Chapter 1

Introduction

Educators and mental health professionals share the belief that a positive and stable self concept is central to academic and interpersonal success (Craven, Marsh & Debus, 1991; Marsh, Smith, Barnes & Butler, 1983; Samuels, 1977; Zimet & Farley, 1984). Children who feel good about themselves tend to be academically successful, well adjusted socially and more readily accepted by their peers. Conversely, children exhibiting problematic behaviours perceive themselves negatively and therefore personally and socially inadequate. Thus, overt behaviours are said to provide a good indication of personal adjustment. Although this argument is intuitively appealing, sufficient evidence exists to cast doubt on the notion that overt behaviours and self concept are thus related (Bajuk, Relich & Richardson, 1992; Bloom, Shea & Eun, 1979; Brown & Hammill, 1983; Piers, 1972; Reisberg, Fudell & Hudson, 1982; Schneider & Leitenberg, 1989; Zimet & Farley, 1984). A growing body of research suggests that an individual's behaviour does not accurately reflect the valency of that individual's self concept. Empirical evidence however, has failed to clarify these opposing perspectives.

This thesis examines the perceptions of interpersonal adequacy held by preadolescent boys, identified as behaviourally disordered, through comparison with perceptions held of them by significant others and through normative comparison with their peers. Several features of this research contribute to its
originality. Conceptually, it is proposed that an individual's behaviour does not reflect the valency of that individual's self concept and conversely that knowledge of an individual's self concept is not useful in predicting behavioural status. Methodologically, the *ex post facto* research design incorporating pair-wise category matching, together with the instruments selected to quantify the constructs under examination, lend predictive power to the results. The use of multiple logistic regression which is able to accommodate matched data, also contributes directly to the originality and credibility of the work. The clinical utility of self report scales, as well as the applicability of the revised 1991 scoring profiles (Achenbach, 1991a; 1991b; 1991c; 1991d) for the Child Behaviour Checklist (CBCL/4-18) and Teacher's Report Form (TRF) to an Australian preadolescent population are also evaluated.

Historically, construct validation of behaviour (Achenbach, 1978b; 1979; Achenbach & Edelbrock, 1984) and self concept (Marsh, 1990a; Shavelson, Hubner & Stanton, 1976) has been frustrated by the variability of accepted definitions and the lack of a coherent conceptual framework. Both Achenbach (1991a; 1991b; 1991c) and Shavelson (Marsh, 1990a; Shavelson et al., 1976) proposed that informal, intuitive definitions are inadequate for the purposes of construct validation. Thus, both have adopted Cronbach and Meehl's (1955) *nomological network paradigm* as their guiding principle. This model provides the researcher with a structure to help locate a construct in conceptual space.

The *nomological network paradigm* incorporates both internal and external analyses of a construct. Investigating the interrelationships among differentiable facets of a construct enables the researcher to examine the internal structure, with
the possibility of determining the composition of the construct. This is termed the
within construct portion of the nomological network. External examination of a
construct focuses on relationships between the construct in question and other
constructs to which it is logically related. This then, is the between construct
portion of the nomological network (Byrne, 1984). According to the nomological
network paradigm, construct definition or within construct research precedes
between construct research, as theoretical definition sets the parameters guiding
subsequent research design and measurement. This logical sequence cannot be
ignored if meaningful interpretation of information is to occur.

This research, concerned with the relationship between children's
behaviour and self concept, proposes to clarify the between construct portion of
the nomological network paradigm, as it relates to both behaviour and self concept
constructs. Three themes, integral to this line of inquiry, are explored. The first
theme examines behavioural perceptions of the child by persons regarded as the
child's significant others. Typically, the realisation that a child's behaviour is
problematic originates with adults rather than the child. In view of the child's
dependence on others, it is prudent to regard childhood behaviour problems as
relativistic. Rather than being intrinsically pathological, children's behaviour is
likely to vary from one context and interaction partner to another (Achenbach,
1991c; Achenbach & Edelbrock, 1978). In order to gain a composite picture of
a child's behavioural strengths and weaknesses, it is necessary to gain information
from a variety of sources. Individuals each possess unique perspectives,
qualifications and prejudices (Achenbach & Edelbrock, 1984). Thus, it is
necessary that assessment techniques capitalise on each informant's unique
descriptive and predictive power.

The self concept is the second theme pertinent to this investigation. Shavelson et al. (1976) described self concept as multifaceted, hierarchical, developmental, stable, evaluative and differentiable. Research has largely focused on within construct validation and the between construct clarification of the academic self concept/academic achievement relationship (Marsh, 1990a). There is little research investigating preadolescent nonacademic self concept dimensions. Certainly little, if any work, has investigated the multidimensional self concepts of behaviour disordered preadolescent populations. Mindful of nomological network principles this research proposes to address past inadequacies through the use of objective, standardised measures developed within the framework of a well researched theoretical base.

The third theme explores the self appraisal process and its emotional impact through the presence of state-trait anxiety (Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983). The individual's self perceptions are said to be formed through experiences with the environment. They are influenced especially by environmental reinforcements and the reinforcements of significant others. Perceptions of self are thought to influence the individual's behaviour and this behaviour in turn influences the individual's self perceptions (Shavelson et al., 1976). However, focus should not only fall on the impact of the social network when considering the development of self concept. Distinctive individual cognitive and affective processes also impinge on and modify the self concept. Shavelson and Bolus (1982, p.3) propose that "one's attributions for one's own behaviour" also contribute to the self concept. The notion that an emotional
component is a mediating factor in this process is intuitively appealing. Indeed, it has been argued that when others' perceptions of an individual and the individual's own perceptions are discrepant, the resulting threat to the *self system* elicits emotions of anxiety (Lundgren & Schwab, 1977).

In order to capture variations in the assessment of children's behavioural functioning, a multiaxial assessment system comprising five axes has been proposed (Achenbach, 1980; Achenbach & Edelbrock, 1984). Two of these axes encompass biomedical and psychometric assessment. The remaining three axes access informant rating data detailing the child's behavioural competencies and problems. Reports from parents, teachers and observational data from clinicians or self report are the most pertinent. Accordingly, these three types of informants provide a comprehensive overview of the child's functioning.

In this study the Child Behaviour Checklist (CBCL/4-18) and revised 1991 profiles (Achenbach, 1991a) together with the Teacher's Report Form (TRF) and revised 1991 profiles (Achenbach, 1991b) were selected to provide objective cross informant information regarding subjects' overt behaviours in the home and school settings, respectively. The direct comparison of behavioural information gained from multiple informants is facilitated through the use of a set of problem items and scales assigned to both instruments (Achenbach, 1991d). The situational specificity of children's behaviour may thus be determined empirically using a single set of explanatory measures.

Advances in self concept theory and measurement (Marsh, 1990a) have indicated that the self concepts of all preadolescent children are sufficiently differentiated to allow for both positive and negative evaluations to coexist on
varying dimensions. These advances may provide a cogent explanation for the contradictions observed in the past. Thus, the belief that children's behaviour provides a good indication of their innermost thoughts regarding self may not always hold true. This research utilised the Self Description Questionnaire-1 (SDQ-1) (Marsh, 1988), a locally developed instrument designed to accommodate multidimensional self concept principles, to test this proposition.

Self appraisal is a complex, on-going process involving not only the individual's interaction and reinforcement with the social environment but also continuous psychological self evaluation. Exploring the contextual complexity of the self concept, as it relates to behaviour, thus involves the comparison of self-other ratings, as well as the definition of psychological processes. A comparison of self-other ratings seeks to investigate the congruence between an individual's self perceptions and the perceptions significant others hold of that individual. In this study this comparison of perception was sought.

The emotional component, defined by the anxiety construct, has been operationalised using the state-trait anxiety model (Spielberger, Edwards, Lushene, Montuori & Platzek, 1973; Spielberger et al, 1983). State-trait anxiety theory has provided researchers with a useful conceptual framework. It has also facilitated the assessment of these two components through the construction of two independent scales. The State-Trait Anxiety Scale for Children (STAIC) (Spielberger et al., 1973) comprising A-state and A-trait scales operationalises this theory and was considered the most appropriate measure of self reported anxiety because of the distinction made between state and trait anxiety.

This probe into the perceptions of interpersonal adequacy held by
preadolescent boys will contribute significantly to the growing body of related literature. Behavioural classification of the research sample was achieved through statistical comparisons with the CBCL/4-18 (Achenbach, 1991a) and TRF (Achenbach, 1991b) demographically matched clinically referred and nonreferred samples. It was thus established that the study group was representative of a clinically referred population and that the comparison group met the behavioural inclusion criteria. In order to place the multidimensional self concepts of these subjects within a normative framework, statistical comparisons were made with the SDQ-1 standardisation sample (Marsh, 1988). The personal, social and school multidimensional self concepts of the sample were found to be commensurate with those reported for a normal population.

Indeed, although behavioural reports provided by both the class teacher and primary caregiver clearly differentiated the groups according to their behavioural status, no significant group differences were found as regards these subjects' multidimensional self concepts. Multiple logistic regression analysis for matched data sets generated the best fitting model adequately predicting behaviour disorder. The model, taking into account state and trait anxiety as potential confounding variables, comprised four self concept dimensions: Physical Abilities, Physical Appearance, Reading and General School. Although statistically valid, this model lacks functional validity thereby limiting its theoretical and clinical utility.

Interesting group differences emerged when the self appraisal process was investigated. Reports of multidimensional self concept and both state and trait anxiety were found to be largely unrelated for the study group. In addition,
comparisons of self-teacher and self-caregiver reports for the study group clearly indicated little evident association. On the other hand, results for the comparison group indicated considerable agreement between self-teacher, and to a lesser extent, self-caregiver ratings. Significant inverse effects between reports of state anxiety and multidimensional self concept were also observed for the comparison group.

Thus, using empirical methods it has been demonstrated that, when potential environmental influences and personal background are controlled, the allocation of behavioural status does not reflect the valency of self reported multidimensional self concept. Furthermore, knowledge of an individual's self concept is not theoretically or clinically useful in predicting behavioural status. Moreover, the multidimensional self concepts of preadolescent boys exhibiting disordered behaviour are not necessarily depressed leading to feelings of personal and social inadequacy. Indeed, the definitive results obtained suggest clear differences between the study and comparison groups regarding behavioural style and ego involvement inferred through the presence of anxiety arousal. This work cautiously proposes inferences regarding the relationship between perceptions of interpersonal adequacy held by preadolescent boys and the psychological and/or motivational processes enlisted during self appraisal. In view of the clear relationship observed between ascribed behavioural status and the differential psychological and/or motivational processes enlisted during self appraisal, future research investigating the relationships between ascribed behavioural status and differential attributional style is strongly recommended.

Finally, it may be useful to ponder the perceived relevance of a seemingly
critical social environment for preadolescent boys identified as behaviour disordered. Teachers, and even caregivers, whose opinions lack perceived credibility and valuation may have little impact on the preadolescent self system. Consequently, any effective behavioural intervention must first ensure that it possesses a measure of credibility in the eyes of the recipient in order to promote self involvement. This may only occur if effective and relevant clinical intervention occurs at an earlier age before the differentiation of self concept peaks.
Chapter 2
The Identification and Classification of
Childhood Behaviour Disorders

2.1 Introduction

The absence of a coherent conceptual framework for describing and classifying childhood behavioural and emotional disorders has in the past severely disadvantaged this field of inquiry (Achenbach, Conners, Quay, Verhulst & Howell, 1989). Indeed, philosophical disagreements regarding the fundamental legitimacy of diagnosis still exist. It has thus been argued that labelling problems may only serve to stigmatise without necessarily granting the associated benefits of appropriate service provision. Researchers must therefore address empirical issues of construct definition and classification, but at the same time avoid the indiscriminate labelling of individuals. The knowledge gained through empirical endeavours should ultimately promote the well being of the individual through improved service delivery.

2.2 Explanatory Models

Defining children's behavioural and emotional problems is not without its complications. Traditionally, the definition and identification of these problems have been largely guided by a medical model. The medical model, exemplified by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV:
American Psychiatric Association, 1994), is founded on the assumption that childhood behavioural and emotional disorders are derived from organic pathologies. Even when an organic aetiology cannot readily be identified, an underlying deficit is sought to account for observed signs and symptoms.

Aetiology is of less concern to the proponents of a psychometric paradigm (Achenbach, 1978b; 1979; Achenbach & Edelbrock, 1978; 1984). Behavioural and emotional problems of childhood are perceived as quantitative deviations from the norm rather than as discrete disorders. This position, concerned with problems of definition and classification, focuses on the use of standardised psychometric scales to quantify individual differences.

In view of the substantial effort both medical and psychometric paradigms have devoted to defining and classifying behavioural and emotional disorders of childhood, Edelbrock and Costello (1988) argue that future research should be directed towards a convergence of these apparently opposing paradigms. Establishing associations between psychometric measures and diagnostic categories would not only strengthen their validity, but would increase their clinical and research utility.

An understanding of the nature and magnitude of childhood behavioural and emotional problems is further enhanced through the study of normal child development. When considered in a developmental context, the magnitude of behavioural and emotional disorders are gauged by their negative impact on the individual's socialisation experiences. A developmental perspective would thus emphasise the transactional relationships between individual children and the social contexts in which they function. It would also take into account the impact
of various child and environment combinations at different developmental levels (Achenbach, 1978b; 1979; Achenbach & Edelbrock, 1978; 1984). Thus, rather than defining childhood behavioural and emotional problems within the parameters of the medical paradigm, the comparative approach of the psychometric paradigm would appear far more utilitarian.

Moreover, the identification of childhood behavioural and emotional disorder brings with it a unique set of circumstances governed by the child's role in society (Rosenberg, 1973). Typically, the realisation that a child's problematic behaviour is such that specialist intervention is required originates with adults rather than the child. It is the adult who judges the degree of pathology and its repercussions on subsequent developmental periods. Deeming children's behaviour problematic and contravening the social mores of a particular culture is thus part of the adult's role as an agent of socialisation. Thus, children's behaviour is likely to vary from one context and interaction partner to another (Achenbach, 1991c). There are occasions when problem behaviours may be offset by behavioural competencies. Indeed, problem behaviours may be perceived as milder in one child who also displays many socially appropriate and valued characteristics compared to another child who does not.

A meaningful evaluation requires an overview of the child's behavioural repertoire, including those behaviours which may not be so easily identified as aberrant. It is therefore necessary to ascertain a child's relative position within the peer group in terms of behavioural problems and competencies. Consequently, Achenbach and Edelbrock (1984) argue that a composite picture of the child's behavioural strengths and weaknesses relative to age-appropriate
expectations is necessary before professional help is enlisted.

2.3 Multiple Informants

The degree and persistence of certain behaviours necessitating classification has always been a contentious issue amongst professionals working with children. It is accepted that children's behaviour varies immensely across situations and with interaction partners. The nature of the interaction partner's relationship with the child would invariably affect the nature of reported behaviours. Achenbach, McConaughy and Howell (1987) therefore suggest that ideally multiple reports representative of varying relationships should be obtained.

Past research (Dunn, Stocker & Plomin, 1990; Garrison & Earls, 1985; McConaughy, Achenbach & Gent, 1988; Weissman, Orvaschel & Padian, 1980) suggests that there is a lack of consistent agreement between informants sharing differing relationships with the child. Meta analysis (Achenbach, McConaughy & Howell, 1987) however, indicates some consistency between reports by pairs of parents, teachers and other observers. Thus, these researchers propose that one report from each type of interaction partner would provide an acceptable sample of the child's behaviour. However, they advise against the substitution of one informant for another who shares a different relationship with the child because of empirically demonstrated lack of agreement.

Research evidence on parent and teacher perceptions of behaviour disorder is paradoxical. Touliatos and Lindholm (1981) found that parents tended to report a greater amount of behaviour disorder in their children than did teachers. Furthermore, correlations between ratings made by parents and
teachers were highest for boys. Holdaway and Jensen (1983), found the opposite to be true. Their results showed teachers' evaluations, when compared with those made by subjects' mothers, to be far more critical. Although paradoxical, these results reflect the breadth of information available about how children function in a variety of settings. Thus, each informant, including the child's self report, contributes a considerable amount towards a total picture of the child not accounted for by the others.

The findings that have been discussed present a dilemma for advocates of the medical model who categorise children's behavioural and emotional disorders according to the DSM-IV (American Psychiatric Association, 1994). Although a multiaxial diagnostic system is used, the main diagnostic criteria for most childhood disorders specify precise features which must be judged as being present or absent. It would seem inappropriate to apply fixed criteria to the varying judgements of different informants reporting on a child's functioning in different situations.

2.4 Situation Specificity

Achenbach and Edelbrock (1984) perceive the informant as an interaction partner who, as well as being exposed to samples of the child's behaviour, also exerts an impact on the resultant behaviour. It is this reciprocal relationship that is of interest here because of its impact on the informants' reporting of children's problematic behaviours. Most pertinent to this research are parent-child and teacher-pupil interactions in the home and school settings, respectively as these relationships are to be specifically investigated.
2.4.1 Home and the Family

Evaluation of children's behaviour is primarily based on parental reporting. Society considers parents responsible for primary socialisation. Thus, they are considered key informants. However, various influences prejudice parental perceptions and could compromise the objectivity of reporting. The degree and nature of psychopathology found in parents has a direct bearing on their ratings of psychopathology in the child (Kazdin, French & Unis, 1983; Kazdin, French, Unis & Esveldt-Dawson, 1983; Mash & Johnston, 1983; Steinhausen, Edinsel, Fegert, Gobel, Reister & Rentz, 1990). This, then raises serious questions regarding the validity of psychometric assessment based on only one parent's ratings.

Friedlander, Weiss and Traylor (1986) investigated this proposition using maternal depression as an indicator of parent psychopathology. Although both maternal depression and child gender were related to mothers' ratings of their children's behaviour, these ratings nevertheless differentiated between children whose behaviour was regarded as deviant and those whose behaviour was considered normal. Even though parents' capacities to cope with personal crises and deliver objective appraisals of their children's behaviour is doubtful, it would seem the broad discriminatory power of their reporting prevails.

Although parents provide good primary evidence of their child's functioning regardless of their personal psychological status, the influence of family climate on parental reporting has also been shown to be pertinent (Dunn et al., 1990; Margalit, Weisel, Heiman & Shulman, 1988; Rosenberg & Joshi, 1986). Marital discord is a particularly potent disruption to a functional family climate. Indeed,
Rosenberg and Joshi (1986) indicate that as marital difficulties increase, so does the difference in parents' perceptions of their children's behavioural difficulties. Furthermore, there is evidence to suggest that children from the one family can experience vastly different lives. That is, the family climate experienced may vary from one family member to another. Dunn et al. (1990) believe that children are sensitive to differential maternal behaviour from a very young age. This awareness generates feelings of anxiety and/or depression in those who feel less loved. Differential maternal behaviour towards offspring may also influence parental reporting of children's behavioural and emotional problems. This would certainly explain why children in the same family are sometimes viewed very differently.

Family climate and child rearing styles however, are only part of the broader social milieu. The notion that cultural mores determine child rearing philosophies has appealed to researchers of diverse background (Achenbach, Bird, Canino, Phares, Gould & Rubio-Stipec, 1990; Achenbach, Hensley, Phares & Grayson, 1990; Ekblad, 1988; Hensley, 1988; Steinhausen et al., 1990). Cross cultural studies using multiaxial assessment have indicated cultural differences in the reporting of problematic behaviour. Both Chilean and Puerto Rican parents, when compared with American mainland parents, related a higher incidence of problematic behaviour in their children (Achenbach, Bird, Canino, Phares, Gould & Rubio-Stipec, 1990).

Achenbach, Hensley, Phares and Grayson (1990) also found that parents in Sydney, Australia reported a higher incidence of problem behaviours than the American comparison sample (Achenbach & Edelbrock, 1983). In addition to
sampling variations between the studies, it is also noteworthy that Sydney has a greater and more diverse immigrant population than the American cities sampled for the standardisation of the CBCL (Achenbach & Edelbrock, 1983). Thus, greater cultural variety in the reporting of problem behaviours could have contributed towards the observed differences between the samples.

Differences in the reporting of problem behaviours could lead one to postulate that actual prevalence rates may differ in the cultures described by these studies (Achenbach, Bird, Canino, Phares, Gould & Rubio-Stipec, 1990; Achenbach, Hensley, Phares & Grayson, 1990; Ekblad, 1988; Hensley, 1988; Steinhausen et al., 1990). Conversely, parents may vary in their tolerance thresholds according to cultural mores. Either assumption leads to the conclusion that cultural differences are a significant factor in the reporting of children's problematic behaviour. Because the influence of cultural mores on children's behaviour cannot be disregarded, this aspect has been incorporated into the sampling methodology and will later be elaborated.

2.4.2 The School Setting

Outside the family unit, teachers are considered the next most important adults to have sustained contact with children. Identification of childhood behavioural and emotional problems which result in referral to, and intervention by, a specialist clinician is largely initiated by teachers. The school environment is believed to be one of the first and most effective means of promoting dominant social norms and group membership (Osuna & Luna, 1989). As society's agents for socialisation, teachers are in a prime position to identify any deviation from
the socialisation practices prescribed by the wider community.

Teachers are in a unique position as their role enables them to observe and interact, making use of a structured environment to draw comparisons among children of the same developmental level. They are able to observe children's responses to school curriculum tasks which require sustained attention, persistence and organisation. Sandler (1980) however, has raised a valid issue concerning the referral of children identified as behaviourally and/or emotionally disturbed in the school setting for specialist assistance. Problems which do not manifest themselves cross situationally, but arise specifically in the school setting, may be an indication that the school is not mindful of that individual child's needs. Generalised disorders would manifest themselves cross situationally and would be reported by multiple informants (Achenbach, 1991c).

There is evidence to suggest that teachers hold negative stereotypic notions regarding children from low socioeconomic backgrounds (Mazer, 1971). Stereotypic notions held by teachers may interfere with their ability to effectively discriminate between generalised behavioural and emotional disorders and normal behaviour exhibited by children from differing backgrounds to themselves. Alternately, the differences between expected behavioural mores in the home and school settings may be greater for children from low socioeconomic backgrounds leading to this discrepancy of expectation (Burdett & Jensen, 1977; Fahey & Phillips, 1981; Sandler, 1980; Trowbridge, 1970).

The legitimacy of teachers' ratings has not only been questioned in relation to possible stereotypic social class biases. Serious consideration has been given to the question of whether teachers are able to accurately integrate information
from their numerous encounters with students. Cadwell and Jenkins (1986) have developed an information processing model to evaluate the rating process. They suggest that when asked to provide ratings pertaining to their students, teachers serve as the instrument which transforms the requested information, through numerous interactions with students, into the resultant set of ratings. Thus, the rater becomes the measuring instrument (Jackson & Paunonen, 1980).

Little is known of how the vast amount of, sometimes crucial, information about students is integrated by teachers. Cadwell and Jenkins (1986) suggest that in response to the cognitive strain of recalling the specific behaviours of individual children, teachers may rely on cognitive strategies which result in systematic error. Behavioural ratings, in particular, place a great burden on the teachers' information processing abilities (Feldman, 1981). Easily recalled events are believed by teachers to have occurred more frequently. In addition, they are influenced by the organisation of their semantic memory for the terms used to describe behaviours in question. Consequently, semantically similar descriptions of different behaviours may be recalled as co-varying because of their closeness in meaning and not as the result of their actual co-occurrence. Behavioural ratings may tell us as much about the way teachers organise information as they tell us about how behaviours actually co-vary (Cadwell & Jenkins, 1986). Thus, although rating scales may furnish useful information regarding teachers perceptions of their students, it is unwise to rely on them alone as direct measures of students' behaviour.

No informant can provide a complete picture of a child's behaviour. Each individual possesses a unique perspective (Achenbach & Edelbrock, 1984).
Parents and teachers observe and interact with children within different social milieux. Thus, it is necessary that assessment techniques capitalise on each informant's descriptive and predictive power. Each individual report provides insight into the child's interactive capacity within a particular environment but ultimately an integrated picture is necessary if a generalised cross situational appraisal is to be made of the child's adaptive functioning.

2.5 A Case for Multiaxial Assessment of Behaviour

It has been argued that both the informant's idiosyncratic background and the nature of the informant-child relationship are reflected in behavioural reporting. Child characteristics however, are also reflected in this procedure. Experiential differences related to sex, race, socioeconomic status and cognitive level are just as likely to affect reported behaviour. In order to capture variations in the assessment of children's functioning, Achenbach (1980; 1991c) has proposed a system of multiaxial assessment, not unlike that used by the proponents of the medical model in the DSM-IV (American Psychiatric Association, 1994). This paradigm has been extensively researched (Achenbach, 1978a; Achenbach & Edelbrock, 1979; 1981; 1986; Cohen, Gotlieb, Kershner & Wehrspann, 1985; Edelbrock & Achenbach, 1980; 1984; Evenson, Frankel, Sirles & Parsons, 1988; Hoge & McMay, 1986; Mooney, Thompson & Nelson, 1987; Towle & Schwartz, 1987) over the past decade leading to a substantial revision of the scales.

Achenbach proposes an integrated system of behavioural assessment comprising five axes. Two of these axes encompass biomedical and psychometric assessment. The remaining three axes access the principal sources of informant
rating data regarding the child's behavioural and/or emotional status. Reports from parents, teachers and observational data from clinicians or self report are considered the three principal sources of informant rating data. Thus, reports from these informants provide a comprehensive overview of the child's functioning (Achenbach, McConaughy & Howell, 1987; McConaughy, 1985; McConaughy & Achenbach, 1988; 1989).

The cross informant assessment approach developed by Achenbach (1991c) integrates information from parents through the CBCL/4-18 (Achenbach, 1991a), from teachers through the TRF (Achenbach, 1991b) and through self report for children aged 11 years and over (Achenbach, 1991e). The information derived from these instruments is scored in terms of eight cross informant syndrome scales: **Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour and Aggressive Behaviour**; and two broad band groupings derived from these eight syndrome scales. The eight cross informant syndrome scales, statistically derived through a comprehensive research program, describe children's behaviour patterns and emotional status (Achenbach, 1991c).

The two broad band groupings include the *Internalizing and Externalizing scales*. The *Internalizing scale* comprises the sum of the Withdrawn, Somatic Complaints and Anxious/Depressed syndrome scales, whilst the *Externalizing scale* comprises the sum of the Delinquent Behaviour and Aggressive Behaviour syndrome scales. This Internalizing-Externalizing dichotomy is said to reflect over controlled versus under controlled behaviour or alternately personality versus conduct problems (Achenbach, 1991b).
Norms are derived from a large national sample of demographically matched clinically referred and nonreferred children (Achenbach, 1991a; 1991b; 1991e). A child's behavioural status is thus quantified and positioned within a normative framework of reports from informants sharing similar settings. Discrepancies in informant reporting are potentially as instructive as agreements because they highlight diversity in judgements across situations and interaction partners. Within this paradigm cross situational variations in a child's reported functioning does not necessarily call an informant's credibility into question. Furthermore, deviance reported in specific situations may not mean that the child should be changed. Indeed, those informants responsible for structuring that environment may not be mindful of the child's needs. Thus, adhering to standardised assessment procedures, which reflect an awareness of situational specificity, appears to be a far more utilitarian approach than relying on categorical diagnoses based on any single individual's judgement.

2.6 The Psychometric Paradigm: Implications for this Study

The psychometric paradigm plays an integral role in the formulation of this research. Central to this model, and thus to this research, is the notion that behavioural and/or emotional problems are perceived as quantitative deviations from the norm, their magnitude measured by the effects on an individual's socialisation experiences. Standardised, integrated assessment procedures facilitate the classification of children's behaviour using a cross informant approach. Thus, multiple reports of a child's interactive capacity across settings provide an integrated picture of that child's functioning.
The measurement and classification of children's behaviour using this comparative approach has also been incorporated into the research methodology. Normative comparison of children identified as behaviourally and/or emotionally disordered with children whose reported behaviour falls within acceptable limits has been achieved through both instrumentation and sampling procedures. The CBCL/4-18 (Achenbach, 1991a) and TRF (Achenbach, 1991b) are norm referenced behavioural rating instruments modelled on psychometric principles. It is thus possible to validate subjective subject selection in terms of normative population parameters using statistical methods. Normative comparisons between the subjects identified as behaviourally and/or emotionally disordered and their immediate cohort are also possible by incorporating pair-wise category matching procedures into the research design. This technique produces a study group and a normative reference group drawn from the same cohort for direct comparison.

The CBCL/4-18 (Achenbach, 1991a) and TRF (Achenbach, 1991b) form part of an integrated system of materials designed to tap children's behavioural competencies and problems as they are reported by parents and teachers, respectively. These measures are specifically designed to yield standardised, integrated behavioural ratings from multiple informants representing divergent settings. As the informants selected for this study were putative significant others representing home and school settings, these instruments in their revised form were considered particularly suitable. The behavioural information gained allows the researcher to determine the situational specificity of reported behavioural competencies and problems.

Indeed, the use of the revised and renormed 1991 profiles for both the
CBCL/4-18 and TRF contribute to the originality of this research. These recently released profiles lack substantive supporting research. This research is likely to be the first example of research to make use of these revised instruments using an Australian preadolescent cohort.
Chapter 3
Multidimensional Self Concept

3.1 Introduction

Preoccupation with the task of bringing some order into self concept research stems from the firmly held belief that self concept enhancement is a desirable goal (Craven et al., 1991; Marsh, 1988; Marsh & Richards, 1988; West, Fish & Stevens, 1980). The notion that an improvement in self concept may facilitate improvements in other outcomes, such as academic achievement, academic behaviour and personal adjustment has motivated both researcher and practitioner alike.

Although the association between children's behavioural adjustment and self concept has generated a good deal of attention over time (Belter, Lipovsky & Finch, 1989; Durrant, Cunningham & Voelker, 1990; Gordon & Tegtmeier, 1982; Higgins, Klein & Strauman, 1985; Loney, 1974; Politino & Smith, 1989; Williams & Cole, 1968; Zimet & Farley, 1984), no clear trends have as yet emerged. This may be directly attributed to the variability of conceptual definitions and the inadequacies of traditionally accepted measures for both these constructs.

The past decade has seen these issues addressed. However, a definitive direction is still lacking. Research merging the most powerful theories and empirical measures developed for both constructs has hitherto not occurred. It is the aim of this investigation to address this oversight by exploring the notion
of multidimensional self concept as it specifically relates to children who have been classified empirically as behaviourally and/or emotionally disordered.

3.2 Defining the Construct

Reviews critically analysing self concept theory and research prior to the development of the multidimensional, hierarchical model repeatedly concluded that results lacked consistency and were difficult to replicate (Burns, 1979; Marsh, 1990a; Shavelson et al., 1976; Wylie, 1979). In a comprehensive review of existing self concept research, Wylie (1979) concluded that the most common problems constraining progress were: the profusion of idiosyncratic self concept instruments with questionable psychometric properties, the use of uninterpretable discrepancy scores, small sample sizes, the non-equivalence of groups in cross sectional studies and the effects of attrition in longitudinal design. When categorised, these shortcomings represent either problems relating to conceptual definition or research methodology (Marsh, Barnes, Cairns & Tidman, 1984).

Self concept theorists have been notorious for their inability or unwillingness to agree upon a set of universally accepted tenets conceptually defining the construct. Byrne (1984) isolated as many as four theoretical models underpinning much of the research conducted and the intrinsic philosophy of which ultimately influences the interpretation of research results. She described these models as the nomothetic, compensatory, taxonomic and multifaceted, hierarchical positions.

Followers of the nomothetic position envisage self concept as a unidimensional construct (Rosenberg, 1965). Those espousing the compensatory
perspective suggest that specific facets of self concept are inversely related. Accordingly, perceptions of failure in one area may be compensated by perceptions of success in another area. In contrast, those employing a taxonomic model believe self concept comprises a series of highly specific, mutually exclusive factors that are said to parallel Guilford and Thurstone's conceptualisation of intellectual abilities (Sattler, 1992).

Perhaps the most persuasive perspective outlined is that originally proposed by Shavelson et al. (1976). It has been termed the multifaceted, hierarchical approach. This position holds that multiple facets of self concept may be ranked in an hierarchical formation with situation specific self perceptions at the base, moving to inferences about self in specific situations, and then to inferences about self in general. This multifaceted, hierarchical view of self concept parallels Vernon's conceptualisation of intellectual abilities (Sattler, 1992). Measures of self concept and associated self concept research to date may thus reflect any one of these four underlying theoretical models.

Conceptualisation problems are not the only sources of ambiguity. Serious problems of definition also exist (Shavelson et al., 1976). Shavelson found that either the same term took on widely differing meanings or various terms referring to the same phenomenon were used interchangeably. Thus, it has not been uncommon that self concept also be referred to as self esteem, self confidence, self worth, self acceptance or self love with little thought being given to semantic distinctions (Fleming & Courtney, 1984).

This ambiguity and variability in definition and terminology has led to a plethora of discrete measurement techniques (Shavelson et al., 1976). The lack
of empirically demonstrated equivalence among these discrete self concept measures thus makes it difficult to generalise across studies which have used different instruments. This, more than likely, accounts for the inconsistent results which have plagued self concept research.

In order to qualify this contention, Shavelson et al. (1976) examined the construct validity of five frequently used self concept instruments. Of these five, the Self Esteem Inventory (SEI: Coopersmith, 1967) and the Piers-Harris Children's Self Concept Scale (CSCS: Piers & Harris, 1964) are presented for closer inspection as they are popularly used amongst Australian counselling and guidance practitioners in the course of their field work (Bogan, 1988).

Three characteristics of self esteem are outlined in the construct definition for the SEI (Coopersmith, 1967). These are: stability, structure and process. Stability refers to the overall enduring quality of self esteem irrespective of transitory life events. It is also acknowledged that self esteem is structured, comprising a general self esteem component as well as specific facets. In addition, the acquisition of self esteem is seen as a process of self examination culminating in an evaluation of personal worthiness. Shavelson et al. (1976) concluded that, although separate facets of self esteem were acknowledged conceptually by Coopersmith, this interpretation as it related to the SEI (Coopersmith, 1967) lacked empirical support. This was later supported by Marsh and Smith (1982) who, using factor analytic and multitrait-multimethod matrix techniques, found that subscales of the SEI (Coopersmith, 1967) lacked stability and were not sufficiently discrete to be separated from the total score. The total score reflecting a general dimension of self. They consequently concluded that
the instrument lacked construct validity.

In contrast to the SEI (Coopersmith, 1967), the CSCS (Piers & Harris, 1964) was developed in the absence of a conceptual framework. However, there is an implicit inference that self concept is considered to be multifaceted and relatively stable with distinct developmental characteristics. Shavelson et al. (1976) report a general paucity of empirical data supporting these inferred attributes. They do however, acknowledge that there is some evidence to warrant the interpretation of a general dimension based on total scores.

A recent study conducted by Marsh and McDonald-Holmes (1990) tested the construct validity of the CSCS (Piers, 1984) together with the Self Description Questionnaire-1 (SDQ-1: Marsh 1988) and the Harter Perceived Competence Scale for Children (PCS: Harter, 1982). These instruments were selected as they claim to measure multiple dimensions of self concept. Of the three, the CSCS (Piers, 1984) was the only instrument where items were not constructed specifically to measure a priori self concept facets. Although Marsh and McDonald-Holmes (1990) examined the 1984 version of the CSCS, the items did not differ from the 1964 publication where scales were derived on an ex post facto basis. As the CSCS (Piers & Harris, 1964) was originally designed with a unidimensional construct in mind, support for the intended multiple dimensions is extremely tenuous. In summarising supporting construct validation research even the author, Piers, concluded that the interpretation of specific cluster scales was unwise as additional research exploring underlying dimensions is still needed.

A fact largely neglected by these researchers is that construct definition sets parameters for potential measurement techniques. Thus,
Construct interpretation of a test score involves an interplay of construct definition, instrument development and data collection (Shavelson et al., 1976, p.413).

This logical sequence cannot be ignored if meaningful interpretation of information gathered is to occur. Informal, intuitive definitions are inadequate for the purposes of construct validation. A formal, prescriptive approach is necessary. Ideally construct definition should occur using a network of associations or propositions that relate the construct in question, firstly to observable properties or qualities of that construct, and then to other constructs which are themselves related to observables (Shavelson et al., 1976). This proposition is modelled on the nomological network paradigm (Cronbach & Meehl, 1955).

Byrne (1984) has in fact evaluated the construct validity of the above mentioned instruments using the nomological network paradigm. She cites a substantial body of research, using both factor analysis and the multitrait-multimethod matrix method, which demonstrates empirically that the SEI (Coopersmith, 1967) and CSCS (Piers, 1984) lack construct validity. This evaluative model has also played an integral part in the development and validation of psychometrically sound measures, such as the SDQ-1 (Marsh 1988) and PCS (Harter, 1982), which have dominated self concept research over the past decade.

Clearly meaningful interpretation of research results is contingent upon the sound psychometric properties of the instrument, as well as the research methodology employed. The development and precision of computerised
multivariate analysis has greatly assisted the task of construct validation. Indeed, it is this technology that has contributed to the discrediting of such popular and traditionally used instruments as the SEI (Coopersmith, 1967) and CSCS (Piers, 1984).

3.3 The Multidimensional Self Concept Archetype

Shavelson et al. (1976) approached the formulation of their theoretical model with the same rigour they accorded to the work of others. Aware of the pivotal role a priori definition plays in construct validity, they advance a conceptual definition commensurate with these requirements. Thus, self concept is defined as a person's perception of self. These perceptions are formed through experiences with the environment and are influenced especially by environmental reinforcements and the reinforcements of significant others. Perceptions of self are thought to influence the ways in which individuals behave and this behaviour in turn influences self perceptions. Self concept, the product of this appraisal process, may thus be described through seven tenets as organised, multifaceted, hierarchical, stable, developmental, evaluative and differentiable.

In the original model, it was proposed that self concept was both multifaceted and hierarchical (Shavelson et al., 1976). The logic of the model presumed that self concept was organised in such a way that people categorise the vast amounts of information they collect about themselves. They then relate these categories to one another. Therefore, it can be said that self concept is multifaceted. The facets reflect a self referent category system adopted by the individual. The hierarchical structure refers to perceptions of personal behaviour.
at the base moving to inferences about self in specific situations, and then to
inferences about self in general.

After evaluating five of the most frequently used self concept instruments
of the day to muster support for this model, Shavelson et al. (1976) found that at
best only five of the seven proposed tenets were supported. The developmental
aspect was not directly examined, whilst no empirical support was obtained to
suggest a distinction between the descriptive and evaluative aspects of self
concept. These results were hardly surprising in view of the laissez faire approach
accorded to the self concept research. Indeed, Shavelson et al. (1976, p.437)
concluded that:

> once some degree of standardisation of definition, instrumentation, and
> interpretation has been achieved, the determiners, consequences, and
> correlates of self concept, along with their implications for educational
> practices, can be investigated systematically

Although the multidimensional, hierarchical interpretation of self concept
was subsequently examined and its utility debated, the interrelationships of facets
remained unclear and the hierarchical nature remained unconfirmed. At the
time, Shavelson and his colleagues (Shavelson & Bolus, 1982; Shavelson et al.,
1976) were unable to clarify two important aspects. Firstly, as one moved towards
the apex of the hierarchy, facets were observed to be equally stable rather than
increasingly stable as hypothesised. Secondly, the data did not support the
hypothesised upward movement of self concept changes towards the apex. This
lack of empirical verification led to the conclusion that more research employing
methodological procedures capable of determining these interrelationships was needed (Byrne, 1984).

Systematic research over the past decade has however provided the necessary scientific credibility. The model now boasts a solid research base supporting its major tenets. The development of the Self Description Questionnaire instruments: SDQ-1, SDQ-11 and SDQ-111 (Marsh, 1988; 1990a; Marsh & O'Neill, 1984), modelled on Shavelson's conceptual framework, has provided the empirical evidence validating the major postulates. These instruments reflect salient areas of nonacademic and academic self concept as postulated by Shavelson. The nonacademic self concept comprises physical self concept, measured by physical abilities and physical appearance, and social self concept, measured by peer relations and parent relations. The emotional self concept, included in the model by Shavelson, was deleted from the SDQ-1 (Marsh, 1988) as a satisfactory scale suitable for preadolescents could not be constructed. It is however, included in the SDQ-11 and SDQ-111 instruments designed for adolescents and adults, respectively.

The multidimensionality of self concept, using the SDQ-1 (Marsh, 1988), has been verified (Marsh, 1990e; Marsh, Barnes, Cairns & Tidman, 1984; Marsh, Relich & Smith, 1983; Marsh, Smith & Barnes, 1985; Marsh, Smith, Barnes & Butler, 1983), however its hierarchical nature may not be as easily determined. Marsh, Relich and Smith (1983), sampling responses from preadolescent students attending private single sex and public coeducational schools, tested the validity and reliability of the SDQ-1 (Marsh, 1988) as a measure of self concept. They found the hypothesised self concept dimensions present in both groups of students.
and attributed this as support for Shavelson's assumption that self concept is multidimensional.

Although research conducted by Marsh, Relich and Smith (1983) and Marsh, Parker and Smith (1983) indicated that dimensions were hierarchically arranged, the arrangement appeared at odds with that hypothesised by Shavelson. Even though the academic and nonacademic components of self concept were validated, there was little evidence to support the hierarchical amalgamation of these components to form a single general factor. Little support was also found for Shavelson's structure of academic self concept as reading and mathematics were found to be almost unrelated for both samples.

Systematic research replicated these variations and led to a substantial revision of the academic portion of the original model (Marsh, 1990a, 1990b; Marsh & Shavelson, 1985). It was demonstrated that the higher-order structure of Academic Self Concept was hierarchically arranged as Shavelson had posited. However, its structure appeared to be more complicated than first suggested. Whilst Maths and Reading factors each correlated substantially with the General School factor, they were not correlated with each other. Consequently, the revision now incorporates two second order academic factors: Reading-Academic and Mathematics-Academic. Thus, the intercorrelation of these two academic second-order factors along with the second-order Nonacademic factor now form the third-order General Self Concept at the apex of the hierarchy. This amendment to the originally hypothesised model has become known as the Marsh/Shavelson Revision (Marsh & Shavelson, 1985).

Research (Marsh, Parker & Barnes, 1985; Marsh, Relich & Smith, 1983)
also failed to support the separation of physical and social dimensions of self concept. These researchers found that the Physical Abilities and Physical Appearance scales were more highly correlated with the Peer Relations scale than with each other. The Peer Relations scale was in turn more highly correlated with these two physical scales than with the other social scales. These results, whilst paradoxical, supported the multidimensionality of self concept as well as its hierarchical structure, albeit not as proposed by Shavelson et al. (1976). Marsh (1987a) however, has suggested the observed pattern of correlations among the physical and social facets is intuitively tenable. In the interests of parsimony, the physical and social factors should be combined to form one physical/social second order factor.

The multifaceted nature of self concept, in particular the structure of the second-order factors, has received much attention. However, the status of General Self Concept also requires clarification (Marsh, 1986b; 1990a). A hierarchical General Self Concept may be a productive depiction of this concept. This would hypothetically represent an average of specific self concept facets. Its breadth would thus be limited by the range of facets included for analysis. Consequently, in a study that only examines different areas of academic self concept, such a General Self Concept would be limited to a General Academic Self Concept. However, as it stands, the general self concept construct fails to reflect the diversity of specific self facets.

Marsh (1986b) has noted that once again parallels may be drawn between the self concept and intellectual ability constructs. The general constructs in both areas of research may be relevant for the very young however, specific facets gain
importance and become more differentiated as the individual grows older. Because the hierarchy of specific facets in self concept research appears to be weaker than that shown for intellectual ability, the reliance on a general superordinate construct is in fact less justifiable. Shavelson's original model embraced a developmental view of self concept formation. Accordingly, the young child's self concept may be described as global, situation-specific and undifferentiated. With increasing age and experience the self concept is said to become increasingly differentiated. As the child assimilates the acquired knowledge and feelings regarding the self, a multifaceted, structured self concept develops (Shavelson et al., 1976).

Theoretically and methodologically, a stable self concept is highly desirable (Marsh, Smith, Barnes & Butler, 1983). Indeed, it is said that a stable self concept facilitates personal mental health. Nevertheless, self concept research is more often than not directed towards substantiation or facilitating change. Improvement in self concept is often one of the goals of intervention programs, together with the hope that improvement in self concept will facilitate an improvement in other outcomes, such as behaviour or academic performance (Craven et al., 1991).

Empirical research has clearly demonstrated that self concept is a multidimensional construct. However, self concept also becomes increasingly differentiated with age. This aspect may prove more difficult to test as increasing differentiation is a complex phenomenon to operationalise. Marsh, Barnes, Cairns and Tidman (1984) support this notion after finding average correlations among SDQ-1 (Marsh, 1988) scales decreased dramatically with age for their
preadolescent samples. They argued that if increasing differentiation took place an analysis of SDQ-1 results would indicate that factors become more distinct with age.

Further research suggests that younger children do clearly differentiate between broad academic and nonacademic components of self concept (Byrne & Shavelson, 1986; Marsh, Barnes, Cairns & Tidman, 1984; Marsh & Hocevar, 1985). However, it was found that the more specific the categories within these broad components were, the less internally consistent and less clearly differentiated they were. Endeavouring to establish a trend of increasing differentiation across preadolescence to early adulthood, Marsh (1989a) further tested this hypothesis. However, no clear support for increased differentiation beyond preadolescence was found.

Investigating the nature of possible age effects, Marsh (1990a) found a statistically significant non-linear quadratic effect. A clear linear decline with age was observed in preadolescent self concept. The decline continued through early to mid adolescence and then showed an increase again during late adolescence. This trend appeared to be consistent across the SDQ-1, SDQ-11 and SDQ-111 instruments, particularly for the total self concept scores. Marsh (1990a) also reported these age effects across the different dimensions of self concept.

Shavelson et al. (1976) proposed that self concept was increasingly responsive to change upon descent of the hierarchy. However, Marsh, Smith, Barnes and Butler (1983) found preadolescent children's self concepts to be relatively stable, as well as systematic and reliable. They also found there was a clear, logical and predictable ordering of self concept factors. On the basis of
these results they concluded that specifically directed intervention programs could have a substantial effect on a particular facet of self concept, although there may be limited change to the overall self concept. Thus, changes in self concept over time seem to be multidimensional. These observations complement the stability-change dilemma.

3.4 Population Differences: Fact or Fiction?

The contention that significant differences in self concept exist between children exhibiting behavioural and/or emotional disturbance and children whose behaviour lies within socially accepted limits is a much debated topic which lacks clear directional research evidence (Zimet & Farley, 1984). Nevertheless, the belief persists that children with problematic behaviour must hold negative views about themselves. This position is fuelled by the premise that a positive view of oneself is the critical component of a healthy personality. Underlying this premise is the expectation that children exhibiting problematic behaviours perceive themselves as inadequate in most areas of their lives. These perceptions emanate from and are validated by repeated failures at school and in forming and maintaining socially valued relationships. As past research supporting this assumption has not been entirely convincing, advances in the conceptualisation and measurement of self concept may resolve these contradictions.

Exponents of the multidimensional model of self concept have isolated preadolescence as a critical developmental stage with regard to the development of self concept. Empirical studies (Marsh, 1985; 1989a; 1990a; Marsh, Barnes, Cairns & Tidman, 1984), in fact, only support an age related increase in the
differentiation of self concept dimensions to early preadolescence i.e., the equivalent of grade five at school. Thus, based on present knowledge the multidimensional self concepts of all preadolescent children are sufficiently differentiated to allow for both positive and negative evaluations to coexist on varying dimensions simultaneously.

After analysing the SDQ-1 normative data for age effects, Marsh (1989a) reported a clear linear decline in self concept throughout preadolescence and into early adolescence. It would thus appear that there is a universal decline in self concept throughout early childhood and into preadolescence, irrespective of gender or population differences. Marsh (1990a) asserts that this age related phenomenon should not be viewed as problematic for a more realistic appraisal of self develops as life experiences are integrated into the self concept. It would be prudent to suggest that the influence of various familial, school and societal life experiences on the developing self concept are highly individual and dependent upon the individual's idiosyncratic evaluations and attributions. These aspects may well help to clarify the association between children's behaviour and their innermost thoughts regarding self.

Some research findings suggest differences in behaviour between individuals holding positive and negative self concepts. Samuels (1977) and Williams and Cole (1968) argue that children with positive self concepts are more likely to enjoy a higher peer status than those with low self concept. They indicate that children who feel good about themselves tend to be well adjusted socially and to be more accepted by their peers. Politino and Smith (1989) have found a similar trend in relation to attitude towards physical activity. They found
that their sample of emotionally disturbed preadolescent children held more negative attitudes towards physical activity and had a lower self concept than their normal group.

By contrast, however there is a body of evidence to suggest that children exhibiting behavioural and/or emotional disturbance do not necessarily hold remarkably negative self concepts. Piers (1972) and Bloom et al. (1979), in two separate studies, compared the self concept of preadolescent emotionally disturbed children with those of preadolescent well adjusted children. Both studies measured self concept using the CSCS (Piers, 1969) and found that while some differences were observed, the mean scores for both groups remained within the normal range of self concept scores. Higher variances were however, observed for the emotionally disturbed group indicating that their scores covered a wider range than did those of the well adjusted children sampled. Thus, it may be that the extent to which disturbed children see themselves as unworthy is related to the nature and severity of their disturbance for not all behavioural and emotional disturbances share the same sequelae and manifest themselves in the same way.

Indeed, the nature of the disturbance, rather than the severity, may contribute significantly to an individual's reporting of self concept. Schneider and Leitenberg (1989) interested in the impact of types of disturbance, rather than severity of disturbance, investigated the self concepts of aggressive, withdrawn, aggressive-withdrawn and normal children. Using the CSCS (Piers & Harris, 1964) to measure self concept they indicated that the withdrawn and aggressive-withdrawn groups reported lowest self concept, whilst the normal group reported
highest. Of interest was the fact that the aggressive group, while reporting lower self concepts than the normal group, yielded far higher scores than the other two groups. Schneider and Leitenberg (1989) suggest that the self evaluative tendencies of aggressive children are more self enhancing than those of withdrawn children and this may well have accounted for the observed results.

Zimet and Farley (1984) also sought to compare the self concepts of emotionally disturbed and well adjusted school aged children using the CSCS (Piers, 1969). They compared the self concepts of children beginning day treatment in a psychiatric hospital with normal and clinic referred samples used to validate the CSCS (Piers, 1969). A comparison of results indicated that their group of day treatment disturbed children did not perceive themselves significantly more negatively than either the well adjusted or the clinic referred group. These results were in sharp contrast to clinicians' expectations and their observations of the children's behaviour.

This discrepancy between clinicians' interpretations of the self concepts held by children exhibiting disturbed behaviour and the children's self report has been supported by other research (Belter et al., 1989; Gordon & Tegtmeyer, 1982). Both studies measured clinicians' interpretations of subjects' self concern using the Rorschach Egocentricity Index, a measure of the individual's degree of self concern from the Comprehensive System for the Rorschach (Exner, 1986). Belter et al. (1989) used the CSCS (Piers, 1985) to measure the self concept of their subjects, whilst Gordon and Tegtmeyer (1982) used both the CSCS (Piers, 1969) and the SEI (Coopersmith, 1967) as measures of self reported self concept. Both studies found that there was no significant relationship between clinicians'
interpretations of and subjects' self reported self concept. In addition, Belter et al. (1989) found that group means and standard deviations for subjects' self concept scores were found to be commensurate with the normative mean and standard deviation reported for the CSCS.

Although the results obtained in these studies are consistent with previous research, the use of the CSCS (Piers, 1969; 1985) and SEI (Coopersmith, 1967) may limit the interpretive value of the results as these instruments have been shown to be conceptually and methodologically inadequate (Marsh & McDonald-Holmes, 1990; Marsh & Smith, 1982; Shavelson et al., 1976). Indeed, as Belter et al. (1989) suggest, an individual's evaluation of self and the process by which this evaluation takes place are complex and multifaceted. Defensiveness and social desirability are particularly pertinent where deviant preadolescent populations are involved. Given the limitations of these instruments, this process may not have been adequately reflected. Indeed, as Marsh (1990b) argues, the structure of self concept and the process of acquisition are far more complex than is traditionally accepted. Clearly, this and the lack of consistent results yielded by research in this area reveals the need to further explore the outlined relationships.

Bajuk et al. (1992) also contend that self concept is a far more complex construct than is generally accepted. They observed variations in SDQ-1 scale scores (Marsh, 1988) which indicated that their groups of preadolescent behaviourally disordered and normal subjects did not perceive themselves equally on all multidimensional self concept dimensions. Subjects simultaneously perceived personal strengths and weaknesses in various facets of their school and
personal lives. Thus, some support exists for the notion that the multidimensional self concepts of children identified as behaviourally and/or emotionally disturbed are not necessarily more deviant than those of their normal peers. The results reported by Bajuk et al. (1992) however, represent preliminary analysis on work in progress. Further empirically derived supporting evidence is required in order to clarify this position.

Using subjects exhibiting adaptive, situationally appropriate behaviour for the purposes of comparison, this study seeks to explore the nature and maintenance of preadolescent multidimensional self concepts in children identified as behaviourally and/or emotionally disturbed. Cognisant of the conceptual and methodological inadequacies which have compromised self concept research, this research specifically seeks to address previous methodological concerns and establish a between network research base for the nonacademic component of the multidimensional self concept paradigm.

Validation of the multidimensional self concept construct has largely focused on the within network portion of the nomological network paradigm, thereby seeking to clarify the nature of the construct (Marsh, 1990a). This process has resulted in the modification of Shavelson et al.'s (1976) originally proposed model and has clarified the interrelationships within and between the academic and nonacademic components of self concept. The between network research has largely sought to clarify the association between self concept and other constructs to which it is logically related. Considerable research has become available investigating multidimensional self concepts as they relate to academic achievement and academic attributions (Byrne, 1986; Craven et al.,

In comparison, investigation of the nonacademic component of self concept has lagged behind its academic counterpart. Whilst some research in this area is available using adolescent and adult subjects, the preadolescent population has been largely neglected. This is especially so for preadolescent behaviourally deviant populations. Extensive research has failed to uncover any published work exploring the multidimensional self concepts of deviant preadolescents identified as behaviourally and/or emotionally disturbed. The research that exists is limited by the conceptual and methodological deficiencies typical of self concept work in general. Conclusions are often tentative and caution in extrapolating results advised due to the inadequacies of self report measures (Belter et al., 1989; Gordon & Tegtmeyer, 1982; Politino & Smith, 1989; Zimet & Farley, 1984). Given this situation, there is a need for further empirical research using valid and reliable instruments as well as methodologically sound research design.
Chapter 4
The Process of Self Appraisal

4.1 Introduction

In order to clarify the relationship between self concept and children's behaviour, it is necessary to investigate the process integral to the development and maintenance of self concept, that is, the process of self appraisal. The child's social environment is not the only key feature in this process. There are also complex psychological processes which guide these appraisals. Shavelson et al. (1976) drafted a functional definition of self concept that has become a useful tool for the integration of self concept interpretations.

Shavelson et al. (1976) define self concept as a person's perception of self. These perceptions are formed through experiences with the environment and are influenced especially by environmental reinforcements and the reinforcements of significant others. Perceptions of self are thought to influence the ways in which the individual behaves and this behaviour in turn influences the way the individual perceives himself/herself. Thus, the development of self concept is said to be reliant on the evaluations of significant others, reinforcements and attribution for one's own behaviour (Marsh, 1988).

4.2 The Self and the Social Milieu

The assumption that the social milieu plays a pivotal role in the
development of self concept remains undisputed among psychologists. This notion has been articulated for over a century and has its roots in nineteenth century Social Philosophy and Psychology (Shrauger & Schoeneman, 1979). Even though theories explaining the development and maintenance of attitudes about the self have evolved to reflect popular thinking, the fact that the self concept is inextricably linked with the social environment remains fundamental.

Historically, the relationship between the social milieu and the self was firstly formalised by Cooley (1902) and then developed by Mead (1934). Cooley (1902) is credited with developing the notion of the looking glass self. Central to this concept is the assumption that the self is inseparable from social life and essentially involves some reference to others. Thus, according to Cooley (1902), developing a conception of self involved the tripartite process of: imagining our appearance to the other person, the imagination of that person's judgement of our appearance, and an emotional reaction, such as pride, embarrassment or shame.

Mead (1934) augmented this rather simplistic view of social reference to include the entire sociocultural environment. Accordingly, Mead (1934, p.138) argued that:

the individual experiences himself as such not directly, but only indirectly, from the particular standpoints of other individual members of the same social group, or from the generalised standpoint of the social group as a whole to which he belongs.

The emergence of the self is thus contingent upon the individual's ability to take the role of the other, and specifically, to perceive the attitude of the other
towards himself/herself. However, Mead's *looking glass self* is not only reflective of the persons the individual holds in high esteem, or *significant others*, but also the individual's sociocultural environment, referred to as the *generalised other*.

Those persons close to the individual and whom the individual considers important because of their ability to provide or withhold security, promote or discourage independence and foster or inhibit a sense of worth are referred to as *significant others* (Burns, 1982, p.164). Parents, as primary caregivers, are presumed to be *significant others*. Later, during middle childhood, teachers and the peer group also have the opportunity to play this confirming role (Rosenberg, 1973). These particular individuals within the person's social network are *putative significant others*.

The assumption that parents, teachers and peers are in fact *significant others* seems to be valid by virtue of the fact that they play a pervasive role in the socialisation of the child. This has been recognised and advocated by theoreticians and researchers alike. However, not all the individual's potential *significant others* may have equal impact on the developing self concept. There is evidence (Shrauger & Schoeneman, 1979) to suggest that individuals' self perceptions and their views of *others' perceptions of them* are congruent. However, with regard to *others* actual perceptions, some evidence suggests that self perceptions are largely unrelated (Bajuk et al., 1992; Shrauger & Schoeneman, 1979; Zimet & Farley, 1984).

The degree of significance attached to a *significant other* may be contingent upon more than the role occupied by that person within the individual's social network. Rosenberg (1973) suggests that for a *putative significant other* to be a
real significant other the individual must seek, value and respect the opinion of that person. Thus, the individual reacts to his interpersonal environment, and manipulates it within the bounds of reality, rather than being a passive object moulded by outside forces, as the looking glass self would suggest.

Differential interpersonal valuation of a significant other does not occur on an ad hoc basis. The child's social and cultural environment and his/her particular location in the social structure play an important part in this process. Indeed, the status of the child in our society sets parameters on the potential significant others available to the individual. These potential relationships are largely intensive, primary relationships concerned with all aspects of the individual's life. By and large, the child occupies a subordinate status with the potential significant other assuming the power to grant or withhold gratification. This would be especially so in mother-child and father-child dyads. The child's relationship with the teacher, also based on power, is situation specific. Perhaps the only potentially equal relationship available to the child during preadolescence is the peer relationship with siblings and class mates. It would appear logical that the favourable opinions of these persons would be valued and even solicited by the child.

The degree of significance or influence of a significant other is also contingent upon the credibility accorded to that person's opinion (Rosenberg, 1973; Shrauger, 1975; Shrauger & Lund, 1975). Rosenberg (1973) clearly distinguishes between the valuation and credibility of the potential significant other's opinion. A valued opinion is one which we desire and we care about, one which will make a difference to us. Credibility on the other hand involves
confidence in the sound judgement of an other. It can be distinguished from the desire to be liked. Thus, irrespective of the desire to be liked, a child may attribute superior knowledge and insight to a significant other and so be strongly influenced by that person's opinion of them.

The influence of an individual’s real significant others on self perceptions appears to be extremely pervasive, especially in the case of younger children. It would appear that in the earlier years children tend to trust their mother's judgement regarding their personal qualities over their own. This superior insight is also attributed to fathers, but to a lesser extent. As the child grows older faith in external adult evaluations declines. This decline in the belief that adults have a superior understanding of their real selves is offset by a rise in the salience of the peer group (Rosenberg, 1973).

4.3 Self-Other Appraisals

Research exploring the contextual complexity of self concept often involves a comparison of self-other ratings. This comparison rating task has been typically approached from two different perspectives. The choice of method is contingent upon the type of information sought. One method requires the informant to take the place of the other and report as that person would. This procedure produces what Shavelson et al. (1976) refer to as the inferred self concept and has been substantially investigated by Marsh and his colleagues (Marsh, 1990a; Marsh, Barnes & Hocevar, 1985; Marsh, Parker & Smith, 1983; Marsh & Richards, 1990; Marsh, Smith & Barnes, 1984).

The contrasting approach requires the informant to objectively
communicate observations regarding another individual's demeanour. This approach seeks to determine the congruence between an individual's self perceptions and the perception an observer holds of that individual. The quality of information sought when examining possible differences between self report and observer ratings in a behaviourally deviant population can only be gained through this latter approach because it is the comparison of perception which is sought, not inferences regarding another individual's perceptions.

Possible differences between significant others' perceptions of a child exhibiting disordered behaviour and the child's own perceptions have interested educators, psychologists and researchers alike. Interest stems from both the quest for knowledge and a search for practical solutions. Research evidence (Bajuk et al., 1992; Brown & Hammill, 1983; Reisberg et al., 1982) suggests that significant others' perceptions of children exhibiting disordered behaviour and these children's own self perceptions may be at variance. These studies indicated that parent and teacher ratings accurately classified the groups of children into those identified as behaviourally disordered and those whose functioning was considered adaptive. However, there was little difference between the groups on self ratings. Allowing for variations in instrumentation, it would still appear that only the self perceptions of children identified as behaviourally disordered did not reflect the perceptions of significant others chosen for research purposes.

The influence of the school environment is particularly pertinent in preadolescence as the focus of socialisation shifts away from the home sphere. Teachers, regarded by Rosenberg (1973) as secondary or role-specific significant others, become potentially more influential. The peer group also acquires greater
salience in the eyes of the preadolescent child and therefore has the potential to substantially influence the child's self perceptions. The extent of this influence was investigated by Hoge, Smit and Hanson (1990). Their results indicated that overall school climate and feedback from teachers have influence only at the global and academic levels of self esteem. Self esteem in specific disciplines was contingent upon grades attained in that discipline and student's ratings of specific teachers. It was found that influences in specific disciplines differed from year to year and from school to school which suggests the relevance of transient influences, such as individual teachers. This offers tacit support for Rosenberg's (1973) distinction between putative and real significant others.

Schneider and Byrne (1989) also illustrate the shifting influence of significant others during middle and late childhood. They explored the agreement between self perceptions of social efficacy, parent social competence ratings and peer nominations of social competence. It is noteworthy that they found parent ratings of their children's social behaviour on the Social Competence scales of the CBCL (Achenbach & Edelbrock, 1983) did not correspond with other sources of information sampled. These researchers concluded that there was little continuity in social competence between adult-child and child-peer situations. This lack of agreement could also suggest that parents and their children view social competence using different frames of reference.

The issue of sociometric status, especially in the educational setting, is one that has received some attention in recent years. Putative significant others outside the home may not be as accepting of the child's idiosyncrasies as the immediate family. It is possible that the child's social status at home and outside the home
may be at variance. This discrepancy could affect both significant other’s perceptions of the child’s functioning and the child’s self concept. Research (Flores de Apodaca & Cowen, 1982; Haynes, Comer, Hamilton-Lee, Boger & Rollock, 1987; Reynolds, 1980; Samuels, 1977) however, draws more complex links between children’s behaviour, self concept and their peer status. These studies suggest a positive relationship between self esteem, classroom behaviour and peer status. Indeed, Samuels (1977) expresses the sentiment that children who feel good about themselves tend to be well adjusted socially and accepted by their peers.

To extend this notion, Dubow and Cappas (1988) created five social status types: popular, average, neglected, rejected and controversial. They included what they described as a controversial group, a group of children who exhibit a high degree of both prosocial and aggressive behaviour. Their results indicated that children’s self reports of adjustment tended to converge with teacher and peer reports. However, of interest was their controversial group. Surprisingly, this group was found to exhibit high academic achievement and have the most friends. It would appear that the negative social consequences of aggressive behaviour can be offset by prosocial behaviours to a certain degree. The notion that the perceived severity of problematic behaviour may be offset to varying degrees by a child’s competencies is one also espoused by Achenbach and Edelbrock (1984).

As empirical evidence demonstrates, the acquisition of self concept appears to be a far more complex process than earlier theoreticians postulated. Rosenberg (1973) asserts that the fate of all important theories ultimately relies on empirical reality. Once in the hands of empiricists, theories are either
abandoned or they "undergo progressive refinement and specification" (p.829). The latter has been the case with the self concept construct. Examining the character of environmental influences and the reinforcements of significant others has provided an abundance of inconclusive findings. This predicament is only to be expected when attempting to reach universal conclusions from personalised processes. Research is fraught with methodological diversity. The legitimacy of putative significant others chosen by researchers and the nature of their perceptions concerning the individual only account for some of the diversity present in research today. Further controversy exists over the quality and appropriateness of measurement instruments as well as the selection of suitable research designs.

4.4 Self Attribution and Self Concept

Not only did Shavelson et al. (1976, p.411) propose that self concept was influenced "by environmental reinforcements and significant others", he later proposed that "one's attributions for one's own behaviour" (Shavelson & Bolus, 1982, p.3) also contributed to the self concept. Thus, the link between self attribution for one's behaviour and self concept was formalised and has since been developed (Marsh, 1988; 1990a). Self attribution is considered at this juncture because of its bearing on self concept development although it boasts a substantial body of knowledge in its own right.

Self attribution researchers typically probe perceived causes used to explain events. Two schools of thought divide those investigating causal attributions. On the one hand, a dispositional or trait emphasis examines individual differences in
the way subjects explain their own behaviour in different settings. On the other hand, a situational or state emphasis observes how systematic manipulations in context alter attribution. Neither approach is considered intrinsically superior. Indeed, Marsh (1984a, p.1292) suggests that the attribution process is influenced by both situational and dispositional tendencies. However, care must be taken that the interpretation of research findings remains within the parameters set by the approach used.

The dispositional approach is a derivation of Rotter's (1966) *locus of control* theory. This theory hypothesises a generalised expectancy for the internal and external control of events (Marsh, 1984a; 1988; Marsh, Cairns, Relich, Barnes & Debus, 1984). The notion of internal control relates to a person's belief that outcomes depend on one's own efforts or innate characteristics. Alternately, external control refers to the belief that outcomes are a result of external events beyond one's own control, such as the influence of others. Although the *locus of control* may vary in specific situations, it is hypothesised that systematic individual differences generalise across all situations. Self Attribution theory, although influenced by Rotter's work, differs from it significantly. A greater emphasis is placed on the attributed causality of outcomes which cannot be explained by a single internal-external dimension. Thus, outcome is the major focus of study in attributional research.

The character of self attribution concerning perceived responsibility for outcomes has become a controversial issue. Outcomes can be simplistically defined to be a success or a failure. Logically, these two points represent antitheses along a continuum. However, research has shown that there is an
asymmetry in the attribution process applied to these hypothesised antithetical outcomes (Bradley, 1978; Zuckerman, 1979). The asymmetry refers to the tendency of individuals to attribute their successes to internal causes while attributing their failures to external causes. This phenomenon has been termed the *self serving bias* or *the hedonic bias* (Heider, 1958).

The *self serving bias* has traditionally been interpreted as a device used to protect or enhance self esteem (Riess, Rosenfeld, Melburg & Tedeschi, 1981). This is achieved through the use of differential causal attribution in success and failure situations. Bradley (1978) qualifies this position by specifying several conditions which serve to elicit defensive attributions regardless of outcome valency and posits this may occur when:

a) when an individual's performance is public; b) when an individual perceives himself to have high choice in taking an action and as a result, feels responsible for the outcome of his action; c) under conditions designed to produce high ego involvement; and also under conditions designed to produce an objective self-awareness (Bradley, 1978, p.68-9).

In addition, Bradley (1978) suggests an expansion of the *self serving bias* formulation to account for what he calls *counterdefensive attributions*. He postulates that self serving attributions may be viewed as public self presentations designed to maximise public self esteem. Under certain conditions the individual's needs may best be served by accepting responsibility for negative outcomes. The embarrassment of accepting undue credit for positive outcomes and denying credit for negative outcomes, resulting in public intimidation, would threaten the individual's positive public image. Thus, an individual's public
appraisals of causality may be distorted to engender a favourable impression. Their private perceptions and cognitions remaining closer to the truth.

Similarly, Riess et al. (1981, p.225) hold that causal attributions are guided by two discrete motivational processes that either represent "conscious, intentional distortions in a person's public descriptions of causality" or "unconscious, unwitting distortions in perceptions of causality". They researched this notion using the bogus pipeline paradigm where public descriptions were followed by a lie detector test to elicit private causal attributions. The results indicated that attributional asymmetry seems to reflect actual bias in private perceptions of objective causality. Thus, it was concluded that the self serving bias in causal self attributions was not merely a conscious distortion of public image. It appears to be an accurate indicator of self perceptions across situations.

Miller and Ross (1975) further highlighted the equivocal nature of the self serving bias argument. They suggest that data normally used to support self enhancing attributional biases can be readily interpreted using an information processing model. It would appear that there is support for the notion that individuals tend to attribute success to internal causes and failure to external causes (Marsh, 1990a; Marsh, Cairns, Relich, Barnes & Debus, 1984). What remains controversial is the diversity of opinion regarding the internal processes responsible for this effect.

Whilst some researchers suggest the effect represents a deliberate distortion, others argue that it may be the result of dispositional, cognitive processes. A conscious distortion clearly represents a bias in self attribution however, the other explanations may not. Consequently, the self serving bias has
been renamed the *self serving effect* as the thrust of this debate suggests the phenomenon may not constitute a bias in the true sense of the word (Marsh, 1986a; 1988; 1990a; Marsh, Cairns, Relich, Barnes & Debus, 1984). Ultimately, the explication of the *self serving effect* as the sole result of either motivational biases or valid representations of self perceptions is over simplistic.

### 4.5 Anxiety and Self Appraisal

The development of self concept is a complex, on-going process involving the individual's interaction with the social environment. This interaction, not only incorporates the impact of relationships, but also includes cognitive and emotional processes in the continuous reappraisal of the *self*. The emotional component associated with this appraisal process was first recognised by Cooley (1902). Indeed, Shrauger and Schoeneman (1979), investigating evidence for the congruence of *self-other* perceptions, suggested that the related transmission process had, to that time, been largely neglected by researchers. It would seem that the emotional component in this process, although intuitively appealing, would be difficult to define and operationalise. It is therefore postulated that the emotion most likely to be manifested is *anxiety*.

Spielberger's state-trait anxiety theory (Spielberger et al., 1973; Spielberger et al., 1983) provides researchers with a credible conceptual framework for the examination of anxiety. The conceptualisation of state and trait anxiety has helped to integrate divergent viewpoints represented in the literature (Shedletsky & Endler, 1974). In addition, this dichotomy has also facilitated the construction of two independent assessment scales. Thus, the state-trait anxiety position
clearly delineates the various stressors which precipitate anxiety episodes.

According to Spielberger et al. (1973; 1983), state anxiety describes subjective feelings of apprehension, tension and worry that vary in intensity and fluctuate over time. Elevations in state anxiety are generally roused through exposure to stressful situations. Situations where failure may be experienced or where personal adequacy may be evaluated are likely to trigger episodes of state anxiety. Trait anxiety, on the other hand, denotes relatively stable individual differences in the tendency to perceive situations as dangerous or threatening. Trait anxiety may reflect individual differences in the frequency and intensity with which anxiety states have occurred in the past and in the probability of state anxiety being experienced in the future.

Individuals manifesting high trait anxiety are more likely to respond with higher levels of state anxiety to situations that involve interpersonal relationships and threaten self esteem. Circumstances in which failure is experienced, or an individual's personal adequacy is evaluated, are generally more threatening to persons of high trait anxiety. The fear of failure and a self deprecating tendency are elicited in the measurement of trait anxiety. Spielberger et al. (1973; 1983) maintain high trait anxiety individuals are more self deprecating, self preoccupied and discontented with themselves than low trait anxiety individuals. Therefore, these personal qualities would be aroused through stressful situations that are ego involving. As a result, such situations would cause greater arousal states for individuals whose trait anxiety is elevated than for those individuals whose trait anxiety is low.

Experiences in early childhood influence the development of individual
differences in trait anxiety, thereby disposing high trait anxiety individuals to classify situations where personal adequacy is evaluated as more threatening than individuals low in trait anxiety (Spielberger et al., 1973; Spielberger et al., 1983). Recognition that childhood experiences influence the development of anxiety arousal patterns has led researchers to pursue the question of qualitative differences in children exhibiting behavioural and/or emotional disorders (Bedell & Roitzsch, 1976; Finch, Kendall & Montgomery, 1976; Finch & Nelson, 1974; Nunn, Parish & Worthing, 1983). The fact that findings contradict Spielberger's assertions regarding the nature of state and trait anxiety is noteworthy.

In one study, Finch et al. (1976) found that emotionally disturbed children experienced higher levels of state anxiety than normal children. Surprisingly, they found levels of trait anxiety for their emotionally disturbed subjects were low, thus disputing Spielberger's contention that children exhibiting high levels of state anxiety are so predisposed by their elevated levels of trait anxiety. In previous studies these researchers (Finch, Montgomery & Deardorff, 1974; Finch & Nelson, 1974) indicated that emotionally disturbed children experience relatively high levels of constant anxiety at any given moment. Indeed, these contradictory findings suggest that trait anxiety may not be as firmly established in children exhibiting behaviour disorder and/or emotional disturbance. Bedell and Roitzsch (1976) have proposed that these children's prior psychotherapeutic experiences could unduly influence research results and so account for the observed contradiction. They maintain trait anxiety, in particular, could be influenced by on-going psychotherapy.

As previously discussed, a long standing issue in research of this nature has
been the discrimination between putative and real significant others (Rosenberg, 1973). Rosenberg's contention that real significant others are both valued and attributed credibility by the individual is central to this concern. It would then follow that the individual would find the perceptions of such others highly salient. Therefore, if the real significant others' perceptions of the individual and the individual's own self perceptions were discrepant, a situation of tension would arise possibly eliciting emotions of anxiety.

Lundgren and Schwab (1977) have pursued this notion. They argue that anxiety emanates from threats to the self system. This occurs because the individual's experiences cannot be readily assimilated into the current self structure. This line of reasoning parallels that taken by the Symbolic Interactionist perspective. These theorists hold that it is through social participation that the individual learns to assess the self from the perspective of the other. Thus, when discrepancies occur between appraisals by the other and the individual's self evaluation, anxiety is likely to be the emotional consequence for the individual.

The pertinence of selecting real as opposed to using putative significant others for research purposes is illustrated by Felker (1969). Using teachers and peers as putative significant others, Felker found peer ratings to be more closely associated with anxiety. Anxiety was found to be lowest when self ratings were higher than peer ratings. It was suggested that in the face of low peer ratings, high self ratings operate as a defense to lower anxiety when self-other ratings are both low. The relationship is however, more complex as subsequent research demonstrates.
Shrauger and Lund (1975) argue that self esteem reflects differences in *defense* styles, with the high self esteem person blocking out, distorting, or in some manner, invalidating unfavourable self referent input. This source devaluation occurs when there are differences between external evaluation and self perception. The credibility of the source is questioned in order to negate the validity of discrepant feedback. This process occurs because subjective public esteem and self esteem discrepancies present a potential challenge to the individual's own evaluation or to the anticipated loss of esteem from *significant others* (Lundgren & Schwab, 1977).

*Defense* styles for low self esteem individuals are somewhat different. Low self esteem presumably involves the expectation that one lacks the ability to cope effectively with interpersonal transaction. These *defense* styles in operation are accompanied by feelings of doubt and threat. Many and Many (1975) maintain that anxiety occurs when the individual expects to be, or actually is, rejected by *self* or by *others*. A clear inverse relationship between anxiety and self esteem has been found by Many and Many (1975) and Rosenberg (1962).

The logic that various interpersonal factors account for the arousal of anxiety in situations where *self-other* discrepancies exist is not greatly at variance with work relating to the *self serving bias* of self attributions (Bradley, 1978; Miller & Ross, 1975; Riess et al., 1981). This is especially so with regard to the traditional view that this effect acts as a device used to protect or enhance self esteem through the use of differential causal attribution. Bradley's (1978) contention that defensive attributions are elicited in circumstances of high ego involvement or where there is a need for objective self awareness, seems to lend
credibility to the anxiety argument. Thus, it may be hypothesised that under circumstances of high ego involvement a significant amount of anxiety would also be generated.

4.6 The Self Appraisal Process: Implications for this Study

An investigation of the self appraisal process must necessarily incorporate the confirming role played by the social milieu, as well as the impact of the individual's private psychological and motivational processes. This study addresses both these aspects theoretically, as well as methodologically. Statistical analysis, probing the congruence of self-other ratings, addresses the confirming role played by the social milieu through the comparison of self perceptions with behavioural reports made by putative significant others. Thus, the extent to which the self perceptions of preadolescent boys identified as behaviour disordered and the perceptions others hold of them are congruent, may be ascertained empirically. The proposed research methodology for this study allows normative comparisons to be drawn between a study group and a normative reference group selected from one cohort. It is thus possible to examine the congruence between self-other ratings for this normative reference group of children exhibiting appropriate behaviours. Furthermore, this normative comparative approach enables the researcher to establish the universality of the confirming role played by the social milieu.

The impact of the individual's private psychological and motivational processes on the self appraisal process is a difficult notion to operationalise. Spielberger's state-trait anxiety model provides measurable indicators of anxiety,
which it is postulated infer ego involvement during situations where personal adequacy are evaluated. The proposed normative comparative methodology facilitates the identification of group differences in anxiety arousal during a situation involving the evaluation of personal adequacy.
Chapter 5
Research Hypotheses

5.1 Introduction

The hypotheses guiding this research are based on the previously proposed interrelationships between the behaviour and self concept constructs. Primary caregivers and class teachers, potentially the most influential adult significant others because of their child rearing and socialisation roles, were selected to act as behavioural informants. The revised 1991 profiles for the CBCL/4-18 (Achenbach, 1991a) and the TRF (Achenbach, 1991b) provided an integrated structure for the collection and analysis of behavioural information.

Perceptions of self are said to be formed through experiences with the environment and are influenced by the reinforcement of significant others (Shavelson et al. (1976). Thus, the extent to which the evaluations of these putative significant others and self perceptions agreed was examined. The SDQ-1 (Marsh, 1988), a standardised measure of multidimensional self concept was selected to ascertain the subjects' perceptions of self. Comparisons could then be drawn between the behavioural information provided by putative significant others and self information provided by the subjects themselves.

In pursuing this line of inquiry, focus should not only fall upon the social network. Complex psychological processes also influence self appraisals. The state-trait anxiety model (Spielberger et al., 1973; Spielberger et al., 1983) was selected to operationalise the emotional component of this postulate. The STAIC
(Spielberger et al., 1973), a self report instrument measuring transient anxiety states, as well as the individual's propensity to experience anxiety, or trait anxiety was thus considered appropriate for the purposes of this research.

This research focuses on the perceptions of interpersonal adequacy held by preadolescent boys identified as behaviourally disordered in order to establish that the self concepts of these individuals are commensurate with those of the normal population. Methodologically, this was achieved through the use of recently developed self report (Marsh, 1988) and behavioural scales (Achenbach, 1991c) which have previously not been used in such a comprehensive investigation. Additionally, the pair-wise category matching of study and comparison subjects drawn from regular primary schools facilitated normative comparisons with the immediate peer group.

5.2 Informant Ratings of Children's Behaviour

In order to determine the degree and nature of deviance, normative comparison of children's behaviour are recommended when advocating a psychometric approach (Achenbach, 1978b; 1979; Achenbach & Edelbrock, 1978; 1981; 1984). Research conducted on clinical samples should consequently, include comparisons with normal children. Achenbach also recommends research designs which control for the effects of pathological biases, such as: developmental level, socioeconomic status, race and sex.

Achenbach and Edelbrock (1984) perceive the informant as an interaction partner who, as well as being exposed to samples of the child's behaviour, also exerts an impact on the resultant behaviour. As the psychometric paradigm also
advocates that children's behaviour varies from one context and interaction partner to another, the use of multiple types of informants is also recommended. A meaningful overview of the child's functioning may thus be gained (Achenbach, McConaughy & Howell, 1987; McConaughy, 1985; McConaughy & Achenbach, 1988; 1989).

Evaluation of children's behaviour is primarily based on parental reporting. However, outside the family unit, teachers are considered the next most important adults to have sustained contact with children. Teachers are largely responsible for the identification of behavioural disturbances which result in referral to, and intervention by, specialist services. Thus, these two types of informants provide a basic overview of the child's behavioural repertoire.

Achenbach, McConaughy and Howell (1987) found little relationship existed between reports made by different types of informants. Other research suggests that, not only is there a lack of agreement between informants sharing different relationships with the child (Achenbach, Hensley, Phares & Grayson, 1990; Dunn et al., 1990; Garrison & Earls, 1985; Holdaway & Jensen, 1983; McConaughy, et al., 1988; Touliatos & Lindholm, 1981; Weissman et al., 1980), but the direction of reporting also varies considerably.

The reasons for these variations are as diverse as the personal characteristics of potential subjects and the research methodologies and rating instruments available for use. In view of the diverse conclusions reported in the literature, procedures were implemented to confirm the behavioural allocation of subjects admitted to the research sample. As sample selection and group allocation occurred on the basis of behaviour, the formulation of hypotheses to
test the validity of the sample is methodologically inappropriate. However, empirical validation of this selected sample would strengthen the predictive power of the results generated.

The research methodology implemented addressed the issue of normative comparisons of reported behaviour through the use of norm referenced instrumentation, sampling procedures and data analysis techniques. The standardisation data reported for the age appropriate CBCL/4-18 (Achenbach, 1991a) and TRF (Achenbach, 1991b) demographically matched referred and nonreferred samples of boys were selected as the most appropriate population parameters for comparison with sample statistics generated by the research sample.

In addition, cross informant agreement and group differences in informant ratings between the study group of children identified as behaviourally disordered and the comparison group of children exhibiting acceptable behaviours in the school setting were analysed. Cross informant agreement was expected to be significantly greater for the comparison group, with the behaviour disordered group showing significantly less informant agreement on the deviance of subjects' behavioural repertoires. This expectation would support the notion that adaptive behaviours tend to generalise more readily across settings and interaction partners than maladaptive or deviant behaviours. Both parent and class teacher ratings of subjects' behaviour on the CBCL/4-18 and TRF were expected to show that the behaviour of the behaviour disordered group was considered significantly more problematic than that of comparison group. These statistical procedures thus facilitated validation of the research sample.
5.3 Multidimensional Self Concept

Research evidence exists (Belter et al., 1989; Bloom et al., 1979; Durrant et al., 1990; Gordon & Tegtmeyer, 1982; Piers, 1972; Politino & Smith, 1989; Schneider & Leitenberg, 1989; Williams & Cole, 1968; Zimet & Farley, 1984) to support the notion that the self concepts of preadolescents exhibiting behavioural disturbance are not necessarily more deviant than those of their normal peers. However, the interpretive value of these studies is limited as the instrumentation used has been shown to be conceptually and methodologically inadequate (Marsh & McDonald-Holmes, 1990; Marsh & Smith, 1982; Shavelson et al., 1976).

Indeed, the interpretive value of the cited studies also suffers from the methodological inadequacies compromising self concept research in general. Sample sizes are small and groups are non equivalent. Additionally, discrepancy scores are uninterpretable because comparisons are drawn between subjects enrolled in psychiatric programs and those enrolled in regular schools. The only evidence addressing these identified inadequacies and using the multidimensional model of self concept is provided by a preliminary analysis of these data (Bajuk et al., 1992). Clearly, the lack of consistent results, the inadequate research methodologies often selected and the questionable validity of instruments previously used have compromised the outcome of research in this area.

These inadequacies highlight the need to further explore the outlined relationships employing sound research methodology, as well as valid and reliable instruments. In addition, a form of the generalised linear model, the logistic model (Armitage & Berry, 1987; Hosmer & Lemeshow, 1989; Kleinbaum, Kupper
& Morgenstern, 1982; Kleinbaum, Kupper & Muller, 1988), may be used to evaluate the significance of self concept dimensions as potential predictors of behavioural outcome.

Hypothesis 1

A significant difference exists between mean levels of self concept dimensions reported by the behaviour disordered group and mean levels of self concept dimensions reported by the comparison group of regular children, as measured by the SDQ-1 Individual and Total scales.

Hypothesis 2

Reported self concept dimensions, as measured by the SDQ-1 Individual scales, are significant predictors of behaviour, where the presence/absence of behaviour disorder is the designated binary outcome variable.

5.4 The Self Appraisal Process

In order to clarify the relationship between self concept and children's problematic behaviour, it is necessary to investigate the personal strategies employed to maintain the self concept. Both the child's social milieu and complex psychological processes are said to guide self appraisals (Shavelson et al., 1976). The impact of the social milieu is addressed through comparisons between self
reports and the behavioural reports made by the *significant others*. In addition, the mediatory role played by anxiety in the reporting process is also investigated.

5.4.1 Self-other Appraisals

Congruence between the individuals' self perceptions and others' perceptions of that individual was ascertained by comparing *self-other ratings*. Researchers (Achenbach, McConaughy & Howell, 1987; Brown & Hammill, 1983; Hoge et al., 1990; Holdaway & Jensen, 1983; Reisberg et al., 1982; Schneider & Byrne, 1989) have found little agreement between children's self ratings and those made by *significant others*. Brown and Hammill (1983) and Reisberg et al. (1982) compared behavioural ratings of students with those of their parents and teachers. Both studies indicated discrepancies between self ratings and those of parents and teachers for groups of subjects designated as behaviourally disordered. However, these studies reported no such discrepancies for groups of subjects designated as behaviourally normal. Teachers' ratings in the Reisberg et al. (1982) study were generally more positive than parents' ratings.

By contrast, Holdaway and Jensen (1983) found that the self, teacher and mother evaluations for subjects they classified as behaviour disordered were significantly more negative than those reported for their comparison group. Interestingly, they observed that self ratings for physical attractiveness and physical capability were significantly lower for both groups than teacher and mother ratings on these dimensions. These studies, although they report varied findings, provide some support for the following hypotheses which reflect the notion that children whose behaviour is identified as disturbed or disordered hold
perceptions of self which do not necessarily reflect the perceptions of their significant others.

Hypothesis 3a

A significant negative relationship exists between the reported self concept of the behaviour disordered group, measured by the SDQ-1 Individual and Total scales, and reports of their behavioural competencies made by their primary caregivers and class teachers, as measured by the Competence scales of the CBCL/4-18 and the Adaptive Functioning scales of the TRF, respectively.

Hypothesis 3b

A significant positive relationship exists between the reported self concept of the behaviour disordered group, measured by the SDQ-1 Individual and Total scales, and reports of their problem behaviours made by their primary caregivers and class teachers, as measured by the problem scales of the CBCL/4-18 and TRF, respectively.

Hypothesis 4a

A significant positive relationship exists between the reported self concept of the comparison group of regular children, measured by the SDQ-1 Individual and Total scales, and reports of their behavioural competencies made by their primary caregivers and class teachers, as measured by the Competence scales of the CBCL/4-18 and the Adaptive Functioning scales of the TRF, respectively.
Hypothesis 4b

A significant negative relationship exists between the reported self concept of the comparison group of regular children, measured by the SDQ-1 Individual and Total scales, and reports of their problem behaviours made by their primary caregivers and class teachers, as measured by the problem scales of the CBCL/4-18 and TRF, respectively.

5.4.2 Anxiety and Self Appraisal

It has been argued that complex psychological and motivational processes also guide self appraisals. The emotion most likely to be manifested as a result of this process is anxiety. The state-trait model of anxiety (Spielberger et al., 1973; Spielberger et al., 1983) has provided researchers with a useful conceptual framework and credible empirical measure of this construct. The arousal of anxiety states are triggered by situations where personal adequacy and self esteem are threatened. Elevated trait anxiety predisposes the individual to experiencing elevated anxiety states. Central to this argument is that the presence of ego involvement during a situation or task may be inferred through the arousal of anxiety.

Recognition that childhood experiences influence the development of anxiety arousal patterns has led to an examination of these patterns in groups of children identified as emotionally disturbed or behaviourally disordered. Researchers (Bedell & Roitzsch, 1976; Finch et al., 1976; Finch et al., 1974; Finch & Nelson, 1974) found that subjects identified as emotionally disturbed
experienced higher levels of state anxiety and lower levels of trait anxiety than their comparison samples of well adjusted children. Montgomery and Finch (1974) however, found emotionally disturbed children to have higher levels of both state and trait anxiety than their normal counterparts.

Research (Many & Many, 1975; Nunn et al., 1983; Rosenberg, 1962) examining the relationship between self concept and anxiety has found a clear inverse relationship between these two constructs. Many and Many (1975) maintain that anxiety occurs when the individual expects to be, or actually is, rejected by himself or by others. As empirical evidence demonstrates, the acquisition of self concept appears to be a far more complex process than pioneering theoreticians postulated. Examining the influence of social relationships has again drawn a plethora of contradictory findings. Investigations looking into the mediatory effects of motivational forces, such as anxiety, have fared no better. However, sufficient evidence exists to encourage further investigation and formulate the following hypotheses.

Hypothesis 5a

Mean levels of state anxiety, as measured by the STAIC A-state scale, reported by the behaviour disordered group are significantly higher than the mean levels of state anxiety reported by the comparison group of regular children.
Hypothesis 5b

Mean levels of trait anxiety, as measured by the STAIC A-trait scale, reported by the behaviour disordered group are significantly higher than the mean levels of trait anxiety reported by the comparison group of regular children.

Hypothesis 6a

A significant positive relationship exists between reported self concept, as measured by the SDQ-1 Individual and Total scales, and reported anxiety arousal, as measured by the STAIC A-state and A-trait scales, for the behaviour disordered group.

Hypothesis 6b

A significant negative relationship exists between reported self concept, as measured by the SDQ-1 Individual and Total scales, and reported anxiety arousal, as measured by the STAIC A-state and A-trait scales, for the comparison group of regular children.

5.5 Summary of Expected Findings

This systematic examination of the interrelationships between behaviour and self concept is expected to yield definitive results. Comparisons drawn between normative data published for the instruments selected and the sample statistics are expected to verify empirically that the behaviour disordered and comparison group subjects are indeed representative of their respective
populations. Cross informant behavioural ratings for both behaviour disordered and comparison groups are expected to differ significantly. Such a result is anticipated because the putative significant others selected as informants i.e., subjects' primary caregivers and class teachers, share unique relationships with children within different settings. These two informant categories are said to provide sufficient information regarding children's behavioural repertoire and for this reason were selected to furnish data regarding subjects' behaviour. It is thus expected that the information these informants provide will discriminate significantly between the behaviour disordered and comparison groups.

Two aspects of the self appraisal process are explored because of their pertinence to the development of self concept. Firstly, the congruence between an individual's self perceptions and the perceptions held of that individual is ascertained through a comparison of self-other ratings. A discrepancy between the self ratings of the behaviour disordered group and the behavioural ratings made by their putative significant others is predicted. Self-other ratings for the comparison group of regular children, however are expected to agree significantly. One may postulate that the opinions of the putative significant others chosen for the purposes of this research may no longer be valued and/or credible sources of self information for the subjects identified as behaviour disordered. In the face of constant negative feedback from adult significant others this group of preadolescents may reflect positive self information gained from alternate significant others.

Secondly, it is proposed that the self appraisal process involves the presence of complex psychological and motivational processes. It has been argued
that anxiety is the emotion most likely to result from this process and it may be inferred that elevated anxiety is indicative of the ego involvement implicated in the completion of a task or situation. The available literature, as previously discussed, has failed to provide a clear direction regarding the nature of the anxiety experienced by preadolescents identified as behaviourally disturbed. The extent of sustained psychotherapeutic interventions and the character of the disorder are two features believed to influence the individual's anxiety experience. These characteristics were not controlled during sample selection however, it is expected that the behaviour disordered group will report significantly higher levels of anxiety than the comparison group. The inverse relationship between self concept and anxiety reported in the literature is expected to be upheld for the comparison group only. The behaviour disordered group is expected to produce a significant positive relationship between these two constructs.

The inability to discriminate between children exhibiting problematic behaviour and those demonstrating adaptive behaviour patterns on the basis of self reports is central to this inquiry. It is proposed that the self concepts of children exhibiting problematic behaviours are not significantly different from those children demonstrating adaptive behaviours. The Marsh/Shavelson model (Marsh & Shavelson, 1985) of multidimensional self concepts will facilitate the validation of this premise. This model holds that the multidimensional self concepts of preadolescent children are sufficiently differentiated to allow for both positive and negative evaluations to coexist on varying dimensions simultaneously. Although this premise has not been tested on preadolescent children specifically referred for problematic behaviours, it is expected that this generalisation will
hold irrespective of assigned behavioural status.

Empirical examination of this assumption, using both bivariate and multivariate analysis, is possible due to the advances in conceptualisation and measurement of self concept brought about through the work of Marsh/Shavelson. It is expected that the multidimensional self concepts reported by the behaviour disordered group will not differ significantly from those reported by the comparison group. Furthermore, multiple logistic regression analysis of the self concept data is expected to indicate that reported self concept dimensions are not useful in predicting the presence of behaviour disorder. The use of multiple logistic regression, a mathematical modelling procedure fitted using the statistical principle of maximum likelihood, is appropriate where the outcome variable is binary. The data generated by this study is particularly suited to this technique as multiple logistic regression methods are able to accommodate matched data sets. The use of multiple logistic regression as the preferred method of multivariate analysis for this research serves two functions. The use of this innovative statistical technique adds predictive power to the results generated by this study. Of equal importance is the fact that this study is also a vehicle for the introduction of multiple logistic regression methods to educational research.
Chapter 6
Research Methodology

6.1 Research Design

An *ex post facto* or causal-comparative research design was considered to be the most appropriate design for the purposes of this research (Ary, Jacobs & Razavieh, 1972; Cook & Campbell, 1979; Gay, 1987). Typically, this design involves the use of subjects who are allocated on the basis of some naturally occurring characteristic. This characteristic, for either ethical or practical reasons, is unable to be directly manipulated by the investigator. The naturally occurring characteristic on the basis of which subjects for this study were allocated is *behaviour*. Thus *behaviour*, in this instance, is the non-manipulable independent variable. This independent variable is studied in retrospect for its possible relations to, and effects on, the hypothesised dependent variables under investigation: *self concept and anxiety*.

A functional relationship between the independent variable and the hypothesised dependent variables is assumed for the purposes of this study. A functional relationship exists when a change in one variable is accompanied by a change in the other, but the relationship is probably based on a complex system of interactions, rather than being directly causal. Only the ability to manipulate the independent variable allows for inferences of causality and this is generally associated with an experimental design.

The basic logic involved in designing experimental and *ex post facto* studies
however is similar (Gay, 1987). The aim of both designs is to compare two or more groups, similar in all relevant characteristics but one, in order to measure the effect of that characteristic. Thus, the information an experiment provides can also be gained through an *ex post facto* investigation. However, the observed relationships among variables are less definitive in the case of *ex post facto* studies. In an *ex post facto* situation the researcher cannot control the independent variable either through manipulation or by randomisation. The independent variable has already occurred leaving the researcher to determine the antecedents of the observed effect. Clearly, the distinctly scientific cause and effect situation of experimental research does not exist under these circumstances. Thus, to extrapolate beyond the scope of the research design employed would be imprudent. Nevertheless, procedures that furnish a degree of control over *ex post facto* investigations do exist.

Within the parameters of this design, control is effected through pair-wise category matching (Gay, 1987). Category matching occurs on a subject-to-subject basis. The criteria used for matching are usually selected from those variables known, through *a priori* theory and previous research, to influence the topic of interest (Campbell & Stanley, 1963). *Ex post facto* research, though not a perfect substitution for experimentation, does provide recognition of the fact that much of the research conducted in educational settings is field research bound by both ethical and practical constraints.

### 6.2 Matching Criteria

This research, designed on *ex post facto* principles, required two groups for
comparison. The independent variable, *behaviour*, was manipulated to the extent that each member of the *study group* was perceived to exhibit behaviour disorder in the school setting. The disordered behaviour was considered problematic by the class teacher to the extent that it warranted referral to specialist services for support and intervention. The other group, the *comparison group*, comprised subjects that were selected because of the appropriate behaviour these subjects displayed in the school setting. The psychometric model adopted by Achenbach and Edelbrock (1984) recognises the importance of this normative approach. He has suggested that ideally research investigating behavioural and/or emotional disturbances should be:

grounded firmly on comparisons with normal children matched to clinical samples for conditions of observation as well as for such variables as developmental level, socioeconomic status, race and sex (Achenbach, 1979, p.432).

In addition to this normative comparison, subject pairs were category matched on five specific criteria. The matching criteria selected have been identified as antecedent and related to the independent variable under observation on the basis of substantive, *a priori* knowledge and as a result of previous empirical study. Matching pairs of subjects on specific criteria was undertaken in order to reduce inter-group variation with regard to the criteria selected. Thus, the possible confounding effects of extraneous variables, which singularly or through interaction with the dependent variables under observation, may erroneously account for observed differences in hypothesised relationships,
are theoretically able to be controlled. The matching criteria which determined subject selection for this study were:

6.2.1 Sex

As a disproportionate number of boys enrolled in N.S.W. Department of School Education regular primary schools in the Metropolitan South West Region are referred for specialist support and intervention because of their problematic behaviour in the school setting, the decision was taken to restrict the study to boys. In addition, a sample comprising highly disproportionate numbers of boys and girls could introduce unwanted gender related bias. As it has been well documented (see Liben & Signorella, 1987) that children's behaviour patterns are a reflection of their gender because of differential child rearing practices, pairs of subjects were required to be male. Thus, both practical and methodological considerations prompted this decision.

6.2.2 Grade Level and Class

A child's developmental level and cohort school experiences are pertinent in the identification and classification of abnormal behaviour (Achenbach, 1978b; 1979; Achenbach & Edelbrock, 1978; 1984). In view of this, each matched pair of study and comparison subjects was enrolled in the same class at the referring school. In the event that a subject admitted to the study group was enrolled in a composite class, the comparison subject was also drawn from the same grade level. This procedure ensured that pairs of subjects were exposed to similar cohort school experiences and were at approximately similar developmental levels.
6.2.3 Academic Performance

The basis of adaptive functioning at school is considered to be academic performance (Achenbach, 1991b). However, more often than not, disordered or disturbed behaviour in the school setting is accompanied by poor academic performance (Kirk & Gallagher, 1983). Poor academic performance however, should not be confused with limitations in academic ability, as there is considerable difference between the two. Academic performance relates to the child's actual achievements in mastering the school curriculum as it is presented from day to day, whilst academic ability refers to a child's innate capacity to master the school curriculum. Differentiation of these concepts is important because the deleterious effects of disordered or disturbed behaviour may result in academic failure in a case where academic ability is known to be at least in the normal range.

The detrimental effects of behavioural disturbance on academic performance is well supported (Achenbach, 1991b; Cantwell & Baker, 1991; Galvin & Annesley, 1971; Kirk & Gallagher, 1983; Rowe & Rowe, 1992; Stott, 1981; Sturge, 1982; Szaday, 1989; Wheldall & Merrett, 1988). The prevalence of poor learning outcomes generally, and under achievement in reading specifically, has been noted amongst children exhibiting behavioural and/or emotional disturbance. Galvin and Annesley (1971), comparing the academic performance of behaviour disordered and normal boys of the same age and intellectual ability, aptly illustrate this phenomenon. They identified 81 percent of their behaviour disordered boys as underachieving in reading and 71 percent in mathematics. Given the convincing association between behaviour and academic performance,
the decision was made to match the subject pairs on this criterion.

**Operational Definition**

A subjective rating reflecting *Item VII: Current School Performance* on the TRF (Achenbach, 1991b) was selected as a measure of the child's academic performance (see Appendix A.4). Teachers were directed to base this rating on an overall appraisal of performance standards in the language arts and mathematics areas of the curriculum. The three point rating scale was derived by maintaining the *far below grade level* and *far above grade level* ratings as they originally appear in *Item VII: Current School Performance* on the TRF and collapsing the *somewhat below grade level, at grade level* and *somewhat above grade level* ratings to form one *average or at grade level* rating. This simplification of the five point rating scale as it appears in *Item VII: Current School Performance* on the TRF was executed to facilitate the matching process. Thus, referring class teachers were presented with the following three point rating as a matching criterion for academic performance:

- * below average
- * at grade level
- * above average

6.2.4 **Ethnic/Cultural Affiliation of the Primary Caregiver**

A substantial body of literature (Achenbach, Bird, Canino, Phares, Gould & Rubio-Stipec, 1990; Achenbach, Hensley, Phares & Grayson, 1990; Achenbach,
Verhulst, Baron & Akkerhuis, 1987; Achenbach, Verhulst, Edelbrock, Baron & Akkerhuis, 1987; Bronstein, 1986; Carlson & Stephens, 1986; Ekblad, 1988; Hensley, 1988; Knudson & Kagan, 1982; Lambert, Weisz & Knight, 1989; Lee, 1979; Patterson, Kupersmidt & Vaden, 1990; Steinhausen et al., 1990; Weisz, Suwanlert, Chaiyasit & Walter, 1987; Weisz, Suwanlert, Chaiyasit, Weiss, Walter & Anderson, 1988) supports the notion that children's behaviour is governed by culturally determined mores, imparted predominantly through maternal child rearing practices. Culture may be defined as:

a combination of all those beliefs, values and perceptions that a given group of people hold in common. Every culture has its customs or behavioural regularities that combine both meaning and value. Customs define those behaviours that are considered normal, right or correct (Kirk & Gallagher, 1983, p.349).

It has been argued that children's behavioural and/or emotional problems cannot be fully understood on the basis of observations made by one informant in only one environment (Achenbach, 1991c). If contextual variations are important in assessing individuals within a particular culture, they must surely be important when comparing children raised in other cultures. Cultural variations in language, child rearing practices, social mores and adaptive behaviours may all affect the prevalence, character, and referral patterns of behavioural disturbance (Achenbach, Bird, Canino, Phares, Gould & Rubio-Stipec, 1990). Thus, more cross cultural efforts are required in order to determine the nature and prevalence of transcultural, as well as culture specific behaviour.
The culture specific determinants of aggression illustrate this aptly. Ethnographic evidence indicates that aggression occurs in varying degrees in almost all societies (Ekblad, 1988). Consequently, it is considered a transcultural phenomenon. However, the degree of aggression considered socially acceptable appears to be culturally determined. Ekblad (1988) investigated the differential socialisation of aggression in restrictive and permissive societies. There was a strong indication that child rearing practices lacking adequate behavioural restrictions were more likely to produce boys with aggressive behaviour.

Indeed, there is evidence (Lambert et al., 1989; Weisz et al., 1987; Weisz et al., 1988) to suggest that cultural mores, expectancies and child rearing practices may actively suppress, or alternatively, foster the development of certain types of child behaviour problems. Lambert et al.'s (1989) cross cultural study using the CBCL as a behavioural measure found that Jamaican children exhibited significantly more Internalizing problems, specifically Somatic Complaints, than their American counterparts. By contrast, Externalizing problems such as aggression, disobedience and stealing were more prevalent in the American sample. Lambert et al. (1989) suggest these results reflect over controlled versus under controlled child rearing mores, respectively. Similarly, Weisz et al. (1987; 1988) also using the CBCL as a behavioural measure, found that under controlled behaviour is actively discouraged in Thai children. It would appear that Thai children are encouraged to be self controlled, submissive and respectful to elders. Weisz et al. (1987; 1988), like Lambert et al. (1989), found more over controlled referral problems, such as Somatic Complaints, in their Thai sample.

Steinhausen et al.'s (1990) study is of particular interest as it deals with
immigrant families whose cultural affiliations are discrete and differ significantly from the dominant culture. They reported significant differences in children referred for psychiatric intervention from Turkish and Greek migrant worker families and those from French military and indigenous German families. Greek subjects were found to have the lowest rate of child psychiatric disorder, whilst Turkish subjects had the highest rate of disorder, with enuresis prevalent. The French military and indigenous German subjects lay in between. These results were attributed to differences in psychosocial adaptation rather than socioeconomic factors.

This precis suggests that the effects of culture on children's behaviour cannot be disregarded. Child rearing is still predominantly the domain of the mother and maternal influences have been found to be significant in the socialisation process. It was thus considered appropriate to match subjects for this study on the ethnicity or cultural affiliation of the primary caregiver. This criterion was included to eliminate the possibility of confounding due to culturally determined variations in behavioural reporting.

Operational Definition

Broad geographic divisions, reflecting cultural similar areas, were considered adequate in reflecting the ethnic or cultural composition of the population from which the sample was drawn. Pairs of subjects were matched according to the ethnic/cultural affiliation of the primary caregiver. The cultural categories comprised:
* Australian Aboriginal or Torres Strait Islander
* Oceania - Pacific Islander
* Western European - English speaking and/or of Western European descent
* Eastern European - Former *Communist Block* countries
* Southern European - Mediterranean region
* Middle Eastern - Arabic descent
* Asian
* Latin American - Central and South American

6.2.5 Family Structure

The optimal child rearing environment in Western industrial societies is considered to be the intact, nuclear family with father, mother and children residing as a family unit (Demo & Acock, 1988; Kirk & Gallagher, 1983). Deviations may have deleterious effects on the social and emotional well being of children. Studies (Demo & Acock, 1988; Dishion, Patterson, Stoolmiller & Skinner, 1991; Dobson, Campbell & Dobson, 1982; Ekblad, 1988; Forehand, Long & Hedrick, 1987; Goldstein, 1984; Kurdek & Sinclair, 1988; Touliatos & Lindholm, 1980; Wadsworth, Burnell, Taylor & Butler, 1985; Webster-Stratton, 1985; 1990) have shown that preadolescents and adolescents whose families have been disrupted by divorce or separation exhibit a greater degree of behavioural and/or emotional disturbance than do their counterparts from intact families. Thus, it is the effects disruptions of family structure have on the child rearing function of the family which are of interest here.

Pursuing this notion, Touliatos and Lindholm (1980) investigated the effects of the disrupted family structure on children's adjustment. They found that their results supported the dominant societal beliefs outlined. Children from disrupted families exhibited greater degrees of disturbed behaviour than did those
from intact families. This finding held irrespective of the exact composition of the disrupted family. In addition, this study revealed a high incidence of conduct disorder and delinquency in children coming from disrupted families structures.

Notwithstanding this, studies investigating the effects of parental remarriage have yielded mixed results (Clingenpeel & Segal, 1986; Marsh, 1990f; Wadsworth et al., 1985). Wadsworth et al. (1985) found a greater incidence of behavioural deviance in children from reconstituted families, while Marsh (1990f) found little or no behavioural difference between adolescents from intact families and those from reconstituted families. However, the age of the subjects may well account for the contradictory results reported by these researchers.

The relationship between various family structures and children's socialisation constitutes a thesis in its own right. Research (Demo & Acock, 1988) suggests that this association is extremely complex involving many intermediary factors. The effects of poverty, parental monitoring and discipline problems associated with single parenthood and reconstituted families are just a few of the factors implicated (Clingenpeel & Segal, 1986; Dishion et al., 1991; Forehand et al., 1987; Goldstein, 1984; Hulsey & White, 1989). It is beyond the scope of this discussion to elaborate the various complex issues raised by Demo and Acock (1988) in their comprehensive review on the impact of family breakdown. However, in view of the mounting research evidence, the link between children's behavioural and/or emotional difficulties and nontraditional family structures cannot be ignored. Consequently, the decision was taken to control for family structure. Subjects from the study group were matched with comparison group subjects to minimise inter-group variation on this criterion.
Operational Definition

As substantive, a priori research indicates the presence of behavioural and/or emotional disturbance in preadolescent children regardless of the composition of the disrupted family unit, it was felt two categories would sufficiently control for the effects of family structure in this study. Thus, subjects were matched accordingly:

* intact - living with both natural parents
* disrupted - not living with both natural parents

6.3 Sampling Procedures

The proposed ex post facto research methodology incorporating pair-wise category matching, although itself not uncommon, has not previously been used to investigate the interrelationships between children's behaviour and their multidimensional self concepts. Typically, uneven samples of children enrolled in psychiatric day or inpatient programs have been compared with students enrolled in regular school settings. This research aims to minimise extraneous school, social and familial variations in order to isolate and clarify the relationship between children's behaviour and their multidimensional self concepts. This has been achieved by targeting children presenting with behavioural disturbance in the regular school setting and comparing these children with their immediate peer group. It is this sampling procedure which contributes to the originality of this research.
6.3.1 Prospective Subjects Exhibiting Behavioural Disorder

Boys attending 112 N.S.W. Department of School Education regular primary schools in the Metropolitan South West Region of Sydney comprised the prospective target population. The N.S.W. Department of School Education has divided this region into 18 clusters. The schools in the Narellan and Picton clusters, situated at the southern most extremity of the region, were excluded from the target population as these semi-rural areas are quite distinct in character from the rest of the region. These two clusters incorporate 20 regular primary schools giving the region a total of 132 regular primary schools. The 112 targeted schools, representing 16 clusters, typify a roughly homogeneous urban population. These schools service what is generally regarded as the outer western suburbs of Sydney's urban sprawl. This primarily residential region encompasses a population of diverse ethnic and socioeconomic groups of varying family composition.

Prior to the commencement of data collection in July, 1990, the researcher was officially granted permission to conduct the research in schools under the auspices of the N.S.W. Department of School Education (see Appendix C.1). Subsequently, the researcher arranged to advise the N.S.W. Department of School Education, Metropolitan South West Region guidance staff of the rationale, aims and significance of the research at a Regional Guidance Staff Meeting. Guidance staff were invited to consult their files and relay the names of any students who had been referred to them because of problematic behaviour in the school setting.

It was suggested that for the purposes of the study, the children referred should display distractability, exhibit a marked inability to persist in the
performance of a task, and present a constant irritation to the teacher because of their inability to follow directions and maintain a learning set (Kirk & Gallagher, 1983). The management of the referred child’s behaviour would typically have exhausted the resources within the school prior to a request for intervention from specialist support staff. The specialist support staff available for consultation in this region comprised the District School Counsellor, Itinerant Support Teacher (Behaviour), and Specialist School Counsellor (Emotional Disturbance).

In addition, the researcher addressed the Metropolitan South West Regional Guidance Executive Staff Meeting in order to accelerate subject identification. It was requested that Executive staff inform the District School Counsellors in their respective District Guidance Groups that names of possible subjects could be referred back to the researcher either through the District Guidance Officer or personally by the District School Counsellor. Permission to access the Metropolitan South West Region data base for children exhibiting severe behavioural and/or emotional disturbance, compiled in 1990 and 1991, was also granted. This data base proved to be the primary source for prospective subjects identified as behaviourally disordered. The described procedure enabled the researcher to compile a list of students suitable for the study group.

At the commencement of the 1991 school year the described procedure was repeated as sufficient referred subjects had not been identified to allow for expected subject attrition resulting from the matching process. In order to expedite the identification of prospective subjects exhibiting behavioural and/or emotional disturbance in the school setting, telephone contact was made directly with school counsellors and school principals. Data collection ceased in
December, 1991. Responses given by the 112 schools contacted are summarised in Table 6.1.

<table>
<thead>
<tr>
<th>Responses</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>No school permission</td>
<td>34</td>
</tr>
<tr>
<td>No parental permission</td>
<td>4</td>
</tr>
<tr>
<td>No match available</td>
<td>14</td>
</tr>
<tr>
<td>No suitable children</td>
<td>38</td>
</tr>
<tr>
<td>Permission to participate</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
</tr>
</tbody>
</table>

6.3.2 Matching Procedures

Schools referring boys who exhibited behavioural disturbance to specialist support services through the channels previously outlined were contacted by the researcher. Permission was obtained from the school principal to consult with the relevant class teacher regarding the referred student (see Appendix C.2). If the referred student's behaviour satisfied the inclusion criteria and a subject for the comparison group from the same class and same grade level, meeting all the matching criteria was available, the subject pair were enrolled in the study. The subject selected for the comparison group was a student who was perceived by the class teacher to display adaptive, age-appropriate behaviour patterns in the school setting. This subject was matched with the child referred for the study group on:
academic performance, family structure and ethnic/cultural affiliation of the primary caregiver in order to minimise the academic, social and familial differences between the groups. Sampling procedures for subject selection are graphically represented in Figure 6.1.

6.4 The Research Sample

The total research sample comprised 70 boys drawn from 22 N.S.W. Department of School Education regular primary schools situated in the Metropolitan South West Region of Sydney. These 22 schools represented 13 departmental clusters. The 70 subjects formed two groups of 35 subjects each: a study group and a comparison group. The study group comprised students identified as exhibiting behavioural and/or emotional disturbance who were referred to specialist support services. The referred child's class teacher was asked to nominate another child from the same class for the comparison group. The comparison subjects were children perceived by that teacher to display adaptive, age-appropriate behaviour patterns in the school setting. Pairs of subjects were drawn from one class and in the case of composite classes, from the same grade level. A pair-wise category matching procedure was employed using academic performance, family structure and ethnic/cultural affiliation of the primary caregiver as matching criteria. Thus, this sample was the product of a lengthy process involving the strict implementation of predetermined criteria for the identification and selection of subjects. The procedure was commensurate with the requirements of an ex post facto research design, as previously discussed.
permission to conduct research  

- no*  
  - contact another school  
  - yes  
    - suitable subject for study group  
      - no*  
        - contact another school  
        - yes  
          - match for comparison group  
            - no*  
              - contact another school  
              - yes  
                - parent permission granted  
                  - no  
                    - study subject  
                      - no*  
                        - contact another school  
                        - yes  
                          - comparison subject  
                            - no*  
                              - contact another school  
                              - yes  
                                - teacher interview  
                                  - no*  
                                    - contact another school  
                                    - yes  
                                      - comparison subject  
                                        - no  
                                          - SDQ-1  
                                            - no*  
                                              - contact another school  
                                              - yes  
                                                - STAIc  
                                                  - no*  
                                                    - contact another school  
                                                    - yes  
                                                      - assess subjects  
                                                        - no  
                                                          - SDQ-1  
                                                            - no*  
                                                              - contact another school  
                                                              - yes  
                                                                - STAIc  
                                                                  - no*  
                                                                    - contact another school  
                                                                    - yes  
                                                                      - comparison subject  
                                                                        - no*  
                                                                          - contact another school  
                                                                          - yes  
                                                                            - parent interviews  
                                                                            - no  
                                                                              - CBCL/4-18  
                                                                                - no*  
                                                                                  - contact another school  
                                                                                  - yes  
                                                                                    - CBCL/4-18  
                                                                                      - no*  
                                                                                        - contact another school  
                                                                                        - yes  
                                                                                          - data for matched subjects included in study  
                                                                                                            - no*  
                                                                                                                - contact another school  
                                                                                                                
* for information on refusals see Table 6.1

1 Child Behaviour Checklist/4-18
2 Teacher Report Form
3 Self Description Questionnaire-1
4 State-Trait Anxiety Inventory for Children

Figure 6.1 Sampling procedures for subject selection
6.5 Instrumentation

This research investigates the relationships between behaviour, self concept and anxiety. The instruments selected provide current, objective, standardised measures of these psychological constructs. These instruments are well grounded theoretically, are methodologically sound, and used in conjunction with the previously described research design, break new ground in clarifying these interrelationships.

6.5.1 Child Behaviour Checklist/4-18

As the release of the 1991 Profiles for the CBCL/4-18 (Achenbach, 1991a) coincided with the inception of this research, the use of this revised and renormed instrument adds to the originality of the research. Its predecessor, the CBCL (Achenbach & Edelbrock, 1983) has been widely used and is well respected by researchers and clinicians alike. However, this revision with its revised profiles and new norms lacks substantive supporting research. The current research is likely to be the first example of between network research (Cronbach & Meehl, 1955) in Australia to make use of this instrument in its new form.

Unlike the CBCL, the 1991 revision places the CBCL/4-18 within an integrated system of cross informant materials which includes the Teacher's Report Form and 1991 Profile (TRF: Achenbach, 1991b) and the Youth Self Report and 1991 Profile (YSR: Achenbach, 1991e). This integrated system of materials is designed to tap competencies and problems that are reportable by parents, teachers and children. Changes in the scoring profiles, as a result of continuing research, allow for the co-ordination of cross informant data on 89
items and eight syndrome scales common to these three instruments. These innovative changes make this instrument extremely effective in the standardised classification and measurement of children's behaviour across sex, age and informants.

The CBCL/4-18 parent questionnaire (see Appendix A.1) is completed by the child's parents or parent surrogates and may be self administered or administered by an interviewer. It is designed to elicit parental perceptions of children's behavioural competencies and problems "in a standardised fashion with a minimum of interference" (Achenbach, 1991c, p.18). The emphasis of these materials is to gain an accurate, objective description of the child's behaviour. The presence or absence of particular competencies may be important in evaluating a child's needs and prognosis.

Research to determine competencies which discriminate between children exhibiting adaptive behaviour and those exhibiting disturbed behaviour has been an important feature of Achenbach's work. This, together with their pilot work to develop a preferred format for the assessment of competencies, has resulted in the Competence scales of the CBCL/4-18 (see Appendix A.2). The Competence scales encompass caregivers' reports of their child's participation and performance in areas designated as Activities, Social and School. These scales comprise 20 social competence items eliciting the caregivers' views regarding their child's use of leisure time, performance at school, and ability to socialise effectively. An indication of the quality of participation and the amount of time spent pursuing the above is graded as less than average, average, and more than average. In addition, open ended items are included to gain qualitative
information which is not scored on the profile. The raw scores for each scale are totalled and converted to normalised T scores. The Total Competence scale, an aggregate of the Activities, Social and School scales, is also reported as a raw score and normalised T scores.

In addition, the instrument comprises 118 behaviour problem items, 89 of which are common to the TRF (Achenbach, 1991b) and YSR (Achenbach, 1991e). Each item is scored on a three step response scale. The respondent is asked to consider the child's behaviour over the previous six month period and circle 2 if the item is very true or often true of their child, 1 if the item is somewhat or sometimes true, or 0 if the item is not true. Achenbach (1991c) suggests the middle category, 1, should be used when mild or ambiguous instances make it difficult to choose between the presence or absence of a specific behaviour. He argues that:

response scales using more than three categories for parents’ ratings have been found to weaken discrimination between normal and deviant children by causing parents to avoid the lowest and highest response categories (Achenbach, 1991c, p.19).

Separate profiles for boys and girls at 4-5, 6-11 and 12-18 years are available for the CBCL/4-18. Homogeneous syndrome scales across age, sex and instruments are the foci of the 1991 profiles as previously mentioned. All 1991 profiles display the items of the eight cross informant syndrome scales (see Appendix A.3). The eight cross informant syndrome scales include: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems,
Attention Problems, Delinquent Behaviour and Aggressive Behaviour. An additional syndrome scale labelled Sex Problems is scored for the CBCL/4-18.

Internalizing and Externalizing groups of problem items were classified through second order factor analyses of these eight cross informant syndrome scales. The Internalising scale comprises the Withdrawn, Somatic Complaints and Anxious/Depressed syndrome scales, whilst the Externalising scale comprises the Delinquent and Aggressive Behaviour syndrome scales. Profiles display the allocated rating for every problem item, as well as raw score totals and the converted normalised T-scores for the eight cross informant syndrome scales, Internalising, Externalising and Total Problem scales. These 12 scales are also collectively referred to as the Problem scales. Normal, borderline and clinical ranges based on standardisation data are also indicated for each of these 12 scales. The normal range was thus established as below the ninety-fifth percentile, whilst the borderline range falls between the ninety-fifth and ninety-eighth percentiles and the clinical range is above the ninety-eighth percentile.

The standardisation of the CBCL/4-18, TRF and YSR has enabled Achenbach to devise a method by which the data from multiple sources can be compared empirically. This innovation is only available through the Cross Informant Program for the CBCL/4-18, YSR and TRF (Achenbach, 1991d) marketed through the University of Vermont, Department of Psychiatry. This program provides Q correlations between the item scores and between the eight cross informant syndrome scale scores obtained from caregiver, teacher and self reports (see Appendices A.7 and A.8). In addition, it compares the degree of cross informant agreement between scores obtained by the subject and the cross
informant $Q$ correlations obtained by large reference samples (Achenbach, 1991c, p.87). This program was procured and used to score the CBCL/4-18 (Achenbach, 1991a) and TRF (Achenbach, 1991b) questionnaires completed for each subject admitted into the sample. In addition, the cross informant $Q$ correlations feature was used as a means of determining the extent of the agreement between caregiver and teacher reporting.

Issues of validity and reliability are comprehensively treated in the Manual for the Child Behaviour Checklist/4-18 and 1991 Profile (Achenbach, 1991a). Achenbach presents convincing evidence for the instrument's validity. A perusal of the evidence indicates that the questions of construct, content and concurrent validity have been addressed. Achenbach holds that behaviour is a construct which lacks standard operational criteria. It is for this reason that he has adopted Cronbach and Meehl's (1955) nomological network paradigm as the guiding principle for his validation work. Extensive within network empirical investigations using factor analytic techniques have validated the eight cross informant syndrome scales. In addition, between network studies have shown significant associations between this instrument and others with analogous behaviour scales (Achenbach, 1991a, p.84). The ability of CBCL/4-18 items to discriminate significantly between demographically matched referred and nonreferred children indicates the instrument's content validity.

In addition, supporting evidence indicates that the instrument's reliability has also been rigorously tested. As the instrument is designed to be self administered or interviewer administered, Achenbach (1991a) investigated both inter-interviewer and test-retest reliability. The inter-interviewer and test-retest
reliabilities of the CBCL/4-18 item scores were supported by overall intra-class correlations in the order of \( r = .90 \)'s for mean item scores acquired by different interviewers and for caregiver reports completed one week apart. The test-retest reliability of the CBCL/4-18 scale scores was also supported by mean test-retest reliabilities of \( r = .87 \) for the Competence scales and \( r = .89 \) for the eight cross informant syndrome scales over a one week period. Long term stability of all scale scores was also demonstrated. Over a one year period mean correlations of \( r = .62 \) and \( r = .75 \) were obtained for the Competence and Problem scales, respectively. Over a two year period reduced mean correlations of \( r = .56 \) and \( r = .71 \) were obtained for the Competence and Problem scales, respectively.

The instrument was also found to be a reliable indicator of inter-parent agreement. Mean correlations for the Competence scales ranged from \( r = .74 \) to \( r = .76 \) across profiles scored for the four sex/age groups: boys and girls 6-11 years and boys and girls 12-18 years, whilst mean correlations for the eight cross informant syndrome scales ranged between \( r = .65 \) and \( r = .75 \). In addition, odds ratios showed highly significant agreement between mothers' and fathers' ratings in classifying children's behaviour as either in the normal or clinical range on all CBCL/4-18 scales (Achenbach, 1991a, p.81).

The internal consistency of all CBCL/4-18 Competence and Problem scales is reported in terms of Cronbach's alpha (Achenbach, 1991a; p.252-255). The Alpha coefficients reported represent the mean correlations between all possible sets of half the items comprising each scale. Thus, the internal consistency of each scale is dependent upon the length of the scale, with short scales showing less stability. Nevertheless, Achenbach (1991a) suggests that, because syndrome
scales were derived through principal components analyses, measures of internal consistency for these scales seem redundant.

6.5.2 The Teacher's Report Form

The TRF and 1991 Profiles (Achenbach, 1991b) form part of the revised integrated cross informant system for assessing behavioural and emotional disturbance in children. The 1991 profiles for both the CBCL/4-18 and the TRF enable the researcher to access standardised, objective cross informant data with regard to children's adaptive functioning across settings.

The TRF (Achenbach, 1991b) is designed to obtain teachers' accounts of students' adaptive functioning and problem behaviours using a standardised format. When completing the TRF (Achenbach, 1991b), teachers are asked to base their ratings on the previous two month period (see Appendix A.4). This time span was chosen to allow for repeated assessments within a school year. However, if direct caregiver and teacher comparisons are required over a similar time period, Achenbach (1991a) recommends that the time span on the CBCL/4-18 be reduced to two months in line with the TRF.

The Adaptive Functioning section of the TRF (Achenbach, 1991b) requires the teacher to supply relevant background information, ratings of academic performance and ratings of four aspects of adaptive functioning: "How hard is he/she working?", "How appropriately is he/she behaving?", "How much is he/she learning?" and "How happy is he/she?". Thus, the teacher reported adaptive functioning aspect of the 1991 Profile incorporates scores for School Performance, and the four aspects of adaptive functioning: Working Hard, Behaving
 Appropriately, Learning and Happy (see Appendix A.5). These raw scores are converted to mid-point percentile ranks and normalised T scores. The Adaptive Functioning scale, reflecting the child's functioning within the school context, parallels the Competence scales on the CBCL/4-18.

The format of the 118 problem items is similar to that of the CBCL/4-18 (Achenbach, 1991a). Eighty-nine of these 118 problem items are common to both the CBCL/4-18 and TRF. This facilitates comparisons between teacher and caregiver reports based on standardised, parallel forms of this measure. The problem items are designed to identify the eight cross informant syndrome scales of problems also tapped by the CBCL/4-18 (see Appendix A.6). The eight cross informant syndrome scales comprise: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour and Aggressive Behaviour.

Internalizing and Externalizing groups of problem items were classified through second order factor analyses of these eight cross informant syndrome scales. The Internalizing scale comprises the Withdrawn, Somatic Complaints and Anxious/Depressed syndrome scales, whilst the Externalizing scale comprises the Delinquent and Aggressive Behaviour syndrome scales. Both instruments also use a common profile format to facilitate cross informant data collection. The procedures have been outlined for the CBCL/4-18 and in the interests of brevity will not be duplicated here.

The Manual for the Teacher's Report Form and 1991 Profile (Achenbach, 1991b) has devoted two chapters to validity and reliability issues. Achenbach (1991b) addresses three aspects of instrument reliability in the above mentioned
manual: test-retest reliability, stability and internal consistency. Briefly, the test-retest reliability of the TRF was found to be high with mean correlations of $r = .90$ and $r = .92$ reported for the Adaptive Functioning and Problem scales, respectively. This was assessed over a seven to 30 day range with a mean interval of 15 days. Stability was reported as good over two and four month periods even though the sample comprised referred boys. Inter-rater agreement was similar for teachers reporting on pupils irrespective of the similarity of school circumstances shared with the subject. Correlations reported were all in the order of $r = .50$'s to $r = .60$'s.

The internal consistency of all TRF Problem scales is reported in terms of Cronbach's $alpha$ (Achenbach, 1991b; p.204-207). No $alpha$ coefficients have been calculated for the TRF Adaptive Functioning scales. The $Alpha$ coefficients reported represent the mean correlations between all possible sets of half the items comprising each scale. Thus, the internal consistency of each scale is dependent upon the length of the scale, with short scales showing less stability. Achenbach (1991b) again suggests that, because syndrome scales common to both the CBCL/4-18 and TRF were derived through principal components analyses, measures of internal consistency for these scales seem redundant.

Several types of evidence for the validity of the TRF have been presented by Achenbach (1991b). These include construct validity, content validity and criterion related validity. Both the CBCL/4-18 and the TRF share the empirical construct validation work conducted within the nomological network paradigm (Cronbach & Meehl, 1955). In addition, the rationale for the instruments content and criterion related validity is also similar to that outlined for the CBCL/4-18.
Content validity is said to be supported because most of the TRF items discriminate significantly between demographically matched referred and nonreferred subjects. Criterion related validity is also said to be supported because the TRF quantitative scale scores for the eight cross informant syndrome scales discriminate between referred and nonreferred pupil even with demographic effects partialled out. A clinical cut off at the ninety-eighth percentile on these eight scale scores were also shown to discriminate between demographically matched referred and nonreferred pupils.

The recent innovative change in the profile structure of these instruments has limited the quantity of supportive research available. However, these instrument's research and clinical popularity will undoubtedly remedy this situation in the future. Indeed, this research represents one of the first examples of between network to make use of the 1991 revised profiles of both the CBCL/4-18 and TRF scored through the newly released Cross Informant Program for the CBCL/4-18, YSR and TRF (Achenbach, 1991d).

6.5.3 Self Description Questionnaire-1

The SDQ-1 (Marsh, 1988) was chosen because it is a locally developed, recently published measure of multidimensional self concept utilising the theoretical rationale developed by Marsh/Shavelson (1985). Although this measure of self concept boasts a substantial research base focussing on the academic self concepts of normal preadolescents, its use with deviant populations has been confined to behaviourally disordered adolescents. Questions regarding the discriminatory power of this instrument between preadolescents exhibiting
behavioural disturbances and those whose behavioural repertoire lies within socially acceptable limits remain unanswered.

The SDQ-1 is a pencil-and-paper test which can be administered individually or in groups (see Appendix A.9). Standardised administration procedures are provided and the user is advised to adhere to these if normative data are to be interpreted reliably. Total administration time is approximately 20 minutes. The questionnaire comprises 76 items assessing four areas of Nonacademic Self Concept: Physical Abilities, Physical Appearance, Peer Relations, and Parent Relations; and three areas of Academic Self Concept: Reading, Mathematics, and General School. A General Self Scale was added after the instrument's initial trialing. These eight scales are said to reflect the individual's multifaceted or multidimensional self concept (see Appendix A.10).

When completing the questionnaire, the child is asked to respond to simple declarative sentences, such as "I make friends easily" with one of five possible responses: false, mostly false, sometimes false/sometimes true, mostly true or true. Each of the eight scales contains eight positively worded items. Twelve negatively worded items are included to disrupt possible response bias (Benson & Hocevar, 1985; Marsh, 1986d; Nisbett & Wilson, 1977; Rorer, 1965; Samelson, 1972; Schriesheim & Hill, 1981). However, these items do not form any part of the scoring for the eight scales. Raw scores are obtained for each of the eight scales. Scores for Total Academic, Total Nonacademic, and Total Self are also computed. These scores may be converted to midpoint percentile ranks and standard T-scores. Percentile ranks and standard T-scores are not available for the General Self Scale (grades 2-4) as this scale was added to the instrument after
the majority of the normative data had been collected.

Normative data provided in the manual are based on the responses of 3,562 students between grades two and six enrolled in metropolitan Sydney primary schools. No overall sampling procedure was employed. However, Marsh reports that "care was taken to ensure that the selected schools were broadly representative of the population of school children in Sydney, Australia" (Marsh, 1988, p.19). Tables providing norms for seven of the eight individual scales and all three total scales by sex and grade range are included for grades 2-4 and grades 5-6. It must be noted that norms for the General Self Scale (grades 5-6) are based on 739 responses primarily from grade five students so consequently any interpretation of this scale on the basis of these norms should be made cautiously. No norms are available for the General Self Scale (grades 2-4).

A unique feature of the scoring procedure is the optional inclusion of six control scores. Meaningful interpretation of a child's SDQ-1 scores assumes that appropriate responses are given to all items. This may not always occur. Responses may be omitted or tendered in a manner which renders them meaningless. There are two commonly observed problems: those of noncontingent responding and positivity/negativity bias. Noncontingent responding occurs when replies are indiscriminately assigned independent of the item content. Children's tendency to use the positive or negative end of the response scale, also independent of item content, is referred to as positivity/negativity bias. Marsh (1988) has addressed these potential problems through the inclusion of six control scores. Thus, when the validity of a child's profile appears questionable, the computation of control scores is suggested. It
is suggested that these scores be interpreted cautiously as no validation research other than the normative study has occurred.

Marsh reports that the SDQ-1 possesses construct validity because each factor (representing a scale) is:

significantly correlated to other constructs to which it is logically related and less correlated with other constructs to which it is logically unrelated (Marsh, 1988, p.4).

This premise has been extensively researched over the past ten years by Marsh and his colleagues. By and large, validity research has found responses to the SDQ instruments to be related to sex and age (Byrne & Shavelson, 1986; 1987; Marsh, 1985; 1987c; 1989a; 1991a; Marsh, Barnes, Cairns, & Tidman, 1984; Marsh & O'Neill, 1984; Marsh, Parker & Barnes, 1985; Marsh, Smith & Barnes, 1985), academic achievement (Byrne, 1986; Marsh, 1984a; 1984b; 1990c; Marsh, Byrne & Shavelson, 1988; Marsh, Parker & Barnes, 1985; Marsh, Smith & Barnes, 1984; 1985), teacher ratings of achievement and inferred self concepts (Marsh, Barnes & Hocevar, 1985; Marsh, Parker & Smith, 1983; Marsh & Richards, 1990; Marsh, Smith & Barnes, 1984), student attributions for the perceived causes of their academic successes and failures (Marsh, 1984a; 1984b; 1984c; 1986a; 1986c; 1987b; 1990d; Marsh, Cairns, Relich, Barnes & Debus, 1984), responses to other self concept instruments (Marsh & Gouvenet, 1989; Marsh & McDonald-Holmes, 1990), and experimental interventions designed to enhance self concept (Craven et al., 1991; Marsh & Richards, 1988).
In addition, some cross national studies using Canadian populations have been conducted to verify the generality of multidimensional self concept as measured by the SDQ instruments (Byrne & Shavelson, 1986; 1987; Marsh, 1990c; Marsh & Smith, 1987). SDQ responses have been related systematically to external criteria in a way that is consistent with Shavelson's guiding theory, thus supporting the construct validity of the instrument (Byrne, 1986; 1989; Byrne & Shavelson, 1986; Marsh, 1986b; 1987a; 1987c; 1990b; 1990e; Marsh, Byrne & Shavelson, 1988; Marsh & Hocevar, 1985; Marsh & McDonald-Holmes, 1990; Marsh & O'Neill, 1984; Marsh, Relich & Smith, 1983).

Marsh has used reliability, factor analytic and multitrait-multimethod analyses to confirm the salient components of self concept as they relate to the multidimensional, hierarchical model (Marsh, 1987c; 1989b; 1990e; Marsh & Bailey, 1991; Marsh, Balla & McDonald, 1988; Marsh & Hocevar, 1985; 1988). Instrument reliability for the SDQ-1 is reported in terms of interval consistency estimates. The alpha coefficients reported for the various scales are in the order of .80's and .90's. The average correlation among the SDQ-1 scales was relatively low and reported as a mean $r = .17$, showing good discrimination between scales (Marsh, 1988, p.3). Hierarchical factor analysis was used to confirm the hierarchical structure of self concept (Marsh, 1987a; 1989b) and factor analysis was also used to test the invariance of the SDQ-1 factor structure (Marsh, 1987c; 1990e; Marsh & Hocevar, 1985). Multitrait-multimethod analyses have further demonstrated the distinctiveness of the different factors (Marsh, 1983; Marsh & Smith, 1987). These studies reveal that the SDQ-1 reliably measures distinct dimensions of self concept.
6.5.4 State-Trait Anxiety Inventory for Children

The STAIC (Spielberger et al., 1973) was selected specifically to provide measures of state and trait anxiety. Spielberger et al. (1973; 1983) suggest that individuals manifesting high trait anxiety are more likely to experience higher levels of state anxiety in situations involving interpersonal relationships and those potentially threatening self-esteem. It may therefore be inferred that state and trait anxiety provide measurable indicators of ego involvement present during a situation where self-report of multidimensional self-concepts is required.

Buros (1978) considers this instrument the best available measure of children's anxiety because of the care and precision taken in its development. Indeed, Buros (1978) considers Spielberger et al. (1973; 1983) to be the leaders in anxiety research. The practical considerations for its selection included: its short administration time, the comprehensive administration and scoring procedures outlined in the manual and the provision of age-appropriate norms for the subjects being sampled.

This instrument was initially developed in 1969 and revised in 1973. It is currently widely used as a research tool and has been translated into a number of languages. The instrument includes two separate self-report scales measuring anxiety, the A-state and A-trait scales (see Appendices A.12 and A.13). The authors claim that the A-state scale measures actual levels of anxiety provoked by stressful situations, whilst the A-trait scale measures anxiety proneness as a personality trait. The STAIC is a 40 item self-administered scale and has no time limit. Twenty items are designed to measure A-state anxiety. These items are designed to ascertain feelings at the time of administration. Items are phrased
to include the three point scale of hardly ever, sometimes, often. Thus, an example of an A-state item states "I feel very nice", "nice", "not nice". The remaining twenty items measure A-trait anxiety. A-trait anxiety items are statements, such as "I am shy" followed by hardly ever, sometimes, often. The profiles are scored by hand yielding a raw score total for each scale. These raw score totals may then be converted to percentile ranks and normalised T scores using the tables provided.

The original standardisation sample comprised 1,554 grades four to six elementary school children in U.S.A. Data collected provide the basis for the norms reported in the manual. Separate means and standard deviations based on the standardisation sample are provided at each grade level for A-state anxiety and A-trait anxiety scales. The reliability of the instrument is reported in terms of internal consistency and test-retest reliability. Alpha coefficients, denoting internal consistency for the A-state scale were reported as .82 for males and .87 for females, while those reported for the A-trait scale were .78 and .81, respectively.

The test-retest reliability proved less substantial. This procedure yielded .65 for males and .71 for females on the A-trait scale, whilst coefficients for the A-state scale were .31 and .47, respectively. Theoretically this is to be expected because of the transient nature of state anxiety. In contrast, Finch et al's. (1974) use of the STAIC with emotionally disturbed children yielded a significantly higher test-retest reliability coefficient for the A-state scale. They argue that population differences account for the observed difference and that emotionally disturbed children experience constant high levels of situational anxiety at any given time thus accounting for the discrepant result.
Although the STAIC (Spielberger et al., 1973) is not as well researched as its adult counterpart, the State-Trait Anxiety Inventory (STAI: Spielberger et al., 1963), preliminary evidence for the validity of the STAIC (Spielberger et al., 1973) indicates the presence of construct validity (Buros, 1978). In addition, concurrent validity with the Children's Manifest Anxiety Scale (CMAS: Castaneda, McCandless & Palermo, 1956) at $r = .75$ has been established according to the authors (Spielberger et al., 1973). Montgomery and Finch (1974) also tested the concurrent validity of the STAIC with the CMAS. They used a matched sample of normal children and emotionally disturbed children. The results add further support to the validity of the STAIC. However, the emotionally disturbed children yielded higher scores on both the A-state and A-trait scales, as well as the anxiety portion of the CMAS. In addition, the correlation between the A-trait and the CMAS was somewhat lower than that reported by Spielberger. Once again it was argued that population differences accounted for the observed differences.

6.6 Procedures

The assessment process for each matched pair of subjects began once parental permission for each child to participate in the study was granted in writing (see Appendix C.3). Standardised procedures at each stage of the data collection enabled the researcher to eliminate the effects of extraneous variables, as far as was practicable. Uniform assessment procedures and computerised data management ensured the resultant data base was error free.
6.6.1 The Child

Prior to assessment, background information was collected for each matched pair of subjects to verify the chosen subject's suitability for inclusion in the study. Information comprised: age at testing, academic performance, family structure and ethnic/cultural affiliation of the primary caregiver. Other relevant background information was also extracted from the N.S.W. Department of School Education Pupil Record Card (see Appendix A.15). Arrangements were then made to access the selected pair of subjects for assessment purposes. Subjects were subsequently withdrawn from class and assessed individually. A standardised procedure was implemented for withdrawal and assessment.

Firstly, the withdrawal procedure was standardised for each pair of subjects taking part in the study. Each comparison subject was withdrawn from class and assessed prior to the study subject's withdrawal. It was anticipated that this order of withdrawal would minimise the effects of situational anxiety arising from the comparison subject's close association with a peer who has attracted an inordinate amount of attention from school staff and other visiting adults.

Assessment order was also standardised to further counteract this phenomenon. The assessment schedule included an initial informal period of dialogue with the subject. In order to promote an atmosphere of composure, the researcher introduced herself and discussed her interest in how children of this age group felt about a variety of issues such as school, friendships, interests and hobbies. The subject was encouraged to discuss his feelings about taking part in this study and to share any concerns he may have. If concerns were voiced these were briefly addressed and the assessment schedule was commenced.
Assessment began with the administration of the SDQ-1 (Marsh, 1988). The subject was subsequently presented the 20 items comprising the STAIC: A-state scale (Spielberger et al., 1973) followed by the 20 items comprising the STAIC: A-trait scale (Spielberger et al., 1973). Both SDQ-1 and STAIC items were read to all subjects to control for possible variations in reading and comprehension skills. This order was maintained at each administration as levels of state anxiety associated with the self report process were required. It was felt situational anxiety generated by the selection for participation and withdrawal from class would have been minimised by the preceding dialogue.

Each child was withdrawn from class for approximately 45 minutes. It was anticipated that most children in this age group would have experienced being withdrawn from the classroom for a similar period of time to complete a task. In the event that this situation was a novel experience, it was assumed that there was a willingness on the part of the child to participate in the study as parental consent was required prior to assessment. At the end of the session the child was thanked for choosing to share his private thoughts with the researcher. It was also mentioned that this contribution would help adults to better understand the feelings of children in this age group.

6.6.2 The Class Teacher

Arrangements were made to meet with the class teacher for approximately 10 minutes. During this briefing, the aims of the research were discussed and the administration instructions for the TRF (Achenbach, 1991b) were outlined. The administration instructions delivered to each teacher were taken from the Manual
for the Teacher's Report Form and 1991 Profile (Achenbach, 1991b, p.11-12).

The class teacher was subsequently given two TRF questionnaires to complete, one for each of the subjects. These instruments are designed to be self administered by teachers. Most teachers were able to complete the two questionnaires in approximately 40 minutes. Generally the questionnaires were collected by the researcher a week later, although some teachers required a longer time. All questionnaires were returned within a one month period.

6.6.3 The Primary Caregiver

An interview with each subject's primary caregiver (mother or custodial guardian) was arranged in order that the CBCL/4-18 (Achenbach, 1991a) could be administered by the researcher. The CBCL/4-18 questionnaire is designed to be completed by caregivers who have basic primary school level reading and comprehension skills. It takes approximately 30 minutes to complete and is designed to be self administered or administered by an interviewer.

Each interview was approximately 45 minutes duration and was scheduled to take place at the subject's school. The content of each interview was standardised. The researcher introduced herself and initiated a discussion regarding the aims of the study. The caregiver was invited to ask questions or raise any concerns he/she had regarding any aspect of the research. When it became evident that the caregiver was at ease, the CBCL/4-18 questionnaire was introduced for completion.

The researcher handed the caregiver a copy of the CBCL/4-18 questionnaire, whilst retaining a second copy, and then articulated that in order
to standardise the administration the questions on the form would be read aloud. The caregiver was given the choice of writing the answers or allowing the researcher to write the answers. Caregivers who could read well started answering the questions without waiting for them to be read aloud. This procedure avoided any embarrassment or errors that may have arisen as a result of illiteracy. Once the administration of the CBCL/4-18 questionnaire was completed, the caregiver was offered a short time to debrief. The fact that caregivers could find this task emotionally arousing was thus acknowledged.

6.7 Data Management

The inclusion of data for each matched pair of subjects was contingent upon the completion of the four instruments: CBCL/4-18, TRF, SDQ-1 and STAIC. All data for the identified pair of subjects were collected within a one month time frame. The Cross Informant Program for the CBCL/4-18, YSR and TRF (Achenbach, 1991d) was purchased from the University of Vermont upon its release in October, 1991 and used to score the completed CBCL/4-18 and TRF questionnaires. Programs were written, using the Clinical Reporting Systems data management program (Clinical Reporting Systems, 1990), to score the completed SDQ-1 and STAIC questionnaires (see Appendices A.11 and A.14, respectively).

Although the authors of the SDQ-1 and STAIC, Marsh (1988) and Spielberger et al. (1973) respectively, outlined comprehensive scoring procedures for their instruments, a margin for scoring error nevertheless exists. Scorer error is possible at each stage of the process, beginning with the assignation of values to item responses. The margin for error is just as great when raw scores are
converted to standardised scores and data are organised and entered for analysis. Computerised data entry and scoring eliminated the margin for scoring and transcription errors.

Computerised data entry and scoring of the SDQ-1 and STAIC were facilitated through the use of the Clinical Reporting Systems data management program (Clinical Reporting Systems, 1990). This system is designed to maintain a data base specifically for data and statistical analysis. Simplicity of data entry and retrieval, along with flexibility of design and function, has been a prime consideration in its use. Using this system, programs were written to enable interactive data entry and scoring of the SDQ-1 and STAIC.

All data generated were then imported into SAS (SAS Institute, 1988) for statistical analysis, precluding the need for transcription.

6.8 Data Analysis

Descriptive statistics were generated for the data using the SAS program (SAS Institute, 1988). The measures of central tendency and dispersion calculated were the arithmetic mean and the standard deviation, respectively. The arithmetic mean, standard error of the mean and standard deviation were calculated for: the sample age distribution, SDQ-1 Individual and Total scales, STAIC A-state and A-trait scales, the CBCL/4-18 Competence and Problem scales and the TRF Adaptive Functioning and Problem scales.

In order to provide inferential statistics, both bivariate and multivariate analyses were subsequently conducted on these data (Tabachnick & Fidell, 1989). The bivariate procedures used comprised the t-test, testing the difference between
a sample and population mean (Bruning & Kintz, 1977), the paired \( t \)-test for related samples and the Pearson correlation coefficient. Multiple logistic regression was the multivariate analysis considered as most appropriate for these data.

6.8.1 The \( t \)-test Testing the Difference Between a Sample Mean and the Population Mean

A series of \( t \)-tests, testing the difference between a sample mean and a population mean (Bruning & Kintz, 1977), were calculated manually to determine if the behaviour and self concepts of the research sample differed significantly from those reported for the general population (see Appendix B.1). Normative data generated by the clinically referred and nonreferred populations used to standardise the CBCL/4-18 and TRF were statistically compared with the sample statistics generated by the study and comparison groups, respectively. Normative data generated by the standardisation sample of children attending regular schools and classes used to norm the SDQ-1 provided the designated population parameters for multidimensional self concepts.

The differences between sample and population means for the A-state and A-trait scales of the STAIC were not calculated as the values required for this calculation were not included in the manual. Thus, this statistic was calculated for the eight Individual and three Total SDQ-1 scales, the four Competence and 12 Problem scales of the CBCL/4-18 and the six Adaptive Functioning and 11 Problem scales of the TRF.
6.8.2 The Paired t-test for Related Samples

The paired t-test for related samples was the parametric test selected to compare the pairs of observations generated by the matched pairs of subjects comprising the research sample. According to Schlotzhauer and Littell (1987, p.201) the two assumptions which must be met by the data are that:

- each pair of measurements is independent of other pairs of measurements
- differences are from a normal distribution

Interpretation of the paired t-test for related samples using the PROC UNIVARIATE output (SAS Institute, 1988) involves reaching the decision as to whether or not the average difference obtained is significantly different from zero. If the t-test reaches statistical significance at the $p < .05$ level, then it may be concluded that the observed result is significantly different from zero.

In order to test the previously stated hypotheses paired t-tests for related samples were used to test the difference between study and comparison group means for the eight Individual and three Total SDQ-1 scales, as well as the A-state and A-trait scales of the STAIC. The difference between study and comparison group means for the four Competence and 12 Problem scales on the CBCL/4-18 and the six Adaptive Functioning and 11 Problem scales of the TRF were also tested using this procedure.

In addition, the paired t-test for related samples procedure was selected to test the difference between scale score means on the CBCL/4-18 Total Competence/TRF Total Adaptive scale for each group. The CBCL/4-18 Total
Competence scale is a composite of the Activities, Social and School scales. It represents a measure of the child's adaptive behaviour as perceived by the child's caregiver. In contrast, the TRF Total Adaptive scale is a composite of Academic Performance, Working Hard, Behaving Appropriately, Learning and Happy scales. It reflects a child's adaptive behaviour in the school setting as perceived by the child's class teacher. These two composite scales provide an indicator of informant agreement regarding the child's adaptive capabilities across settings. A similar comparison of the 11 problem scales common to both the CBCL/4-18 and TRF was effected. This enabled a comparison of the problematic behaviours reported by these informants for each group.

6.8.3 Pearson Correlation Coefficient

The Pearson correlation coefficient measures the strength of a relationship between two variables. A significant relationship, regardless of the size, does not imply causation. One of the most useful means of interpreting a correlation coefficient is to square the correlation coefficient obtained. The resulting $R^2$-squared can then be interpreted as the proportion of variance in one variable that can be associated with variation in the other variable (Cody & Smith, 1991).

In order to test the previously stated hypotheses separate correlation matrices between the eight Individual and three Total SDQ-1 scales and each of the following: four Competence and 12 Problem scales comprising the CBCL/4-18, six Adaptive Functioning and 11 Problem scales comprising the TRF and STAIC A-state and A-trait scales, were produced using the SAS PROC CORR procedure (SAS Institute, 1988).
6.8.4 Multiple Logistic Regression

The goal of any regression analysis is to postulate a mathematical model describing the mean of the dependent variable as a function of the independent variables on the basis of prior knowledge (Kleinbaum et al., 1982; Kleinbaum et al., 1988). The model is fitted to the data and after the adequacy of fit is verified, appropriate statistical inferences are made. Logistic regression, a generalised linear model, is thus conceptually similar to classical linear regression (see Appendix B.2). Logistic regression however, is based on maximum likelihood methods (ML) and is appropriate when the dependent or outcome variable represents a binary outcome, presence/absence of a predetermined attribute. In this case the designated dichotomous dependent variable is behaviour, disturbed versus adaptive.

Logistic modelling accommodates matched data sets through the use of conditional ML estimation (see Appendix B.3). The model for matched data requires the use of conditional ML estimation for estimating parameters because where data is matched the number of parameters included in the model is large relative to the number of observations. The procedure is thus ideal for the purposes of this study.

The potential explanatory variables selected as predictors of behaviour were the eight SDQ-1 Individual scales. On the basis of a priori knowledge the STAIC A-state and A-trait scales were treated as potential confounding variables and subjected to confounding and precision assessment. The logistic regression analysis was conducted using the lreg procedure (SPIDA: Gebski, Leung, McNeil & Lunn, 1992). The SPIDA lreg procedure is used to fit the logistic regression

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model to the data. See Appendix B.4 for an explanation of this procedure. In order to determine the best subsets of explanatory or predictor variables the \textit{breg} procedure was subsequently evoked (Lunn & McNeil, 1991).

6.9 **Significance of the Research Methodology**

This research was designed specifically to address some of the recognised theoretical and methodological inadequacies which have hampered the progress of self concept research in the past. Encumbrances such as: small sample sizes, the non-equivalence of groups in cross sectional studies and the effects of attrition in longitudinal design, the profusion of idiosyncratic self concept instruments with questionable psychometric properties and the use of uninterpretable discrepancy scores, have been cited as common (Marsh, Barnes, Cairns & Tidman, 1984).

An \textit{ex post facto} research design incorporating the pair-wise category matching of subjects was selected as an effective means of addressing the problem of group non-equivalence. A total sample size of 70 subjects, 35 subjects per group, was considered adequate given this research design and the choice of statistical procedures. Subjects were referred for either the \textit{study group} or the normative reference group, a \textit{comparison group}, on the basis of the presence or absence of behaviour disorder in the school setting, respectively. In addition, pairs of subjects were drawn from one cohort and matched on academic performance, family structure and ethnic/ cultural affiliation of the primary caregiver to reduce the influence of potential environmental influences and personal background.

The choice of instrumentation and statistical procedures also feature
significantly in the design of this research as a means of addressing previously
recognised problems. As this research focuses on the complex interrelationships
between behaviour and self concept, instruments which are well grounded
theoretically and have been developed using sound methodological procedures
were selected. The SDQ-1 (Marsh, 1988), as well as the 1991 cross informant
profiles for the CBCL/4-18 (Achenbach, 1991a) and TRF (Achenbach, 1991b)
provide current, objective, standardised measures of the self concept and
behaviour constructs, respectively. The STAIC, which is theoretically appropriate
for the purposes of this research, is also considered to be a methodologically
sound instrument.

The *ex post facto* research design incorporating the pair-wise matching of
subjects, along with the instrumentation selected, facilitate the theoretical
interpretation of discrepancy scores. Statistically, interpretation of discrepancy
scores is facilitated by the use of multiple logistic regression. Notably, multiple
logistic regression procedures are able to accommodate small samples of matched
data. However, also of consequence is the fact that theoretical postulates
concerning the mediatory role of anxiety in the self appraisal process may also be
incorporated into the logistic model. This robust form of multivariate analysis
consequently contributes significantly to the theoretical and methodological
originality of this research.
Chapter 7

Results

7.1 Introduction

The results presented are structured to encompass the three major themes which have been employed to examine the perceptions of interpersonal adequacy held by preadolescent boys. These themes cover the behavioural classification of children using a psychometric paradigm, the analogous nature of multidimensional self concept irrespective of behavioural allocation and the notion of self appraisal. The behavioural classification of the research sample was effected using a comparative approach. Normative comparisons of study and comparison group data with published population parameters and comparisons between the study and comparison group data were undertaken to achieve this end. Both normative comparisons between study and comparison group data with published population parameters and comparisons between study and comparison group data also tested the analogous nature of multidimensional self concept irrespective of behavioural allocation. The notion that self appraisal is to some extent governed by environmental reinforcement was tested by comparing self-other ratings. Additionally, the significance of complex psychological and motivational processes operating during self appraisal was operationalised and tested using the state-trait anxiety model.

This research is bound by the constraints commonly associated with the collection of matched data sets. In this instance the limited number of
appropriate subjects available and the onerous amount of time required to collect the data greatly influenced the sample size. The strength of this data collection thus rests on the comprehensive techniques employed in the information gathering process rather than the number of respondents sampled. This focus on technique has resulted in an information rich small sample. In response to the small sample size and the large number of variables generated by the research, a conservative approach will be taken when interpreting the reported results. Thus, rather than interpreting results that meet the conventionally accepted $p < .05$ level of significance, the researcher has chosen to apply the more rigorous $p < .01$ level of significance.

7.2 Sample Description

The research sample was a selected sample comprising pairs of subjects chosen from one cohort and admitted to either the study or comparison group according to the presence/absence of behaviour disorder, respectively. Pairs of subjects were matched on academic performance, family structure and ethnic/cultural affiliation of the primary caregiver. Thus, an analysis of the groups' age distribution and configurations of the matching criteria provide a useful, descriptive profile of the research sample.

7.2.1 Age Distribution

The total sample for this study comprised 70 boys, 28 grade four and 42 grade five boys. The 70 subjects formed two groups, a study group and a comparison group, of 35 subjects each. Study and comparison group means for the
total sample and subgroups of grade four and grade five subjects indicated that the study group in each case was, on average, slightly older than the comparison group (see Table 7.1). In addition, the reported standard deviations also indicated that the spread of ages for the study group was greater in each case than that reported for comparison group.

Upon closer inspection, subject differences in school entry age and repetition accounted for the observed group variations in sample means and standard deviations. Of the 35 study group subjects (14 grade four and 21 grade five), nine subjects (two grade four and seven grade five) repeated a school year and five subject's school entry (two grade four and three grade five) was delayed for a year. By contrast, only six comparison group subjects (three grade four and three grade five) repeated a school year. Thus, the observed variation in average age between the groups was directly attributable to the greater number of study group subjects who repeated a school year or whose school entry was delayed for one year.

<table>
<thead>
<tr>
<th>Table 7.1</th>
<th>Sample age distribution reported in months</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sample</th>
<th>Study Group</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n  MEAN  SD</td>
<td>n  MEAN  SD</td>
</tr>
<tr>
<td>Total</td>
<td>35  126.11  8.36</td>
<td>35  123.97  6.59</td>
</tr>
<tr>
<td>Grade 4</td>
<td>14  118.71  5.28</td>
<td>14  118.07  3.91</td>
</tr>
<tr>
<td>Grade 5</td>
<td>21  131.05  6.07</td>
<td>21  127.91  4.82</td>
</tr>
</tbody>
</table>
7.2.2 Subject Characteristics

The effects of academic performance, family structure and ethnic/cultural affiliation of the primary caregiver were controlled through a process of category matching, as previously described. Consequently, the research sample comprised two groups of subjects with similar background characteristics, as defined by the previously determined matching criteria.

Academic Performance

Teachers' subjective ratings, based on an overall appraisal of the subject's academic performance in the language arts and mathematics areas of the curriculum were used to gauge academic performance. The ratings reflected an aggregate of Item VII: Current School Performance on the TRF (Achenbach, 1991b). The far below grade level and far above grade level were maintained, while the at grade level rating was derived by collapsing the somewhat below grade level, at grade level and somewhat above grade level categories. Class teachers rated 11 pairs of subjects as overall below grade level and 24 pairs of subjects as overall at grade level. No subjects were rated as overall above grade level.

Family Structure

Family structure was categorised as intact or disrupted. The intact family was defined as the family into which the child was born or adopted from babyhood. The disrupted family constituted any form of disruption to the original family unit into which the child was born or adopted. Final figures indicated that of the 70 subjects sampled, 14 pairs of subjects were members of intact families
and 21 pairs of subjects were members of disrupted families.

**Ethnic/Cultural Affiliation of the Primary Caregiver**

The ethnic/cultural affiliation of the primary caregiver was categorised into broad geographical/cultural regions: Australian Aboriginal or Torres Strait Islander, Oceania or Pacific Islanders, Western European, Eastern European, Southern European, Middle Eastern/Arabic, Asian and Latin American. The ethnic/cultural affiliation of the primary caregivers for 32 pairs of subjects was Western European. English speaking caregivers and/or caregivers of Western European descent were categorised as Western European.

In addition, the primary caregivers of two pairs of subjects were categorised as Southern European. The caregivers of one pair of boys reported a greek background, whilst those for the other pair reported an italian background. Finally, the caregivers of one pair of subjects were categorised as Middle Eastern. The caregivers of this pair of boys were Muslim.

**7.3 Sample and Population homogeneity**

Predetermined selection criteria governed sample selection. Group membership was allocated on the basis of behaviour. Thus, once a subject exhibiting behaviour disorder was identified for the study group, the subject sought for the comparison group, a boy from the same class exhibiting age appropriate behaviour in the school setting, was required to parallel the study group subject on all the predetermined matching criteria. The resulting personal and social influences for each matched pair of boys were consequently controlled to
minimise unwanted variation.

Evidence that this selected sample is in fact representative of the population from which it was drawn would consequently augment the interpretive and predictive power of the results. Normative data reported for the CBCL/4-18 and TRF were deemed suitable population measures for the behaviour construct. Statistical methods were employed as empirical determinants of sample and population homogeneity.

7.3.1 Population Parameters for the Behaviour Construct

Normative data for the CBCL/4-18 and TRF were drawn from a nationally representative sample of 2,466 nonreferred, normal subjects first assessed in 1986 at ages 4-16 years and then reassessed in the Spring of 1989 (McConaughy, Stanger & Achenbach, 1992; Stanger, McConaughy & Achenbach, 1992). These subjects were chosen to be representative of the 48 mainland states of the U.S.A. with respect to socioeconomic status, ethnicity, region, and urban-rural residence. In the 1989 follow up, completed CBCL/4-18 questionnaires were obtained for 90.2 percent of the 1986 sample. Subjects aged 4-16 years in 1986 were followed up in 1989 at ages 7-18 years. Data for the 4-6 year age range were collected from households already in the survey where, in addition to a child in the 7-18 years age range, a child in the 4-6 year age range was identified. Of the eligible households, 94.8 percent were surveyed for this age range. The normative sample of behaviourally and/or emotionally healthy children aged 4-18 years was drawn from this data bank of subjects who had not received mental health or special remedial school services within the preceding 12 months.
Data for the clinically referred sample comprised checklists used to standardise the previous edition, as well as data obtained for children referred for mental health services from that time onwards. These clinically referred subjects were seen in 52 settings providing child psychiatric and psychological services located throughout the eastern, southern and midwestern U.S.A. The settings provided sufficient variation in socioeconomic, demographic and other client characteristics to minimise selective factors idiosyncratic of individual services.

The demographically matched normative samples for the CBCL/4-18, providing the population parameters for this research, were drawn from the previously described data banks of nonreferred and clinically referred subjects (Achenbach, 1991a). Pairs of referred and nonreferred subjects were precisely matched by age and sex and as closely as possible on the following criteria: type of respondent, ethnicity and socioeconomic status.

Normative data for the 1991 revision of the TRF scales were drawn from the same national sample used to standardise the CBCL/4-18. Data for the 5-6 year age range were collected for subjects of households already in the survey where, in addition to a child in the 7-18 years age range, a normal child in the 5-6 year age range was identified. Parents of subjects aged 5-18 years, who were attending school, were asked to give permission for the TRF to be sent to the child's class teacher for completion. If the child had more than one regular teacher, the parent was asked to nominate the teacher whom they considered knew the child best. Completed TRF questionnaires were received for 76.3 percent of the children whose parents gave permission.

As with the CBCL/4-18, the clinically referred sample for the 1991 revision
of the TRF comprised the sample used to standardise the previous edition of the TRF. TRF data collected for clinically referred children from that time onwards were added to this data bank. These clinically referred subjects were seen in 58 settings providing child psychiatric and psychological services located throughout the eastern, southern and midwestern U.S.A. The settings provided sufficient variation in socioeconomic, demographic and other client characteristics to be considered representative of the population.

The demographically matched normative samples for the 1991 revision of the TRF, providing the population parameters for this research, were drawn from the previously described data banks of nonreferred and clinically referred subjects (Achenbach, 1991a). The 1,275 pairs of clinically referred and nonreferred normal subjects were precisely matched by age and sex and also matched as closely as possible regarding ethnicity and socioeconomic status.

7.3.2 Population Parameters and Sample Statistics for the Behaviour Construct

Standardisation data from the CBCL/4-18 demographically matched referred and nonreferred normative samples of boys 4-11 years and the TRF demographically matched referred and nonreferred normative samples of boys 5-11 years provided the population parameters for this research. Thus, direct comparisons between the results obtained for the study group and those provided for the CBCL/4-18 and TRF normative samples of clinically referred boys, were possible. Parallels could also be drawn between results obtained for the comparison group and those provided for the CBCL/4-18 and TRF normative sample of nonreferred, normal boys. This procedure provides statistical evidence
that the study group is indeed representative of a clinically referred population, while also establishing the comparison group as representative of the nonreferred, normal population.

The Study Group

A comparison between study group raw score means for CBCL/4-18 Competence and Problem scales and the CBCL/4-18 normative sample of referred boys aged 4-11 years was achieved using the t-test formula, testing the difference between sample and population means. t-statistics were calculated for all CBCL/4-18 Competence and Problem scales (see Table 7.2). The CBCL/4-18 Competence scales comprise the Activities, Social, School and Total Competence scales. The Activities scale reflects parents' perceptions of their child's participation and demonstrated skill in sporting activities, hobbies and household chores. The Social scale reflects parents' perceptions of the quantity and quality of their child's peer interactions, both in organisations and in daily play. The School scale reflects parents' perceptions of their child's academic progress. The Total Competence scale is an aggregate of these three scales. No significant differences at the designated p < .01 level were observed for the CBCL/4-18 Competence scales.

The CBCL/4-18 Problem scales comprise the eight cross informant syndrome scales: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour, Aggressive Behaviour, as well as the Sex Problems scale which is only included
Table 7.2  Comparison of study group raw score means for the CBCL/4-18 competence and problem scales and normative data for the CBCL/4-18 referred sample of boys 4-11 years

<table>
<thead>
<tr>
<th>CBCL/4-18 Scales</th>
<th>Study Group n=55</th>
<th></th>
<th>CBCL/4-18 Referred Sample n=582</th>
<th></th>
<th>t^a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN</td>
<td>SE</td>
<td>MEAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Competence Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td>5.24</td>
<td>.27</td>
<td>5.90</td>
<td>-2.44</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>4.90</td>
<td>.28</td>
<td>5.00</td>
<td>-0.36</td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>3.54</td>
<td>.17</td>
<td>3.40</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>Total Competence^1</td>
<td>13.69</td>
<td>.56</td>
<td>14.50</td>
<td>-1.45</td>
<td></td>
</tr>
<tr>
<td><strong>Problem Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>4.60</td>
<td>.53</td>
<td>4.10</td>
<td>.94</td>
<td></td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>3.03</td>
<td>.57</td>
<td>1.70</td>
<td>2.33</td>
<td></td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>8.46</td>
<td>.96</td>
<td>7.90</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>Social Problems</td>
<td>5.63</td>
<td>.43</td>
<td>4.70</td>
<td>2.16</td>
<td></td>
</tr>
<tr>
<td>Thought Problems</td>
<td>2.94</td>
<td>.51</td>
<td>1.90</td>
<td>2.04</td>
<td></td>
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<tr>
<td>Attention Problems</td>
<td>9.54</td>
<td>.73</td>
<td>8.20</td>
<td>1.84</td>
<td></td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>7.63</td>
<td>.62</td>
<td>4.30</td>
<td>5.37^**</td>
<td></td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>21.71</td>
<td>1.17</td>
<td>16.60</td>
<td>4.37^**</td>
<td></td>
</tr>
<tr>
<td>Sex Problems</td>
<td>.46</td>
<td>.27</td>
<td>.50</td>
<td>-.15</td>
<td></td>
</tr>
<tr>
<td>Internalizing^2</td>
<td>15.40</td>
<td>1.68</td>
<td>13.10</td>
<td>1.37</td>
<td></td>
</tr>
<tr>
<td>Externalizing^3</td>
<td>29.34</td>
<td>1.69</td>
<td>20.90</td>
<td>4.99^**</td>
<td></td>
</tr>
<tr>
<td>Total Problems^4</td>
<td>69.37</td>
<td>4.40</td>
<td>54.50</td>
<td>3.38^*</td>
<td></td>
</tr>
</tbody>
</table>

^a t(34) except Activities, t(33)

^p<.01.  **p<.001.

1 sum of Activities, Social, School
2 sum of Withdrawn, Somatic Complaints, Anxious/Depressed
3 sum of Delinquent Behaviour, Aggressive Behaviour
4 sum of all scored problem items

in CBCL/4-18 profiles. In addition, Internalizing, Externalizing as well as a Total Problems scale are also included.

The $t$-statistics, calculated for CBCL/4-18 Problem scales, reaching statistical significance at the required $p < .01$ level included Delinquent Behaviour [$t(34) = 5.37, p < .001$], Aggressive Behaviour [$t(34) = 4.37, p < .001$], Externalizing [$t(34) = 4.99, p < .001$] and Total Problems [$t(34) = 3.38, p < .01$]. The positive direction of these significant $t$-statistics showed that study group subjects’ caregivers, on average, rated their children significantly higher on these problem scales than did the parents of the CBCL/4-18 normative sample of referred boys. Thus, according to these respondents, as a group, the study group exhibited a statistically significantly greater level of deviance on the above mentioned scales than did the designated reference population.

In order to obtain a representative profile of the study group’s behavioural repertoire, class teacher ratings of subjects' school related behaviours were also solicited. Class teacher ratings of study group subjects' behaviour at school were compared with the normative data for the TRF sample of referred boys aged 5-11 years (see Table 7.3). These norms provided the population parameters for the $t$-test procedure, testing the difference between sample and population means.

The TRF scales measuring adaptive functioning comprise the Academic Performance scale and the Total Adaptive scale. The Academic Performance scale constitutes a teacher's rating of the student's current performance on a five point scale. Academic areas, such as language arts, mathematics, social science and science are targeted. The Total Adaptive scale is derived from the sum of ratings for Working Hard, Behaving Appropriately, Learning and Happy. Each of these
Table 7.3  Comparison of study group raw score means for the TRF adaptive functioning and problem scales and normative data for the TRF referred sample of boys 5-11 years

<table>
<thead>
<tr>
<th>TRF Scales</th>
<th>Study Group</th>
<th>TRF Referred Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=35</td>
<td>n=334</td>
</tr>
<tr>
<td><strong>Adaptive Scale</strong></td>
<td><strong>MEAN</strong></td>
<td><strong>MEAN</strong></td>
</tr>
<tr>
<td></td>
<td><strong>SE</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Academic Performance</strong></td>
<td>2.43</td>
<td>2.10</td>
</tr>
<tr>
<td></td>
<td>.11</td>
<td>3.00*</td>
</tr>
<tr>
<td><strong>Working Hard</strong></td>
<td>1.77</td>
<td>2.80</td>
</tr>
<tr>
<td></td>
<td>.17</td>
<td>-6.06**</td>
</tr>
<tr>
<td><strong>Behaving Appropriately</strong></td>
<td>1.54</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>.13</td>
<td>-8.15**</td>
</tr>
<tr>
<td><strong>Learning</strong></td>
<td>2.26</td>
<td>2.90</td>
</tr>
<tr>
<td></td>
<td>.16</td>
<td>-4.00**</td>
</tr>
<tr>
<td><strong>Happy</strong></td>
<td>2.66</td>
<td>3.10</td>
</tr>
<tr>
<td></td>
<td>.18</td>
<td>-2.44</td>
</tr>
<tr>
<td><strong>Total Adaptive</strong></td>
<td>8.23</td>
<td>11.50</td>
</tr>
<tr>
<td></td>
<td>.51</td>
<td>-6.41**</td>
</tr>
<tr>
<td><strong>Problem Scale</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Withdrawn</strong></td>
<td>4.14</td>
<td>4.20</td>
</tr>
<tr>
<td></td>
<td>.58</td>
<td>-.10</td>
</tr>
<tr>
<td><strong>Somatic Complaints</strong></td>
<td>.86</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>.31</td>
<td>-.13</td>
</tr>
<tr>
<td><strong>Anxious/Depressed</strong></td>
<td>7.43</td>
<td>6.60</td>
</tr>
<tr>
<td></td>
<td>.96</td>
<td>.86</td>
</tr>
<tr>
<td><strong>Social Problems</strong></td>
<td>9.09</td>
<td>5.90</td>
</tr>
<tr>
<td></td>
<td>.82</td>
<td>3.89**</td>
</tr>
<tr>
<td><strong>Thought Problems</strong></td>
<td>1.80</td>
<td>1.60</td>
</tr>
<tr>
<td></td>
<td>.38</td>
<td>.53</td>
</tr>
<tr>
<td><strong>Attention Problems</strong></td>
<td>24.20</td>
<td>18.80</td>
</tr>
<tr>
<td></td>
<td>1.28</td>
<td>4.22**</td>
</tr>
<tr>
<td><strong>Delinquent Behaviour</strong></td>
<td>7.97</td>
<td>3.10</td>
</tr>
<tr>
<td></td>
<td>.49</td>
<td>9.94**</td>
</tr>
<tr>
<td><strong>Aggressive Behaviour</strong></td>
<td>30.66</td>
<td>15.80</td>
</tr>
<tr>
<td></td>
<td>1.82</td>
<td>8.16**</td>
</tr>
<tr>
<td><strong>Internalizing</strong></td>
<td>11.83</td>
<td>11.10</td>
</tr>
<tr>
<td></td>
<td>1.45</td>
<td>.50</td>
</tr>
<tr>
<td><strong>Externalizing</strong></td>
<td>38.63</td>
<td>19.00</td>
</tr>
<tr>
<td></td>
<td>2.16</td>
<td>9.09**</td>
</tr>
<tr>
<td><strong>Total Problems</strong></td>
<td>86.26</td>
<td>56.50</td>
</tr>
<tr>
<td></td>
<td>4.57</td>
<td>6.51**</td>
</tr>
</tbody>
</table>

* t(34)
** p<.01.

1 sum of Working Hard, Behaving Appropriately, Learning, Happy
2 sum of Withdrawn, Somatic Complaints, Anxious/Depressed
3 sum of Delinquent Behaviour, Aggressive Behaviour
4 sum of all scored problem items

is a single rating on a seven point scale.

A comparison between study group raw score means for TRF Adaptive Functioning and Problem scales and normative data reported for the TRF referred sample of boys aged 5-11 years yielded significant differences. \( t(34) = 3.00, p < .01 \); as well as the Working Hard \( t(34) = -6.06, p < .001 \), Behaving Appropriately \( t(34) = -8.15, p < .001 \) and Learning \( t(34) = -4.00, p < .001 \) scales which, together with the Happy scale, comprise the Total Adaptive scale \( t(34) = -6.41, p < .001 \) reached statistical significance at the required \( p < .01 \) level.

The positive direction of the \( t \)-statistic for Academic Performance indicated that class teachers rated the study group as more academically able than the TRF normative sample of referred boys. The negative direction of the Working Hard, Behaving Appropriately, Learning and Total Adaptive scales indicated that on these scales, the study group was rated as significantly less adaptive than the TRF normative sample of referred boys. On average, the academic performance levels of study group subjects were thus shown to be higher than those of the reference population, whilst their application to academic endeavours was lower.

The CBCL/4-18 and TRF are parallel forms designed to meet the needs of informants from the home and school settings, respectively. Thus, TRF Problem scales also comprise the eight syndrome scales, Internalizing, Externalizing and Total Problems scales. As indicated in Table 7.3, the six TRF Problem scales to reach significance at the \( p < .01 \) level were Social Problems \( [t(34) = 3.89, p < .001] \), Attention Problems \( [t(34) = 4.22, p < .001] \), Delinquent Behaviour \( [t(34) = 9.94, p < .001] \), Aggressive Behaviour \( [t(34) = 8.16, p < .001] \),
Externalizing \( t(34) = 9.09, p < .001 \) and Total Problems \( t(34) = 6.51, p < .001 \).

The positive direction of these significant \( t \)-statistics indicated that \textit{study group subjects}, on average, were rated higher on these TRF Problem scales by their teachers than were the TRF normative sample of referred boys. Thus, the \textit{study group} exhibited a statistically significantly greater degree of deviant behaviour on these scales than was reported for the designated population of clinically referred subjects. It would appear that on average, both primary caregivers and class teachers rated \textit{study group} subjects as significantly more deviant than the respective CBCL/4-18 and TRF normative samples on problems of an externalizing nature. As a group, \textit{study group} subjects’ exhibited a high degree of overt, anti-social behaviour across settings. As such, this group of subjects appeared to be drawn from a population identified by Achenbach as \textit{clinically referred}.

\textbf{The Comparison Group}

Parallels were also drawn between the data collected for the \textit{comparison group} and the normative data for both the CBCL/4-18 sample of nonreferred boys aged 4-11 years (Achenbach, 1991a) and the TRF sample of nonreferred boys aged 5-11 years (Achenbach, 1991b). \( t \)-tests, testing the difference between sample and population means, were calculated to ascertain empirically the homogeneity of the \textit{comparison group} and these designated reference populations of nonreferred, normal children.

Interestingly, for the CBCL/4-18 Competence scales, the only \( t \)-statistic to reach statistical significance at the required \( p < .01 \) level was the School scale
\[ t(34) = -3.00, \ p < .01 \] (see Table 7.4). The negative direction of this \( t \)-statistic demonstrated that the caregivers of \textit{comparison group subjects}, on average, rated their children as significantly less competent academically than did the parents of the CBCL/4-18 normative sample of nonreferred boys. It is noteworthy that this statistical procedure produced the reverse results when \textit{study group} raw score means for the CBCL/4-18 Competence scales were compared with the CBCL/4-18 sample of referred boys. It would appear that the \textit{comparison group subjects}, according to their caregiver's perceptions, demonstrated fewer academic competencies than the designated population of nonreferred boys. On the other hand, the \textit{study group subjects}, according to their caregiver's perceptions, were more representative of the designated population of referred boys.

As indicated in Table 7.4, the CBCL/4-18 Problem scales reaching statistical significance at the required \( p < .01 \) level were the Withdrawn \( [t(34) = 3.66, \ p < .001] \) and Internalizing \( [t(34) = 3.33, \ p < .01] \) scales. The positive direction of these significant \( t \)-statistics indicated that the caregivers of \textit{comparison group subjects}, on average, rated these subjects significantly higher on the above listed scales than did the parents of the CBCL/4-18 normative sample of nonreferred boys. According to these respondents' perceptions, the \textit{comparison group} was found to be more withdrawn and exhibited more internalizing traits than the designated population of nonreferred boys.

Class teacher ratings of \textit{comparison subjects}' school related behaviour were solicited through the TRF. Results reported for the \textit{comparison group} on the TRF Adaptive Functioning and Problem scales, when compared with those for the TRF normative sample of nonreferred boys, produced only negative \( t \)-values at
Table 7.4  Comparison group raw score means for the CBCL/4-18 competence and problem scales compared with normative data for the CBCL/4-18 nonreferred sample of boys 4-11 years

<table>
<thead>
<tr>
<th>CBCL/4-18 Scales</th>
<th>Comparison Group</th>
<th>CBCL/4-18 Nonreferred Sample</th>
<th>t&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SE</td>
<td>Mean</td>
</tr>
<tr>
<td>Competence Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td>6.35</td>
<td>.27</td>
<td>6.40</td>
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<tr>
<td>Social</td>
<td>6.26</td>
<td>.30</td>
<td>6.90</td>
</tr>
<tr>
<td>School</td>
<td>4.71</td>
<td>.13</td>
<td>5.10</td>
</tr>
<tr>
<td>Total Competence&lt;sup&gt;1&lt;/sup&gt;</td>
<td>17.38</td>
<td>.47</td>
<td>18.50</td>
</tr>
<tr>
<td>Problem Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>3.23</td>
<td>.39</td>
<td>1.80</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>1.34</td>
<td>.33</td>
<td>.80</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>4.54</td>
<td>.57</td>
<td>3.10</td>
</tr>
<tr>
<td>Social Problems</td>
<td>2.57</td>
<td>.43</td>
<td>2.00</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>.86</td>
<td>.21</td>
<td>.50</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>4.54</td>
<td>.56</td>
<td>3.30</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>1.91</td>
<td>.34</td>
<td>1.60</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>7.77</td>
<td>.81</td>
<td>8.20</td>
</tr>
<tr>
<td>Sex Problems</td>
<td>.17</td>
<td>.06</td>
<td>.10</td>
</tr>
<tr>
<td>Internalizing&lt;sup&gt;2&lt;/sup&gt;</td>
<td>8.83</td>
<td>1.00</td>
<td>5.50</td>
</tr>
<tr>
<td>Externalizing&lt;sup&gt;3&lt;/sup&gt;</td>
<td>9.69</td>
<td>1.05</td>
<td>9.80</td>
</tr>
<tr>
<td>Total Problems&lt;sup&gt;4&lt;/sup&gt;</td>
<td>30.57</td>
<td>2.76</td>
<td>24.20</td>
</tr>
</tbody>
</table>

<sup>a</sup>t(34) except Total Competence t(33)

* p<.01.  ** p<.001.

1 sum of Activities, Social, School
2 sum of Withdrawn, Somatic Complaints, Anxious/Depressed
3 sum of Delinquent Behaviour, Aggressive Behaviour
4 sum of all scored problem items

the required $p < .01$ level of significance (see Table 7.5). $t$-statistics, comparing class teacher perceptions of comparison subjects' adaptive functioning with the population parameters provided by the TRF normative sample of nonreferred boys aged 5-11 years, reached statistical significance for five of the six scales. $t$-statistics for Academic Performance [$t(34) = -4.82$, $p < .001$] and the Working Hard [$t(34) = -3.35$, $p < .01$], Learning [$t(34) = -4.94$, $p < .001$] and Happy [$t(34) = -3.29$, $p < .001$] scales, making up the Total Adaptive scale [$t(34) = -3.65$, $p < .001$], all reached significance at the designated $p < .01$ level. Behaving Appropriately, also included in the Total Adaptive scale, failed to reach statistical significance.

The negative direction of these significant $t$-statistics indicated that, when compared with the population of TRF nonreferred boys, comparison group subjects were, on average, rated as less adaptive in the school setting by their class teachers. It is interesting to note that ratings of these subject's appropriate behaviour in the school setting were commensurate with population parameters even though ratings of academic performance and application to school related tasks did not meet the designated population parameters. As comparison group subjects were included in the research sample on the basis of their demonstrated appropriate behaviour patterns in the school setting, this result substantiates the inclusion of these subjects.

The TRF Problem scales to reach significance at the required $p < .01$ level were the Thought Problems [$t(34) = -3.25$, $p < .01$], Aggressive Behaviour [$t(34) = -3.02$, $p < .01$] and Externalizing [$t(34) = -2.94$, $p < .01$] scales. The negative direction of these significant $t$-statistics indicated that these subjects were,
Table 7.5  Comparison group raw score means for the TRF adaptive functioning and problem scales compared with normative data for the TRF nonreferred sample of boys 5-11 years

<table>
<thead>
<tr>
<th>TRF Scales</th>
<th>Comparison Group n=35</th>
<th>TRF Non referred Sample n=334</th>
<th>t^a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN</td>
<td>SE</td>
<td>MEAN</td>
</tr>
<tr>
<td><strong>Adaptive Scale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>2.67</td>
<td>.11</td>
<td>3.20</td>
</tr>
<tr>
<td>Working Hard</td>
<td>3.43</td>
<td>.20</td>
<td>4.10</td>
</tr>
<tr>
<td>Behaving Appropriately</td>
<td>4.26</td>
<td>.17</td>
<td>4.30</td>
</tr>
<tr>
<td>Learning</td>
<td>3.66</td>
<td>.17</td>
<td>4.50</td>
</tr>
<tr>
<td>Happy</td>
<td>4.14</td>
<td>.14</td>
<td>4.60</td>
</tr>
<tr>
<td>Total Adaptive^1</td>
<td>15.49</td>
<td>.55</td>
<td>17.50</td>
</tr>
<tr>
<td><strong>Problem Scale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>2.83</td>
<td>.47</td>
<td>1.80</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>.26</td>
<td>.11</td>
<td>.50</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>3.54</td>
<td>.60</td>
<td>3.20</td>
</tr>
<tr>
<td>Social Problems</td>
<td>1.94</td>
<td>.43</td>
<td>1.80</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>.14</td>
<td>.08</td>
<td>.40</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>9.20</td>
<td>1.27</td>
<td>8.70</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>.83</td>
<td>.23</td>
<td>1.30</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>3.43</td>
<td>.85</td>
<td>6.00</td>
</tr>
<tr>
<td>Internalizing^2</td>
<td>6.40</td>
<td>.95</td>
<td>5.30</td>
</tr>
<tr>
<td>Externalizing^3</td>
<td>4.26</td>
<td>1.00</td>
<td>7.20</td>
</tr>
<tr>
<td>Total Problems^4</td>
<td>21.69</td>
<td>2.80</td>
<td>23.50</td>
</tr>
</tbody>
</table>

^a t(34)

* p<.01.  ** p<.001.

^1 sum of Working Hard, Behaving Appropriately, Learning, Happy
^2 sum of Withdrawn, Somatic Complaints, Anxious/Depressed
^3 sum of Delinquent Behaviour, Aggressive Behaviour
^4 sum of all scored problem items

on average, rated as significantly less deviant than the normative sample on the above mentioned scales. Thus, according to their class teachers, this group comprised subjects who lacked application to their work. However, they did exhibit age appropriate behaviour patterns in the school setting commensurate with those reported for the designated population of nonreferred boys. Indeed, class teachers rated their behaviour as significantly less problematic than the designated comparison population on a majority of syndrome scales.

7.4 Informant Ratings of Children's Behaviour

Soliciting ratings from informants with whom the child enjoys a significant relationship provides us with an overview of a child's behaviour. Well established behaviour patterns are reported by a variety of informants over a variety of settings. Whether viewed as healthy or problematic, these personal behavioural repertoires are an individual's behavioural modus operandi. Indeed, the informant is an interaction partner who is part of a social network, enjoying numerous, varied relationships. These social encounters serve as comparisons when objective behavioural information is delivered about any one individual. Such is the nature of the relationship for both caregivers and teachers, as significant others, with any one child. The results reported seek to address both these issues. The primary caregiver and class teacher, as the child's putative significant others, are the informants of choice.

7.4.1 Cross Informant Agreement or Discrepancy?

The theme of cross informant agreement in reporting children's behaviour
contributes significantly to our knowledge regarding the nature and severity of children's behavioural problems. Cross informant discrepancies in the reporting of children's problematic behaviours may be indicative of the situational specificity of some reported behaviours. Conversely, cross informant agreement in the reporting of behaviour signifies the generalisability of behaviours across settings and interaction partners.

The present study addresses the theme of cross informant agreement in behavioural reporting using direct comparisons of primary caregiver and class teacher ratings for each subject on a group-wise basis. The instrument used to elicit caregivers' behavioural ratings was the CBCL/4-18 (Achenbach, 1991a). The TRF (Achenbach, 1991b) provided the class teacher ratings. The eight cross informant syndrome scales, together with the Internalizing, Externalizing and Total Problem scales assigned to both the CBCL/4-18 and TRF facilitate this direct comparison. Differences between the CBCL/4-18 Total Competence and TRF Total Adaptive scores, as well as the eight cross informant syndrome scales, Internalizing, Externalizing and Total Problem scales assigned to both the CBCL/4-18 and TRF were statistically tested using the paired t-test for related samples. Results are reported for both the study and comparison groups.

The Study Group

The t-statistic, testing the mean difference between caregivers' Total Competence ratings and class teachers' Total Adaptive ratings (referred to as Total Competence/Adaptive in Table 7.6) was observed to be significantly different from zero \(t(34) = 8.56, p < .001\) for the study group. The positive
Table 7.6  Paired t-tests for related samples testing study group raw score means on scales assigned to both the CBCL/4-18 and TRF

<table>
<thead>
<tr>
<th>CBCL/4-18 and TRF Scales</th>
<th>MEAN (^a)</th>
<th>SD</th>
<th>SE</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence / Adaptive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Competence/Adaptive(^1)</td>
<td>5.46</td>
<td>3.77</td>
<td>.64</td>
<td>8.56(^*)</td>
</tr>
<tr>
<td>Problem Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>.46</td>
<td>5.06</td>
<td>.86</td>
<td>.53</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>2.17</td>
<td>3.02</td>
<td>.51</td>
<td>4.26(^*)</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>1.03</td>
<td>7.15</td>
<td>1.21</td>
<td>.85</td>
</tr>
<tr>
<td>Social Problems</td>
<td>-3.46</td>
<td>3.67</td>
<td>.62</td>
<td>-5.57(^*)</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>1.14</td>
<td>3.85</td>
<td>.65</td>
<td>1.76</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>-14.66</td>
<td>6.69</td>
<td>1.13</td>
<td>-12.96(^*)</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>-3.44</td>
<td>4.47</td>
<td>.76</td>
<td>-.45</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>-8.94</td>
<td>11.74</td>
<td>1.98</td>
<td>-4.51(^*)</td>
</tr>
<tr>
<td>Internalizing(^2)</td>
<td>3.57</td>
<td>12.67</td>
<td>2.14</td>
<td>1.67</td>
</tr>
<tr>
<td>Externalizing(^3)</td>
<td>-9.29</td>
<td>14.99</td>
<td>2.53</td>
<td>-3.66(^*)</td>
</tr>
<tr>
<td>Total Problems(^4)</td>
<td>-16.89</td>
<td>36.91</td>
<td>6.24</td>
<td>-2.71</td>
</tr>
</tbody>
</table>

\(n = 35\)  \(t(34)\)

\(^*\) \(p < .001.\)

\(^a\) mean difference

\(^1\) Total Competence (sum of Activities, Social, School) with Total Adaptive (sum of Working Hard, Behaving Appropriately, Learning, Happy)
\(^2\) sum of Withdrawn, Somatic Complaints, Anxious/Depressed
\(^3\) sum of Delinquent Behaviour, Aggressive Behaviour
\(^4\) sum of all scored problem items
direction of this statistically significant t-statistic indicated that for study group subjects the Total Competence rating was, on average, significantly higher than the Total Adaptive rating. Thus, when comparing caregiver and teacher ratings of study group subjects' competencies and adaptive behaviour, teachers' ratings indicated that these subjects' were significantly less adaptive at school.

Paired t-tests, calculated for the eight syndrome scales and the Internalizing, Externalizing and Total Problems scales, yielded the following significant t-statistics at the designated p < .01 level: Somatic Complaints [t(34) = 4.26, p < .001], Social Problems [t(34) = -5.57, p < .001], Attention Problems [t(34) = -12.96, p < .001], Aggressive Behaviour [t(34) = -4.51, p < .001] and Externalizing [t(34) = -3.66, p < .001]. The negative direction of significant t-statistics for the Social Problems, Attention Problems, Aggressive Behaviour and Externalizing scales showed that class teachers' ratings were, on average, significantly higher than ratings made by caregivers for these scales. This indicated that class teachers perceived study group subjects' behaviour to be significantly more problematic on these scales than did the primary caregivers.

The positive direction of the t-statistic for the Somatic Complaints scale showed that ratings made by primary caregivers were, on average, higher than class teacher ratings. Study group subjects were thus perceived by their caregivers to exhibit significantly higher levels of somatic symptomatology at home. Primary caregivers are said to enjoy a closer relationship with their offspring than do class teachers with their pupils. In view of this these respondents are thus more likely to be aware of their children's varied somatic complaints.
The Comparison Group

As indicated in Table 7.7, the t-statistic testing the difference between the CBCL/4-18 Total Competence and TRF Total Adaptive rating for the comparison group, was found to be significantly different from zero \[ t(34) = 2.76, p < .01 \]. The positive direction of this t-statistic indicates that the Total Competence rating made by the primary caregivers of comparison group subjects was, on average, significantly higher than the Total Adaptive rating made by their class teachers. A similar result was observed for study group subjects. It would appear that both groups are perceived to exhibit a greater degree of adaptive behaviour in the home setting irrespective of their behavioural status in the school setting.

\( t \)-statistics, calculated for comparison group data on the 11 problem scales assigned to both the CBCL/4-18 and TRF, yielded the following significant values at the designated \( p < .01 \) level: Somatic Complaints \[ t(34) = 3.18, p < .01 \], Thought Problems \[ t(34) = 3.32, p < .01 \], Attention Problems \[ t(34) = -4.25, p < .001 \], Delinquent Behaviour \[ t(34) = 3.66, p < .001 \], Aggressive Behaviour \[ t(34) = 4.11, p < .001 \], Externalizing \[ t(34) = 4.61, p < .001 \] and Total Problems \[ t(34) = 2.75, p < .01 \]. The positive direction observed for the Somatic Complaints, Thought Problems, Delinquent Behaviour, Aggressive Behaviour, Externalizing and Total Problems scales, indicated that caregivers' ratings of comparison subjects' problem behaviours were, on average, significantly higher than those made by the class teachers. It would appear these problem behaviours are situation specific for comparison group subjects or not evident to the extent where they are perceived as problematic at school.
Table 7.7  Paired t-tests for related samples testing comparison group raw score means on scales assigned to both the CBCL/4-18 and TRF

<table>
<thead>
<tr>
<th>CBCL/4-18 and TRF Scales</th>
<th>MEAN&lt;sup&gt;a&lt;/sup&gt;</th>
<th>SD</th>
<th>SE</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competence / Adaptive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Competence/Adaptive&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1.82</td>
<td>3.85</td>
<td>.66</td>
<td>2.76&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Problem Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>.40</td>
<td>3.36</td>
<td>.57</td>
<td>.70</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>1.09</td>
<td>2.02</td>
<td>.34</td>
<td>3.18&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>1.00</td>
<td>3.87</td>
<td>.66</td>
<td>1.53</td>
</tr>
<tr>
<td>Social Problems</td>
<td>.63</td>
<td>2.07</td>
<td>.35</td>
<td>1.79</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>.71</td>
<td>1.27</td>
<td>.22</td>
<td>3.32&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>-4.66</td>
<td>6.49</td>
<td>1.10</td>
<td>-4.25&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>1.09</td>
<td>1.76</td>
<td>.30</td>
<td>3.66&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>4.34</td>
<td>6.24</td>
<td>1.06</td>
<td>4.11&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Internalizing&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2.43</td>
<td>7.36</td>
<td>1.24</td>
<td>1.95</td>
</tr>
<tr>
<td>Externalizing&lt;sup&gt;3&lt;/sup&gt;</td>
<td>5.43</td>
<td>6.97</td>
<td>1.18</td>
<td>4.61&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Total Problems&lt;sup&gt;4&lt;/sup&gt;</td>
<td>8.89</td>
<td>19.10</td>
<td>3.23</td>
<td>2.75&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

n = 35  t(34)

<sup>*</sup>p<.01.  **p<.001.

<sup>a</sup> mean difference

<sup>1</sup> Total Competence (sum of Activities, Social, School) with Total Adaptive (sum of Working Hard, Behaving Appropriately, Learning, Happy)
<sup>2</sup> sum of Withdrawn, Somatic Complaints, Anxious/Depressed
<sup>3</sup> sum of Delinquent Behaviour, Aggressive Behaviour
<sup>4</sup> sum of all scored problem items
The Attention Problems scale however, was observed to be the exception. The negative direction of this \( t \)-statistic indicated that class teacher ratings of *comparison subjects'* attending behaviours were significantly higher, on average, than those made by caregivers. Attending behaviour is integral to the learning process and could be considered situation specific. It is particularly pertinent to the school setting. Consequently, the expectations of these *putative significant others* regarding this behaviour do not seem extraordinary. The reported results suggested that these subjects, chosen because of their adaptive behaviour in the school setting, exhibit situation specific problem behaviours.

**Cross Informant \( Q \) Correlations**

Statistically testing the cross informant \( Q \) correlations generated by the *Cross Informant Program for the CBCL/4-18, YSR and TRF* (Achenbach, 1991d) is an alternate method used to ascertain the extent of caregiver-teacher agreement regarding subjects' problem behaviours. The \( Q \) correlation differs from the more familiar \( r \) correlation in that it signifies the strength of association between the responses made by two individuals over numerous variables, rather than two variables scored for numerous individuals. As in the case of \( r \) correlations the magnitude of \( Q \) correlations range from \( r = -1.00 \) through to \( r = 1.00 \). A \( Q \) correlation of \( r = .00 \) is interpreted as no association between the patterns of scores obtained from the two informants. Because \( Q \) correlation values reflect similarity between patterns of scores, rather than the absolute magnitude of scores, they are unaffected by the tendency of one informant to assign generally higher scores than the other.
The *Cross Informant Program for the CBCL/4-18, YSR and TRF* generates two types of \( Q \) correlations for each subject, an item \( Q \) correlation and a scale \( Q \) correlation. The item \( Q \) correlation represents the extent of informant agreement on the 89 problem items assigned to both the CBCL/4-18 and TRF. The item \( Q \) correlation, calculated between the item responses on two checklists completed for one individual, expresses the degree to which the pattern of scores on one checklist is similar to the pattern of scores observed on the other (Achenbach, 1991c). To compute the item \( Q \) correlation, the *Cross Informant Program for the CBCL/4-18, YSR and TRF* applies the Pearson Product Moment correlation formula to the 89 problem item scores obtained from a particular pair of informants. The scale \( Q \) correlation represents the extent of informant agreement on the eight cross informant syndrome scales assigned to these instruments. The scale \( Q \) correlation is calculated using the assigned \( T \)-scores for these scales. Similarly, the Pearson Product Moment correlation formula is applied to the \( T \)-scores calculated for the eight cross informant syndrome scales to achieve the scale \( Q \) correlation.

The results below display paired \( t \)-tests, testing for *study and comparison group* differences on item and scale \( Q \) correlations, calculated between CBCL/4-18 and TRF data (see Table 7.8). Cross informant \( Q \) correlation values for a given subject reflect the similarity between patterns of scores on these instruments. Testing for group trends provides evidence as to whether group trends exist for the observed similarities between patterns of scores. The results reported indicate that, for both item and scale \( Q \) correlations, the average differences between *study and comparison group* values were observed to be
significantly different from zero. The average difference observed between study and comparison group values for item Q correlations was found to be statistically significant in a positive direction \( t(34) = 6.30, p < .001 \). The positive direction of this \( t \)-statistic indicated that, for the study group, the mean observed similarities between patterns of item ratings on the CBCL/4-18 and TRF were significantly greater than those observed for the comparison group.

The average difference observed between study and comparison group values for scale Q correlations were also found to be statistically significant in a positive direction \( t(34) = 3.46, p < .001 \). Again, the mean observed similarities between patterns of scores for the eight cross informant syndrome scales assigned to both the CBCL/4-18 and TRF were significantly greater for the study group than those observed for the comparison group.

### Table 7.8

<table>
<thead>
<tr>
<th>Q correlations</th>
<th>MEAN(^a)</th>
<th>SD</th>
<th>SE</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>.20</td>
<td>.18</td>
<td>.03</td>
<td>6.30(^*)</td>
</tr>
<tr>
<td>Scale</td>
<td>.32</td>
<td>.51</td>
<td>.09</td>
<td>3.46(^*)</td>
</tr>
</tbody>
</table>

\( n = 35 \quad t(34) \)

\(^*p < .001.\)

\(^a\) mean difference
An inspection of these results indicated that, when compared with the *comparison group*, a greater degree of cross informant agreement was observed for the *study group*. This signified the greater generalisability of *study group subjects'* problematic behaviour across settings and interaction partners. It would appear that *comparison group subjects'* behaviour tended to be more situation specific with caregivers rating more critically than class teachers.

### 7.4.2 Group Differences in Informant Ratings

Subjects admitted to this study were subjectively selected by class teachers to represent a *study group* of subjects identified as behaviour disordered and a *comparison group* of subjects exhibiting adaptive behaviour. Statistically significant differences on standard measures used to classify the groups would thus confirm empirically the allocation of subjects to their respective groups.

*Primary Caregiver Ratings*

Primary caregivers' ratings of *study and comparison subjects'* social competence and problem behaviours were statistically tested for group differences using paired *t*-tests for related samples. With the exception of three problem scales: the Withdrawn, Somatic Complaints and Sex Problems scales, all other CBCL/4-18 scales reached statistical significance at the required *p* < .01 level (see Table 7.9). Statistically significant negative *t*-statistics were observed for all the CBCL/4-18 Competence scales indicating that, on average, *comparison group subjects* were rated as significantly more competent socially than were the *study group subjects*. Moreover, all significant *t*-statistics obtained for CBCL/4-18
Table 7.9  Paired t-tests for related samples testing study and comparison group differences on CBCL/4-18 competence and problem scales

<table>
<thead>
<tr>
<th>CBCL/4-18 Scales</th>
<th>MEAN(^a)</th>
<th>SD</th>
<th>SE</th>
<th>(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competence Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td>-1.13</td>
<td>2.05</td>
<td>.35</td>
<td>-3.23(^*)</td>
</tr>
<tr>
<td>Social</td>
<td>-1.36</td>
<td>2.41</td>
<td>.41</td>
<td>-3.34(^*)</td>
</tr>
<tr>
<td>School</td>
<td>-1.17</td>
<td>1.01</td>
<td>.17</td>
<td>-6.88(^**)</td>
</tr>
<tr>
<td>Total Competence(^1)</td>
<td>-3.79</td>
<td>3.61</td>
<td>.62</td>
<td>-6.13(^**)</td>
</tr>
<tr>
<td><strong>Problem Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>1.37</td>
<td>4.28</td>
<td>.72</td>
<td>1.89</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>1.69</td>
<td>4.28</td>
<td>.72</td>
<td>2.33</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>3.91</td>
<td>6.93</td>
<td>1.17</td>
<td>3.34(^*)</td>
</tr>
<tr>
<td>Social Problems</td>
<td>3.06</td>
<td>3.74</td>
<td>.63</td>
<td>4.83(^**)</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>2.09</td>
<td>3.65</td>
<td>.62</td>
<td>3.38(^**)</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>5.00</td>
<td>5.12</td>
<td>.87</td>
<td>5.78(^**)</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>5.71</td>
<td>4.03</td>
<td>.68</td>
<td>8.40(^**)</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>13.94</td>
<td>8.52</td>
<td>1.44</td>
<td>9.68(^**)</td>
</tr>
<tr>
<td>Sex Problems</td>
<td>.29</td>
<td>1.67</td>
<td>.28</td>
<td>1.01</td>
</tr>
<tr>
<td>Internalizing(^2)</td>
<td>6.57</td>
<td>12.76</td>
<td>2.16</td>
<td>3.05(^*)</td>
</tr>
<tr>
<td>Externalizing(^3)</td>
<td>19.66</td>
<td>11.63</td>
<td>1.97</td>
<td>10.00(^**)</td>
</tr>
<tr>
<td>Total Problems(^4)</td>
<td>38.80</td>
<td>32.32</td>
<td>5.46</td>
<td>7.10(^**)</td>
</tr>
</tbody>
</table>

\(n = 35\)  \(t(34)\)

\(^*p<.01.\)  \(^**p<.001.\)

\(^a\) mean difference

\(^1\) sum of Activities, Social, School
\(^2\) sum of Withdrawn, Somatic Complaints, Anxious/Depressed
\(^3\) sum of Delinquent Behaviour, Aggressive Behaviour
\(^4\) sum of all scored problem items
problem scales were observed to be positive indicating that caregiver ratings of study group subjects' problem behaviours were, on average, higher than similar caregiver ratings for the comparison group subjects. As expected, study group subjects' behaviour was thus, on average, considered less socially competent and more problematic by their caregivers than the social competence and problem behaviours reported for the comparison group by their respective caregivers.

**Class Teacher Ratings**

Class teachers' ratings of study and comparison subjects' adaptive functioning and problem behaviours were also statistically tested using the paired t-test for related samples (see Table 7.10). The negative direction of all t-statistics calculated for the TRF Adaptive Functioning scales indicated that class teachers have, on average, rated the comparison group higher than the study group on these scales. Thus, on average, comparison group subjects were considered to be more adaptive than study group subjects in the school setting. However, the Academic Performance scale failed to reach statistical significance at the designated $p < .01$ level. This result was expected as study and comparison subjects were matched on teacher ratings of academic performance thus eliminating inter-group variation.

With the exception of the Withdrawn and Somatic Complaints scales, the t-statistics for all other TRF Problem scales reached statistical significance at the $p < .001$ level. Thus, a significant difference between mean class teacher ratings for the study and comparison groups on the Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour, Aggressive Behaviour, Internalizing, Externalizing and Total Problems scales was indicated.
Table 7.10  Paired t-tests for related samples testing study and comparison group differences on TRF adaptive functioning and problem scales

<table>
<thead>
<tr>
<th>TRF Scales</th>
<th>MEAN*</th>
<th>SD</th>
<th>SE</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adaptive Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>-2.40</td>
<td>6.74</td>
<td>1.14</td>
<td>-2.11</td>
</tr>
<tr>
<td>Working Hard</td>
<td>-1.66</td>
<td>1.43</td>
<td>.24</td>
<td>-6.84*</td>
</tr>
<tr>
<td>Behaving Appropriately</td>
<td>-2.71</td>
<td>1.32</td>
<td>.22</td>
<td>-12.18*</td>
</tr>
<tr>
<td>Learning</td>
<td>-1.40</td>
<td>1.35</td>
<td>.23</td>
<td>-6.11*</td>
</tr>
<tr>
<td>Happy</td>
<td>-1.49</td>
<td>1.31</td>
<td>.22</td>
<td>-6.69*</td>
</tr>
<tr>
<td>Total Adaptive(^1)</td>
<td>-7.26</td>
<td>4.55</td>
<td>.77</td>
<td>-9.43*</td>
</tr>
<tr>
<td><strong>Problem Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>1.31</td>
<td>4.06</td>
<td>.69</td>
<td>1.92</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>.60</td>
<td>2.08</td>
<td>.35</td>
<td>1.71</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>3.89</td>
<td>5.28</td>
<td>.89</td>
<td>4.35*</td>
</tr>
<tr>
<td>Social Problems</td>
<td>7.14</td>
<td>5.48</td>
<td>.93</td>
<td>7.71*</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>1.66</td>
<td>2.31</td>
<td>.39</td>
<td>4.24*</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>15.00</td>
<td>10.30</td>
<td>1.74</td>
<td>8.61*</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>7.14</td>
<td>3.07</td>
<td>.52</td>
<td>13.77*</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>27.23</td>
<td>10.83</td>
<td>1.83</td>
<td>14.87*</td>
</tr>
<tr>
<td>Internalizing(^2)</td>
<td>5.43</td>
<td>9.04</td>
<td>1.53</td>
<td>3.55*</td>
</tr>
<tr>
<td>Externalizing(^3)</td>
<td>34.37</td>
<td>12.70</td>
<td>2.15</td>
<td>16.01*</td>
</tr>
<tr>
<td>Total Problems(^4)</td>
<td>64.57</td>
<td>28.83</td>
<td>4.87</td>
<td>13.25*</td>
</tr>
</tbody>
</table>

\(n = 35\)  \(t(34)\)

\* \(p<.001\).

\(^a\) mean difference

\(^1\) sum of Working Hard, Behaving Appropriately, Learning, Happy

\(^2\) sum of Withdrawn, Somatic Complaints, Anxious/Depressed

\(^3\) sum of Delinquent Behaviour, Aggressive Behaviour

\(^4\) sum of all scored problem items
The positive direction of these $t$-statistics suggested that teachers, on average, rated *study group subjects* higher than the *comparison group subjects* on these scales.

Worthy of comment is the fact that the average differences in values for the Withdrawn and Somatic Complaints scales were not significantly different from zero. It would appear that according to their class teachers, the entire sample displayed similar levels of introspection or withdrawal. Thus, commensurate with previously outlined expectations, both primary caregiver and class teacher ratings of subjects' behaviour on parallel forms of a standardised measure indicated that the behaviour of the *study group subjects* was considered significantly more problematic than that of the *comparison group subjects*. In addition, as a group, *study group subjects* were rated as less socially competent and adaptive when compared to their *comparison group* peers. Behavioural classification and validation of this subjectively selected sample was thus achieved through statistical comparison.

Through normative comparisons with the age appropriate CBCL/4-18 and TRF demographically matched clinically referred and nonreferred, normal samples, it was established that the group profile of behavioural characteristics reported for the *study group* was commensurate with that reported for Achenbach's (1991a; 1991b) clinically referred sample. As a group, the *comparison subjects* also met the behavioural inclusion criteria. Indeed, group profiles of behavioural reports provided by primary caregivers and class teachers clearly differentiated the groups according to the subjective selection criteria. Furthermore, an inspection of cross informant data indicated that problem
behaviours exhibited by the *study group* tended to generalise across settings, whilst those reported for the *comparison group* appeared to be situation specific. This empirical confirmation of sampling methodology thus enhances the generalisability of the reported results.

### 7.5 Multidimensional Self Concept

Conceptually, it is proposed that an individual's behaviour does not reflect the valency of that individual's self concept and conversely that knowledge of an individual's self concept is not useful in predicting behavioural status. This proposition was tested using the SDQ-1 (Marsh, 1988). Accordingly, the individual's self concept is measured on seven Individual scales and from these Total scales designating broad areas of an individual's social life are calculated. Using the data generated by this pair-wise category matched sample of subjects selected on the basis of presence/absence of behavioural disturbance in the school setting, the proposition that an individual's behaviour does not reflect the valency of that individual's self concept was tested empirically. That knowledge of an individual's self concept is not useful in predicting behavioural status will be treated comprehensively in the next chapter, Chapter 8. However, as with the behaviour construct, establishing the representativeness of the sample as regards subjects' self concepts would also enhance the credibility of the results obtained from this sample. This is once again achieved comparatively using the standardisation data published for the SDQ-1 as the designated population parameters for this age group of boys.
7.5.1 Population Parameters for the Multidimensional Self Concept Construct

Normative data derived from the SDQ-1 standardisation sample (Marsh, 1988) provided the most appropriate population parameters for the self concept construct. The SDQ-1 standardisation sample comprised 3,562 primary school children from grades 2-6 attending schools in the Sydney metropolitan area. Although no recognised sampling method was employed, Marsh (1988) reports that care was taken to ensure that the standardisation sample was representative of the population of Sydney school children. Schools from working class, middle class and upper class areas; public and Catholic schools; and single sex and co-educational schools were represented.

This standardisation sample of 3,562 children provided the normative data for the seven SDQ-1 Individual scales: Physical Abilities, Physical Appearance, Peer Relations, Parent Relations, Reading, Mathematics and General School and the three SDQ-1 Total scales: Total Nonacademic, Total Academic and Total Self. The three Total scales are calculated using scores derived from the above individual scales. Thus, the Total Nonacademic score is the mean of the sum of the Physical Abilities, Physical Appearance, Peer Relations, Parent Relations scales. The Total Academic score is the mean of the sum of the Reading, Mathematics and General School scales. The Total Self score is the mean of the sum of the Total Nonacademic and Total Academic scores. Normative data for the General Self scale, a late inclusion, was provided by 739 children predominantly in grade five. Comparisons can consequently only be made for grade five and six children and these should be made with extreme caution.
In addition to the normative data provided for the SDQ-1 total standardisation sample of 3,562 children, Marsh (1988) provides normative data for age/sex sub-samples of the total sample. Separate tables are included for the sub-samples: males, grades 2-4; females, grades 2-4; males, grades 5-6; and females, grades 5-6. Comparisons may be made using normative data generated by the total standardisation sample or that generated by the appropriate sub-sample according to age/sex prerequisites. The use of normative data generated by the total SDQ-1 standardisation sample was considered less appropriate for the purposes of this study because of the possible introduction of unwanted age/sex effects.

7.5.2 Comparison of Population Parameters and Sample Statistics for the Multidimensional Self Concept Construct

The SDQ-1 sub-samples of males, grades 2-4 and males, grades 5-6 were selected as the reference populations. These tables facilitate direct comparison between the SDQ-1 standardisation sample and the research sample by providing specific population parameters for the designated age/sex groups included in the research sample. The difference between sample means and the means for these designated populations were statistically calculated for these sub-groups on all SDQ-1 Individual and Total scales using the appropriate t-test procedure.

The Study Group

Results obtained for the study group on the SDQ-1 Individual and Total scales were divided into two sub-samples according to subjects’ grade level.
Table 7.11  A comparison of the SDQ-1 individual and total scale raw score means for
the grade 4 study group sub-sample and normative data for the SDQ-1
sub-sample of males, grades 2-4

<table>
<thead>
<tr>
<th>SDQ-1 Scales</th>
<th>Grade 4 Study Group n=14</th>
<th>SDQ-1 Sample Males Grades 2-4 n=388</th>
<th>t^b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN</td>
<td>SE</td>
<td>MEAN</td>
</tr>
<tr>
<td>Individual Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Ability</td>
<td>35.43</td>
<td>1.37</td>
<td>35.13</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>29.14</td>
<td>2.30</td>
<td>29.20</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>31.14</td>
<td>1.90</td>
<td>31.97</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>33.36</td>
<td>1.95</td>
<td>35.82</td>
</tr>
<tr>
<td>Reading</td>
<td>30.79</td>
<td>2.45</td>
<td>31.56</td>
</tr>
<tr>
<td>Mathematics</td>
<td>28.50</td>
<td>2.59</td>
<td>30.92</td>
</tr>
<tr>
<td>General School</td>
<td>27.71</td>
<td>2.30</td>
<td>30.29</td>
</tr>
<tr>
<td>General Self^1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Nonacademic^2</td>
<td>32.27</td>
<td>1.47</td>
<td>33.16</td>
</tr>
<tr>
<td>Total Academic^3</td>
<td>29.00</td>
<td>2.18</td>
<td>30.93</td>
</tr>
<tr>
<td>Total Self^4</td>
<td>30.63</td>
<td>1.71</td>
<td>32.29</td>
</tr>
</tbody>
</table>

b^t(13)

1 no normative data for SDQ-1 grades 2-4 sub-sample
2 mean of Physical Abilities, Physical Appearance, Peer Relations, Parent Relations
3 mean of Reading, Mathematics, General School
4 mean of total Nonacademic, Total Academic

Note: SDQ-1 normative sub-sample of males, grades 2-4 from Self Description Questionnaire-1: manual and research monograph (p.166) by H.W. Marsh, 1988, San Antonio: The Psychological Corporation.

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Table 7.12  A comparison of the SDQ-1 individual and total scale raw score means for the grade 5 study group sub-sample and normative data for the SDQ-1 sub-sample of males, grades 5-6

<table>
<thead>
<tr>
<th>SDQ-1 Scales</th>
<th>Grade 5 Study Group n=21</th>
<th>SDQ-1 Sample Males Grades 5-6 n=1,583</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Individual Scale</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Ability</td>
<td>35.14</td>
<td>.87</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>25.52</td>
<td>1.68</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>29.29</td>
<td>1.52</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>34.38</td>
<td>1.18</td>
</tr>
<tr>
<td>Reading</td>
<td>30.14</td>
<td>2.04</td>
</tr>
<tr>
<td>Mathematics</td>
<td>25.05</td>
<td>1.89</td>
</tr>
<tr>
<td>General School</td>
<td>26.29</td>
<td>.92</td>
</tr>
<tr>
<td>General Self^1</td>
<td>30.10</td>
<td>1.25</td>
</tr>
<tr>
<td><strong>Total Scale</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Nonacademic^2</td>
<td>31.08</td>
<td>.88</td>
</tr>
<tr>
<td>Total Academic^3</td>
<td>27.16</td>
<td>1.14</td>
</tr>
<tr>
<td>Total Self^4</td>
<td>29.12</td>
<td>.89</td>
</tr>
</tbody>
</table>

\[ t^b(20) \]

1 no normative data for SDQ-1 grades 2-4 sub-sample
2 mean of Physical Abilities, Physical Appearance, Peer Relations, Parent Relations
3 mean of Reading, Mathematics, General School
4 mean of total Nonacademic, Total Academic

Note: SDQ-1 normative sub-sample of males, grades 5-6 from *Self Description Questionnaire-1: manual and research monograph* (p.168) by H.W. Marsh, 1988, San Antonio: The Psychological Corporation.

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Thus, the sub-sample of grade four study group subjects was compared with the SDQ-1 sub-sample of males, grades 2-4 (see Table 7.11) and the sub-sample of grade five study group subjects was compared with the SDQ-1 sub-sample of males, grades 5-6 (see Table 7.12). These results indicated that, at the designated $p < .01$ level of significance, the multidimensional self concepts of the study group subjects were not significantly different from these reference populations.

**The Comparison Group**

Raw score means for the comparison group sub-samples of grade four and grade five boys, when compared with the SDQ-1 normative sub-samples of males, grades 2-4 and males, grades 5-6, respectively yielded no statistically significant t-statistics on the SDQ-1 Individual and Total scales (see Tables 7.13 and 7.14). This finding indicated that, on average, the comparison group subjects' multidimensional self concepts, as measured by the SDQ-1 scales, paralleled the self concepts reported by their respective reference populations.

**7.5.3 Group Differences in Multidimensional Self Concept**

Study and comparison group differences of raw scores for the SDQ-1 Individual and Total scales were tested using the paired t-test for related measures (see Table 7.15). All t-statistics, calculated to test for differences in group means on these scales, failed to reach statistical significance at the $p < .01$ level. Thus, with respect to reported self concepts, the study and comparison groups may be deemed homogeneous and drawn from one population.
Table 7.13  A comparison of SDQ-1 individual and total scale raw score means for the grade 4 comparison group sub-sample and normative data for the SDQ-1 sub-sample of males, grades 2-4

<table>
<thead>
<tr>
<th>SDQ-1 Scales</th>
<th>Grade 4 Comparison Group n=14</th>
<th>SDQ-1 sample males, Grades 2-4 n=388</th>
<th>$t^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$MEAN$</td>
<td>$SE$</td>
<td>$MEAN$</td>
</tr>
<tr>
<td><strong>Individual Scale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Ability</td>
<td>34.00</td>
<td>1.20</td>
<td>35.13</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>27.00</td>
<td>2.56</td>
<td>29.20</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>30.64</td>
<td>2.20</td>
<td>31.97</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>35.93</td>
<td>.94</td>
<td>35.82</td>
</tr>
<tr>
<td>Reading</td>
<td>30.21</td>
<td>2.17</td>
<td>31.56</td>
</tr>
<tr>
<td>Mathematics</td>
<td>30.36</td>
<td>2.64</td>
<td>30.92</td>
</tr>
<tr>
<td>General School</td>
<td>30.50</td>
<td>2.15</td>
<td>30.29</td>
</tr>
<tr>
<td><strong>Total Scale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Nonacademic</td>
<td>31.89</td>
<td>1.57</td>
<td>33.16</td>
</tr>
<tr>
<td>Total Academic</td>
<td>30.36</td>
<td>2.08</td>
<td>30.93</td>
</tr>
<tr>
<td>Total Self</td>
<td>31.13</td>
<td>1.49</td>
<td>32.29</td>
</tr>
</tbody>
</table>

$^b_t(13)$

1 no normative data for SDQ-1 grades 2-4 sub-sample
2 mean of Physical Abilities, Physical Appearance, Peer Relations, Parent Relations
3 mean of Reading, Mathematics, General School
4 mean of total Nonacademic, Total Academic

Note: SDQ-1 normative sub-sample of males, grades 2-4 from *Self Description Questionnaire-1: manual and research monograph* (p.166) by H.W. Marsh, 1988, San Antonio: The Psychological Corporation.
Table 7.14  A comparison of SDQ-1 individual and total scale raw score means for the grade 5 comparison group sub-sample and normative data for the SDQ-1 sub-sample of males, grades 5-6

<table>
<thead>
<tr>
<th>SDQ-1 Scales</th>
<th>Grade 5 Comparison Group n=21</th>
<th>SDQ-1 Sample Males Grades 5-6 n=1,583</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN  SE</td>
<td>MEAN</td>
</tr>
<tr>
<td><strong>Individual Scale</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Ability</td>
<td>32.81  1.53</td>
<td>34.11</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>26.10  1.58</td>
<td>28.16</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>30.19  1.25</td>
<td>31.42</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>34.90  1.08</td>
<td>35.48</td>
</tr>
<tr>
<td>Reading</td>
<td>29.10  1.81</td>
<td>29.96</td>
</tr>
<tr>
<td>Mathematics</td>
<td>27.52  2.08</td>
<td>29.44</td>
</tr>
<tr>
<td>General School</td>
<td>25.90  1.70</td>
<td>27.85</td>
</tr>
<tr>
<td>General Self(^1)</td>
<td>31.19  1.30</td>
<td>33.45</td>
</tr>
<tr>
<td><strong>Total Scale</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Nonacademic(^2)</td>
<td>31.00  .96</td>
<td>32.39</td>
</tr>
<tr>
<td>Total Academic(^3)</td>
<td>27.51  1.46</td>
<td>29.07</td>
</tr>
<tr>
<td>Total Self(^4)</td>
<td>29.26  1.04</td>
<td>30.96</td>
</tr>
</tbody>
</table>

\(^b\)t(20)

1 no normative data for SDQ-1 grades 2-4 sub-sample
2 mean of Physical Abilities, Physical Appearance, Peer Relations, Parent Relations
3 mean of Reading, Mathematics, General School
4 mean of total Nonacademic, Total Academic

Note: SDQ-1 normative sub-sample of males, grades 5-6 from Self Description Questionnaire-1: manual and research monograph (p.168) by H.W. Marsh, 1988, San Antonio: The Psychological Corporation.
Table 7.15  Paired t-tests for related samples testing study and comparison group differences on SDQ-1 individual and total scales

<table>
<thead>
<tr>
<th>SDQ-1 Scales</th>
<th>MEAN&lt;sup&gt;a&lt;/sup&gt;</th>
<th>SD</th>
<th>SE</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Abilities</td>
<td>1.97</td>
<td>7.35</td>
<td>1.24</td>
<td>1.59</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>.51</td>
<td>12.01</td>
<td>2.03</td>
<td>.25</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.34</td>
<td>9.85</td>
<td>1.67</td>
<td>-.21</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>-1.34</td>
<td>8.14</td>
<td>1.38</td>
<td>-.98</td>
</tr>
<tr>
<td>Reading</td>
<td>.86</td>
<td>10.59</td>
<td>1.79</td>
<td>.48</td>
</tr>
<tr>
<td>Mathematics</td>
<td>-2.23</td>
<td>13.32</td>
<td>2.25</td>
<td>-.99</td>
</tr>
<tr>
<td>General School</td>
<td>-.89</td>
<td>8.99</td>
<td>1.52</td>
<td>-.58</td>
</tr>
<tr>
<td>General Self&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-.94</td>
<td>9.03</td>
<td>1.53</td>
<td>-.62</td>
</tr>
<tr>
<td><strong>Total Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Nonacademic&lt;sup&gt;2&lt;/sup&gt;</td>
<td>.20</td>
<td>7.27</td>
<td>1.23</td>
<td>.16</td>
</tr>
<tr>
<td>Total Academic&lt;sup&gt;3&lt;/sup&gt;</td>
<td>-.75</td>
<td>8.66</td>
<td>1.46</td>
<td>-.51</td>
</tr>
<tr>
<td>Total Self&lt;sup&gt;4&lt;/sup&gt;</td>
<td>-.28</td>
<td>7.35</td>
<td>1.24</td>
<td>-.22</td>
</tr>
</tbody>
</table>

n = 35  \( t(34) \)

<sup>a</sup> mean difference

<sup>1</sup> no normative data for SDQ-1 grades 2-4 sub-sample
<sup>2</sup> mean of Physical Abilities, Physical Appearance, Peer Relations, Parent Relations
<sup>3</sup> mean of Reading, Mathematics, General School
<sup>4</sup> mean of total Nonacademic, Total Academic
On the strength of these results the research hypothesis, *Hypothesis I* which stated that:

*A significant difference exists between mean levels of self concept dimensions reported by the behaviour disordered group and mean levels of self concept dimensions reported by the comparison group of regular children, as measured by the SDQ-1 Individual and Total scales.*

remains unsupported.

It was thus concluded that self concepts reported by the *study and comparison group subjects*, using the SDQ-1 instrument, did not significantly differ irrespective of their behavioural status. Indeed, these subjects' reported self concepts did not differ significantly from each other or from the population described by the designated population parameters.

### 7.6 Self-Other Reporting and Self Appraisal

The congruence between subjects' self perceptions and *others' perceptions* of that subject has been tested empirically using comparisons of *self-other reporting*. Subjects' multidimensional self concepts, representing *self* reporting, were compared with both primary caregiver and class teacher ratings, both representing *others' ratings*. These caregivers and teachers, as putative significant *others*, were asked to objectively communicate their observations of subjects' typical behaviour patterns through standardised rating instruments specifically designed for the purpose. Self perceptions were communicated by the subjects
through another standardised instrument measuring multidimensional self concepts. Congruence in reporting could then be ascertained empirically using correlational procedures.

7.6.1 Children Exhibiting Problematic Behaviours

Children exhibiting problematic behaviours are typically identified because of the difficulties they experience with the putative significant others with whom they share their environment. Such discord, over time, could reduce the credibility of these interaction partners in the eyes of children exhibiting problematic behaviours. The salience of caregivers' and teachers' opinions regarding subjects' social competence and adaptive behaviour was tested empirically by inspecting the congruence between informant ratings supplied by these informants and self report. The congruence between informant ratings and self report was statistically measured using the Pearson product moment coefficient of correlation.

Self-Caregiver Ratings

SDQ-1 Individual and Total scales, representing subjects' multidimensional self concepts, were correlated with the CBCL/4-18 Competence and Problem scales to provide self-caregiver ratings. All correlation coefficients for study group data, between the SDQ-1 Individual and Total scales and the CBCL/4-18 Competence and Problem scales, failed to reach statistical significance at the designated $p<.01$ level, using a one-tailed test of significance (see Table 7.16).
### Table 7.16
Correlations between CBCL/4-18 competence and problem scales and SDQ-1 individual and total scales for the study group

<table>
<thead>
<tr>
<th>CBCL/4-18 Scales</th>
<th>SDQ-1 Individual Scales</th>
<th>SDQ-1 Total Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phys</td>
<td>App</td>
</tr>
<tr>
<td>Activities</td>
<td>.12</td>
<td>0</td>
</tr>
<tr>
<td>Social</td>
<td>.14</td>
<td>-.07</td>
</tr>
<tr>
<td>School</td>
<td>.14</td>
<td>.26</td>
</tr>
<tr>
<td>Total Competence</td>
<td>.17</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Problem Scale</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>-.11</td>
<td>.25</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>-.37</td>
<td>-.09</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>-.39</td>
<td>-.06</td>
</tr>
<tr>
<td>Social Problems</td>
<td>-.31</td>
<td>-.16</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>-.24</td>
<td>.08</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>-.18</td>
<td>.14</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>-.09</td>
<td>-.04</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>-.12</td>
<td>-.08</td>
</tr>
<tr>
<td>Sex Problems</td>
<td>-.05</td>
<td>.10</td>
</tr>
<tr>
<td>Internalizing²</td>
<td>-.36</td>
<td>.02</td>
</tr>
<tr>
<td>Externalizing³</td>
<td>-.11</td>
<td>-.07</td>
</tr>
<tr>
<td>Total Problems⁴</td>
<td>-.31</td>
<td>-.03</td>
</tr>
</tbody>
</table>

**n = 35**

1 sum of Activities, Social, School
2 sum of Withdrawn, Somatic Complaints, Anxious/Depressed
3 sum of Delinquent Behaviour, Aggressive Behaviour
4 sum of all scored problem items
5 (GSelf) General Self: no normative data for SDQ-1 grades 2-4 sub-sample
6 (Noac): mean of Physical Abilities (Phys), Physical Appearance (App), Peer Relations (Peer), Parent Relations (Par)
7 (Ac): mean of Reading (Read), Mathematics (Math), General School (Sch)
8 (Self) Total Self: mean of Total Nonacademic (Noac), Total Academic (Ac)
Thus, no significant relationship between the study group subjects' reported multidimensional self concepts, as measured by the SDQ-1, and caregiver ratings of their social competence and problematic behaviour, as measured by the CBCL/4-18, was observed. Consequently, neither significant agreement nor significant discrepancy was observed between the self reported self concept dimensions and caregiver reports of study group subjects' behavioural competencies or problems. It would appear that for this group no significant linear relationship exists between self-caregiver ratings.

Self-Teacher Ratings

SDQ-1 Individual and Total scales were also correlated with the TRF Adaptive Behaviour and Problem scales to provide self-teacher ratings for study group data. Again all correlation coefficients computed for the study group data between the SDQ-1 Individual and Total scales and the TRF Adaptive Functioning Problem scales failed to reach statistical significance at the designated $p < .01$ level, using a one-tailed test of significance (see Table 7.17). These data indicate that no significant relationship between the study group subjects' reported multidimensional self concepts, as measured by the SDQ-1, and teacher ratings of their adaptive functioning and problematic behaviour, was observed.

As indicated by the results displayed in Table 7.16 and Table 7.17 no significant linear relationship appears to exist for the study group between both self-caregiver or self-teacher ratings. Thus, it may be concluded that Hypothesis 3a which stated that:
Table 7.17  TRF adaptive functioning and problem scales correlated with SDQ-1 individual and total scales for the study group

<table>
<thead>
<tr>
<th>TRF Scales</th>
<th>SDQ-1 Individual Scales</th>
<th>SDQ-1 Total Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phys</td>
<td>App</td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.03</td>
<td>.17</td>
</tr>
<tr>
<td>Working hard</td>
<td>-.02</td>
<td>.10</td>
</tr>
<tr>
<td>Behaving Appropriately</td>
<td>.02</td>
<td>.16</td>
</tr>
<tr>
<td>Learning</td>
<td>-.10</td>
<td>.17</td>
</tr>
<tr>
<td>Happy</td>
<td>-.13</td>
<td>.03</td>
</tr>
<tr>
<td>Total Adaptive (^1)</td>
<td>-.08</td>
<td>.14</td>
</tr>
<tr>
<td>Problem Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrown</td>
<td>.35</td>
<td>-.10</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>-.09</td>
<td>-.16</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>-.01</td>
<td>-.14</td>
</tr>
<tr>
<td>Social Problems</td>
<td>0</td>
<td>-.19</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>.02</td>
<td>-.30</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>.11</td>
<td>-.09</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>.10</td>
<td>-.10</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>.06</td>
<td>-.18</td>
</tr>
<tr>
<td>Internalizing (^2)</td>
<td>.10</td>
<td>-.16</td>
</tr>
<tr>
<td>Externalizing (^3)</td>
<td>.08</td>
<td>-.17</td>
</tr>
<tr>
<td>Total Problems (^4)</td>
<td>.12</td>
<td>-.21</td>
</tr>
</tbody>
</table>

n = 35

\(^1\) sum of Working Hard, Behaving Appropriately, Learning, Happy
\(^2\) sum of Withdrawn, Somatic Complaints, Anxious/Depressed
\(^3\) sum of Delinquent Behaviour, Aggressive Behaviour
\(^4\) sum of all scored problem items
\(^5\) General Self (GSelf): no normative data for SDQ-1 grades 2-4 sub-sample
\(^6\) (Noac): mean of Physical Abilities (Phys), Physical Appearance (App), Peer Relations (Peer), Parent Relations (Par)
\(^7\) (Ac): mean of Reading (Read), Mathematics (Math), General School (Sch)
\(^8\) (Self) Total Self: mean of Total Nonacademic (Noac), Total Academic (Ac)
a significant negative relationship exists between the reported self concept of the behaviour disordered group, measured by the SDQ-1 Individual and Total scales, and reports of their behavioural competencies made by their primary caregivers and class teachers, as measured by the Competence scales of the CBCL 14-18 and the Adaptive Functioning scales of the TRF, respectively.

was not supported using the $p < .01$ level of significance. In addition, Hypothesis 3b which stated that:

a significant positive relationship exists between the reported self concept of the behaviour disordered group, measured by the SDQ-1 Individual and Total scales, and reports of their problem behaviours made by their primary caregivers and class teachers, as measured by the problem scales of the CBCL 14-18 and TRF, respectively.

was also not supported using the $p < .01$ level of significance. In summary, an inspection of these data, representing self-other reporting for the study group, indicated a general lack of association between the two. This held for both caregiver and teacher ratings of social competence, adaptive behaviour and problem behaviours manifested in both home and school settings, respectively.

7.6.2 Children Exhibiting Adaptive Behaviour

The relationship between self-other reporting for comparison group subjects was similarly investigated to determine possible group differences based on behaviour. Antithetically, the comparison group subjects were chosen because of their appropriate behaviour patterns in the school setting. It is proposed that children exhibiting age appropriate behaviour would interact more harmoniously
with their significant others than children exhibiting problematic behaviours.

The congruence between comparison group subjects' self reported self concept and informant ratings of these subjects' competencies and problem behaviours was also tested using the Pearson product moment coefficient of correlation procedure. Results for the comparison group indicate some congruence between self-other reporting.

**Self-Caregiver Ratings**

Comparison group observations on the SDQ-1 Individual and Total scales when correlated with the CBCL/4-18 Competence scales yielded one statistically significant positive correlation at the designated $p < .01$ level. This coefficient indicated a significant positive linear relationship between the CBCL/4-18 School scale and the SDQ-1 General School scale ($r = .39, p < .01$, one-tailed) (see Table 7.18). Interestingly however, no significant relationships were observed between the CBCL/4-18 School and other SDQ-1 scales related to academic performance.

Correlations between the SDQ-1 Individual and Total scales and the CBCL/4-18 Problem scales yielded a clear pattern of significant correlation coefficients at the designated $p < .01$ level (see Table 7.18). All significant coefficients were negative in direction and represented inverse relationships between predominantly school related self concept dimensions and the CBCL/4-18 Problem scales. In summary, the observed congruence between self-caregiver reporting indicated that, for comparison group subjects, high self concepts on social and school related self concept dimensions were associated with low caregiver
Table 7.18  CBCL/4-18 competence and problem scales correlated with SDQ-1 individual and total scales for the comparison group

<table>
<thead>
<tr>
<th>CBCL/4-18 Scales</th>
<th>SDQ-1 Individual Scales</th>
<th>SDQ-1 Total Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phys</td>
<td>App</td>
</tr>
<tr>
<td>Activities</td>
<td>.17</td>
<td>-.17</td>
</tr>
<tr>
<td>Social</td>
<td>.07</td>
<td>-.04</td>
</tr>
<tr>
<td>School</td>
<td>.20</td>
<td>.11</td>
</tr>
<tr>
<td>Total Competence&lt;sup&gt;1&lt;/sup&gt;</td>
<td>.18</td>
<td>-.10</td>
</tr>
<tr>
<td>Problem Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>.16</td>
<td>-.15</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>-.02</td>
<td>-.14</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>-.02</td>
<td>-.22</td>
</tr>
<tr>
<td>Social Problems</td>
<td>-.17</td>
<td>-.24</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>-.08</td>
<td>-.05</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>-.07</td>
<td>-.12</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>.29</td>
<td>-.19</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>.13</td>
<td>-.11</td>
</tr>
<tr>
<td>Sex Problems</td>
<td>-.11</td>
<td>-.22</td>
</tr>
<tr>
<td>Internalizing&lt;sup&gt;2&lt;/sup&gt;</td>
<td>.05</td>
<td>-.22</td>
</tr>
<tr>
<td>Externalizing&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.19</td>
<td>-.15</td>
</tr>
<tr>
<td>Total Problems&lt;sup&gt;4&lt;/sup&gt;</td>
<td>.04</td>
<td>-.22</td>
</tr>
</tbody>
</table>

n = 35

<sup>*</sup>p<.01, one-tailed.

1 sum of Activities, Social, School
2 sum of Withdrawn, Somatic Complaints, Anxious/Depressed
3 sum of Delinquent Behaviour, Aggressive Behaviour
4 sum of all scored problem items
5 (GSelf) General Self: no normative data for SDQ-1 grades 2-4 sub-sample
6 (Noac): mean of Physical Abilities (Phys), Physical Appearance (App), Peer Relations (Peer) Parent Relations (Par),
7 (Ac): mean of Reading (Read), Mathematics (Math), General School (Sch)
8 (Self) Total Self: mean of Total Nonacademic (Noac), Total Academic (Ac)
ratings on the relevant CBCL/4-18 Problem scales, or vice versa. An inspection of those coefficients reaching statistical significance at the \( p < .01 \) level suggests that significant congruence between self-caregiver reporting occurred predominantly in the sphere of schooling, with peer relationships also featuring. Self concepts relating to personal attributes and informant reports of problem behaviours were found to be largely unrelated for this group.

**Self-Teacher Ratings**

Comparison group observations on the SDQ-1 Individual and Total scales when correlated with the TRF Adaptive Functioning scales yielded a number of significant positive correlation coefficients at the required \( p < .01 \) level (see Table 7.19). Thus, where multidimensional self concept scales were observed to be high, class teacher ratings of the respective TRF Adaptive Functioning scale also tended to be high, or vice versa. This trend was indicative of considerable congruence in self-other reporting for this group of subjects selected because of their adaptive behaviour in the school setting.

Interestingly, a significant relationship was observed between class teachers' ratings of academic performance and multidimensional self concepts of both an academic and nonacademic nature. High class teacher ratings for academic performance were not only related to high academic self concepts but were also related to high nonacademic self concepts of a personal nature. This was not observed to be the case for the study group.

Correlations between the SDQ-1 scales and the TRF Problem scales once again yielded a pattern of significant correlation coefficients (see Table 7.19).
<table>
<thead>
<tr>
<th>TRF Scales</th>
<th>SDQ-1 Individual Scales</th>
<th>SDQ-1 Total Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phys</td>
<td>App</td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.31</td>
<td>.47*</td>
</tr>
<tr>
<td>Working Hard</td>
<td>.19</td>
<td>.27</td>
</tr>
<tr>
<td>Behaving Appropriately</td>
<td>.01</td>
<td>.14</td>
</tr>
<tr>
<td>Learning</td>
<td>.25</td>
<td>.34</td>
</tr>
<tr>
<td>Happy</td>
<td>.25</td>
<td>.47*</td>
</tr>
<tr>
<td>Total Adaptive(^1)</td>
<td>.22</td>
<td>.38</td>
</tr>
<tr>
<td>Problem Scales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn</td>
<td>-.09</td>
<td>-.28</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>-.11</td>
<td>-.01</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>-.08</td>
<td>-.28</td>
</tr>
<tr>
<td>Social Problems</td>
<td>-.11</td>
<td>-.19</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>-.26</td>
<td>-.27</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>-.27</td>
<td>-.33</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>.08</td>
<td>-.21</td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>-.03</td>
<td>-.32</td>
</tr>
<tr>
<td>Internalizing(^2)</td>
<td>-.10</td>
<td>-.30</td>
</tr>
<tr>
<td>Externalizing(^3)</td>
<td>0</td>
<td>-.32</td>
</tr>
<tr>
<td>Total Problems(^4)</td>
<td>-.20</td>
<td>-.42*</td>
</tr>
</tbody>
</table>

\(n = 35\)

\* \(p < .05\), one-tailed.  \*\* \(p < .01\), one-tailed.

1 sum of Working Hard, Behaving Appropriately, Learning, Happy
2 sum of Withdrawn, Somatic Complaints, Anxious/Depressed
3 sum of Delinquent Behaviour, Aggressive Behaviour
4 sum of all scored problem items
5 (GSelf) General Self: no normative data for SDQ-1 grades 2-4 sub-sample
6 (Noac): mean of Physical Abilities (Phys), Physical Appearance (App), Peer Relations (Peer), Parent Relations (Par)
7 (Ac): mean of Reading (Read), Mathematics (Math), General School (Sch)
8 (Self) Total Self: mean of Total Nonacademic (Noac), Total Academic (Ac)
On this occasion all significant coefficients between these scales indicated the presence of inverse relationships on predominantly nonacademic self concept dimensions. Academic self concept dimensions were found to be largely unrelated to teacher reports of comparison group problem behaviours.

It may thus be concluded that the positive statistically significant coefficients between the SDQ-1 Individual and Total scales and both the CBCL/4-18 Competence scales and TRF Adaptive Functioning scales indicated that in these instances Hypothesis 4a was supported. Hypothesis 4a stated that:

*A significant positive relationship exists between the reported self concept of the comparison group of regular children, measured by the SDQ-1 Individual and Total scales, and reports of their behavioural competencies made by their primary caregivers and class teachers, as measured by the Competence scales of the CBCL / 4-18 and the Adaptive Functioning scales of the TRF, respectively.*

Furthermore, all negative coefficients between SDQ-1 Individual and Total scales and the problem scales assigned to both the CBCL/4-18 and TRF to reach statistical significance at the designated $p < .01$ level supported Hypothesis 4b. Hypothesis 4b stated that:

*A significant negative relationship exists between the reported self concept of the comparison group of regular children, measured by the SDQ-1 Individual and Total scales, and reports of their problem behaviours made by their primary caregivers and class teachers, as measured by the problem scales of the CBCL / 4-18 and TRF, respectively.*
These results indicated some congruence between comparison group subjects' multidimensional self concepts and informants' ratings of these subjects' adjustment. As expected the results support the view that there is a tendency towards discrepancy between self-other reporting for children exhibiting problematic behaviour. Yet, for children demonstrating age appropriate behaviours, greater congruency exists between self-other reporting. Thus, it would appear that others' perceptions of children who display age appropriate behaviours tend to be accurately reflected in these children's self report. However, there is strong evidence to suggest that the self perceptions of children exhibiting problematic behaviours do not mirror how others might view them.

7.7 Anxiety and Self Appraisal

Self appraisal involves not only the impact of relationships, but also the presence of complex psychological and motivational processes. It has been argued that anxiety arousal evidences the presence of ego involvement in situations where personal adequacy is threatened. Recognition that childhood experiences influence the development of anxiety arousal patterns has led to further examination of these patterns in children identified as behaviour disordered. Levels of anxiety experienced in sustaining the self concept may not be universal, but population specific.

The conviction that children exhibiting problematic behaviours do not necessarily hold remarkably negative self concepts is central to this research. These children have their self concepts continually challenged by forces in the environment and as a consequence may experience higher levels of anxiety
arousal than the normal population. The normal population, comprising children exhibiting appropriate behaviours, are thus more likely to have their self concepts confirmed by their environment and so would be expected to experience lower levels of anxiety arousal.

7.7.1 Group Differences in State-Trait Anxiety

Spielberger's state-trait anxiety theory, operationalised through the STAIC, provides a useful framework for the analysis of anxiety arousal patterns. In order to investigate between-group differences in levels of both state and trait anxiety arousal, the difference between comparison and study group raw scores on these two measures were tested using the paired $t$-test for related samples. As indicated in Table 7.20, $t$-statistics for both the A-state and A-trait scales failed to reach statistical significance at the $p<.01$ level, using a one-tailed test.

<table>
<thead>
<tr>
<th>STAIC Scale</th>
<th>$MEAN^a$</th>
<th>$SD$</th>
<th>$SE$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-state</td>
<td>2.00</td>
<td>8.94</td>
<td>1.51</td>
<td>1.32</td>
</tr>
<tr>
<td>A-trait</td>
<td>.91</td>
<td>12.96</td>
<td>2.19</td>
<td>.42</td>
</tr>
</tbody>
</table>

$n = 35$

$^a$ mean difference
Thus, in the case of both state and trait anxiety, the data failed to support the respective research hypotheses, *Hypothesis 5a and 5b*. *Hypothesis 5a* stated that:

*Mean levels of state anxiety, as measured by the STAIC A-state scale, reported by the behaviour disordered group are significantly higher than the mean levels of state anxiety reported by the comparison group of regular children,*

whilst *Hypothesis 5b* stated that:

*Mean levels of trait anxiety, as measured by the STAIC A-trait scale, reported by the behaviour disordered group are significantly higher than the mean levels of trait anxiety reported by the comparison group of regular children.*

It may therefore be concluded that the average difference in both state and trait anxiety values was not significantly different from zero. These results run contrary to expectation, as it was expected that levels of anxiety arousal reported by the *study group* would be significantly higher than the levels of anxiety arousal reported by the *comparison group*.

### 7.7.2 Multidimensional Self Concept and State-Trait Anxiety

Further insight regarding the role anxiety arousal plays in everyday interactions may be gained through an investigation of its association with subjects' multidimensional self concepts. Again it would be productive in arguing a case for the role anxiety plays in the self appraisal process to establish group
differences in the relationship between multidimensional self concepts and anxiety arousal. Thus, the relationship between the STAIC A-state and A-trait scales and the SDQ-1 Individual and Total scales was tested using the Pearson product moment coefficient of correlation formula. Correlation coefficients were calculated between each of these scales (see Table 7.21). All coefficients calculated for study group observations between the SDQ-1 scales and the STAIC A-state scale failed to reach statistical significance at the $p<.01$ level, using a one-tailed test.

When study group data for the A-trait scale was correlated with the SDQ-1 scales, a statistically significant correlation coefficient was observed on the SDQ-1 Peer Relations ($r = -.42, p < .01$, one-tailed) scale. Thus, the results for the study group data suggest that Hypothesis 6a which stated that:

\[ A \text{ significant positive relationship exists between reported self concept, as measured by the SDQ-1 Individual and Total scales, and reported anxiety arousal, as measured by the STAIC A-state and A-trait scales, for the behaviour disordered group.} \]

remains unsupported.

Comparison group results show a stronger relationship between multidimensional self concepts and state anxiety. Statistically significant correlation coefficients at the designated $p < .01$ level, using a one-tailed test of significance, were obtained between the A-state scale and four of the 11 SDQ-1 scales (see Table 7.21). The observed relationships between the A-state scale and the SDQ-1 Mathematics ($r = -.41, p < .01$, one-tailed), General School ($r = -.47,$
Table 7.21  SDQ-1 individual and total scales correlated with the STAIC A-state and A-trait scales

<table>
<thead>
<tr>
<th>SDQ-1 Scales</th>
<th>Study Group</th>
<th></th>
<th>Comparison Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A-state</td>
<td>A-trait</td>
<td>A-state</td>
<td>A-trait</td>
</tr>
<tr>
<td><strong>Individual Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Abilities</td>
<td>-.15</td>
<td>.23</td>
<td>-.05</td>
<td>.01</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>-.07</td>
<td>.02</td>
<td>-.33</td>
<td>-.19</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.24</td>
<td>-.42</td>
<td>-.20</td>
<td>-.17</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>-.23</td>
<td>-.18</td>
<td>-.39</td>
<td>-.28</td>
</tr>
<tr>
<td>Reading</td>
<td>-.21</td>
<td>-.38</td>
<td>-.05</td>
<td>-.08</td>
</tr>
<tr>
<td>Mathematics</td>
<td>-.03</td>
<td>-.06</td>
<td>-.41</td>
<td>0</td>
</tr>
<tr>
<td>General School</td>
<td>-.07</td>
<td>-.21</td>
<td>-.47</td>
<td>-.27</td>
</tr>
<tr>
<td>General Self&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-.32</td>
<td>-.27</td>
<td>-.53&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.35</td>
</tr>
<tr>
<td><strong>Total Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Nonacademic&lt;sup&gt;2&lt;/sup&gt;</td>
<td>-.23</td>
<td>-.26</td>
<td>-.30</td>
<td>-.19</td>
</tr>
<tr>
<td>Total Academic&lt;sup&gt;3&lt;/sup&gt;</td>
<td>-.14</td>
<td>-.27</td>
<td>-.38</td>
<td>-.13</td>
</tr>
<tr>
<td>Total Self&lt;sup&gt;4&lt;/sup&gt;</td>
<td>-.19</td>
<td>-.29</td>
<td>-.41</td>
<td>-.18</td>
</tr>
</tbody>
</table>

\(n = 35\) for each group

\(^*p<.01,\) one-tailed. \(^{**}p<.001,\) one-tailed.

<sup>1</sup> no normative data for SDQ-1 grades 2-4 sub-sample
<sup>2</sup> mean of Physical Abilities, Physical Appearance, Peer Relations, Parent Relations
<sup>3</sup> mean of Reading, Mathematics, General School
<sup>4</sup> mean of Total Nonacademic, Total Academic
\( p < .01, \) one-tailed), General Self \((r = -.53, \ p < .001, \) one-tailed) and Total Self \((r = -.41, \ p < .01, \) one-tailed) scales clearly indicate a significant relationship between the level of apprehension or tension experienced by \textit{comparison group subjects} and the reporting of these self concept dimensions.

The negative direction of these correlation coefficients also suggests that high levels of reported state anxiety arousal tended to be associated with depressed self concepts on school and self related SDQ-1 dimensions. The inference drawn from these results is that, for \textit{comparison group subjects}, the act of reporting multidimensional self concepts appeared to be a highly anxiety provoking situation. \textit{Comparison group} data yielded no significant coefficients at the required \( p < .01 \) level when the A-trait scale was correlated with the SDQ-1 scales.

The negative direction of the observed statistically significant coefficients for the \textit{comparison group} data supported the research hypothesis, \textit{Hypothesis 6b} which stated that:

\begin{quote}
\textit{A significant negative relationship exists between reported self concept, as measured by the SDQ-1 Individual and Total scales, and reported anxiety arousal, as measured by the STAIC A-state and A-trait scales, for the comparison group of regular children.}
\end{quote}

The null hypothesis however, should be retained for the remaining coefficients which failed to reach statistical significance at the \( p < .01 \) level, using a one-tailed test. It may thus be concluded that whilst an almost negligible association between anxiety arousal and multidimensional self concepts was observed for the
study group, as a group the comparison group reported a greater degree of association between the act of reporting anxiety arousal and multidimensional self concept.

7.8 Summary of the Results

The results presented hitherto have been structured in such a way as to provide a descriptive profile of the research sample through the comparison of sample statistics with population parameters representative of the constructs investigated. This procedure was employed to confirm empirically the representativeness of the sample in order to enhance the predictive value of the results. Through a comparison with the appropriate normative data for the CBCL/4-18 and TRF it was established that both the study and comparison groups behaviourally fell within the parameters of their respective reference population. The comparison of sample statistics with normative data for the SDQ-1 indicated that the self concepts of both study and comparison group subjects were representative of the designated reference populations.

The application of bivariate inferential statistics to the data also yielded some notable findings, not always in the expected direction. Inspection of cross informant data generated some interesting results. Expectations were confirmed when cross informant discrepancies were found for the study group, with teachers rating these subjects' behaviour as more problematic than caregiver ratings. Contrary to expectation however, cross informant discrepancies were also found for comparison group. Here the caregivers rated comparison group subjects' behaviour as more problematic than teachers.
As expected the results support the view that there is a tendency towards discrepancy between *self-other reporting* for children exhibiting problematic behaviour. Yet, for children demonstrating age appropriate behaviours, greater congruency is observed in *self-other reporting*. It has been argued that anxiety is likely to be manifested when personal adequacy is evaluated and the self concept threatened. Group differences in levels of anxiety experienced in sustaining self concepts were observed however, not entirely as expected.

Arguably the most important finding however, was related to the self concept of the *study group subjects*. The premise that children exhibiting problematic behaviours do not necessarily hold remarkably negative self concepts is germane to this research. Thus, the finding that the multidimensional self concepts reported by *study group subjects* did not, on average, differ significantly from those reported by *comparison group subjects*, is crucial.

These results, although comprehensive, are based on bivariate analyses inspecting relationships between two variables at any given instance. In order to address this, multiple logistic regression was employed to investigate the predictive value of self concept.
Chapter 8
The Analysis of Matched Data
Using Multiple Logistic Regression

8.1 Introduction

Multiple logistic regression (Kleinbaum, 1991a; 1991b) is seen as the preferred method of multivariate analysis for this research for a number of reasons. Primarily, it implements methods of variable selection on the basis of statistical significance. It also makes no assumptions of normality as regards the distributions of explanatory variables. However, the principal consideration in the selection of this procedure is that it has particular application to the analysis of matched data sets. Although often used in educational research, discriminant analysis is not specifically designed to accommodate the analysis of matched data. This research is consequently a vehicle for the introduction of multiple logistic regression methods to educational research and particularly as the favoured method for the analysis of matched data (Kleinbaum, 1991h). See Appendices B.2 and B.3 which detail the rationale for logistic modelling.

This study closely follows the rationale of an epidemiological case-control study utilising pair-wise category matching of subjects. In such a study, an index group of cases is selected because of some shared attribute which is of interest to the researcher. The study group represents this index group. This group is then compared to a referent group of control subjects, in this instance the comparison
group. The most popular method of selecting the referent group is through a process of category matching. This process involves the classification of each matching criteria and then the pairing of each case with a control representing the same combined set of matching categories. The matching criteria selected comprised: grade level, class, academic performance, ethnic/cultural affiliation of the primary caregiver and family structure. On the basis of substantive theory and prior research these were expected to cause confounding in the data. It was anticipated that as a result of effective matching, greater statistical efficiency or precision through the choice of a smaller sample size would be gained.

8.2 Confounding and Precision Assessment

Multiple logistic regression adapted for the analysis of matched data was employed to test the utility of multidimensional self concepts in the prediction of behaviour disorder in the school setting. It has been argued, on an a priori basis, that anxiety may influence the reporting of multidimensional self concepts, especially in children whose behaviour is identified as disordered. Thus, anxiety represents a potential confounding variable which has not been controlled through subject matching. Kleinbaum et al. (1982) suggest that essential to any evaluation of confounding is a cognisance of causal relationships operating in the target population. Any variable that the researcher determines is related and antecedent to outcome status on the basis of substantive theory and previous research findings represents a potential confounder. Therefore, if a strong relationship between children's multidimensional self concepts and the identification of behaviour disorder in the school setting is established, this finding
should not be explained by anxiety which is also believed to be related to behavior.

The full model testing this proposition, to be known as the *Gold Standard model* (Kleinbaum, 1991g), comprised the SDQ-1 Individual scales: Physical Abilities, Physical Appearance, Peer Relations, Parent Relations, Reading, Mathematics, General School and General Self. SDQ-1 Total scales: Total Nonacademic, Total Academic and Total Self scales were not included. These composite scales, were they to be included, would introduce multicollinearity. The STAIC A-state and A-trait scales were included as potential confounding variables.

The *Gold Standard model* may thus be represented mathematically as:

**Gold Standard Model:**

\[
\text{logit } P(X) = b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 + b_8 x_8 + b_9 x_9 + b_{10} x_{10}
\]

where \(x_{1,8}\) are multidimensional self concept predictors:
- \(x_1\) = Physical Abilities
- \(x_2\) = Physical Appearance
- \(x_3\) = Peer Relations
- \(x_4\) = Parent Relations
- \(x_5\) = Reading
- \(x_6\) = Mathematics
- \(x_7\) = General School
- \(x_8\) = General Self

where \(x_{9,10}\) are potential confounding variables:
- \(x_9\) = A-state anxiety
- \(x_{10}\) = A-trait anxiety
Table 8.1 The Gold standard model including SDQ-1 individual scales as predictors and both STAIC A-state and A-trait scales as potential confounding variables

<table>
<thead>
<tr>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>p</th>
<th>OR</th>
<th>95%</th>
<th>C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Abilities</td>
<td>.19</td>
<td>.09</td>
<td>.04</td>
<td>1.21</td>
<td>1.01</td>
<td>1.45</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>-.05</td>
<td>.06</td>
<td>.42</td>
<td>.96</td>
<td>.86</td>
<td>1.07</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.01</td>
<td>.09</td>
<td>.94</td>
<td>.99</td>
<td>.84</td>
<td>1.18</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>-.02</td>
<td>.07</td>
<td>.83</td>
<td>.98</td>
<td>.86</td>
<td>1.13</td>
</tr>
<tr>
<td>Reading</td>
<td>.09</td>
<td>.07</td>
<td>.22</td>
<td>1.10</td>
<td>.95</td>
<td>1.27</td>
</tr>
<tr>
<td>Mathematics</td>
<td>-.02</td>
<td>.06</td>
<td>.79</td>
<td>.98</td>
<td>.87</td>
<td>1.11</td>
</tr>
<tr>
<td>General School</td>
<td>-.06</td>
<td>.10</td>
<td>.56</td>
<td>.94</td>
<td>.78</td>
<td>1.15</td>
</tr>
<tr>
<td>General Self</td>
<td>-.04</td>
<td>.10</td>
<td>.69</td>
<td>.96</td>
<td>.79</td>
<td>1.17</td>
</tr>
<tr>
<td>A-state anxiety</td>
<td>-.00</td>
<td>.06</td>
<td>.97</td>
<td>1.00</td>
<td>.89</td>
<td>1.11</td>
</tr>
<tr>
<td>A-trait anxiety</td>
<td>.02</td>
<td>.04</td>
<td>.70</td>
<td>1.02</td>
<td>.94</td>
<td>1.10</td>
</tr>
</tbody>
</table>

\[ df^1:25 \quad -2\text{LogL}^2:39.62 \quad \% (0)^3:0 \quad \# \text{iter}^4:9 \]

1 the degrees of freedom after fitting the logistic model
2 minus twice the log likelihood
3 percentage of zeros among the responses
4 number of iterations in the model fitting procedure

Confounding and precision assessment is generally carried out without the use of statistical testing. This is because confounding is a validity issue, and consequently does not concern random error issues which characterise statistical testing. Controlling for confounding takes precedence over achieving precision, for the primary goal of the analysis is to obtain the correct estimated odds ratios for each predictor, rather than narrow confidence intervals around incorrect estimates. Confounding assessment is a relatively straightforward procedure (Kleinbaum, 1991g). The odds ratio estimates in the Gold Standard model...
represent adjusted estimates which control for both A-state and A-trait anxiety, the potential confounders in our model (see Table 8.1). These estimated odds ratios, controlling for all the potential confounders in the model, are referred to as the gold standard estimates of effect.

Other estimated odds ratios may however, be calculated by dropping one of the variables identified as potential confounders, as is the case in Reduced Model 1, which only includes A-state anxiety (see Table 8.2) and Reduced Model 2, which only includes A-trait anxiety (see Table 8.3). This procedure allows the researcher to appraise the effects of each variable singularly thereby determining the significance of the contribution made by that particular variable to the reduced model.

\textbf{Reduced Model 1}

\[
\text{logit } P(X) = b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 + b_8 x_8 + b_9
\]

where \(x_{1,8}\) are multidimensional self concept predictors:
- \(x_1 = \text{Physical Abilities}\)
- \(x_2 = \text{Physical Appearance}\)
- \(x_3 = \text{Peer Relations}\)
- \(x_4 = \text{Parent Relations}\)
- \(x_5 = \text{Reading}\)
- \(x_6 = \text{Mathematics}\)
- \(x_7 = \text{General School}\)
- \(x_8 = \text{General Self}\)

where \(x_9\) is the potential confounding variable:
- \(x_9 = \text{A-state anxiety}\)
Table 8.2  Reduced model 1 including SDQ·1 individual scales as predictors and the STAIC A-state scale as the potential confounding variable

<table>
<thead>
<tr>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>p</th>
<th>OR</th>
<th>95%</th>
<th>C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Abilities</td>
<td>.19</td>
<td>.09</td>
<td>.04</td>
<td>1.21</td>
<td>1.01</td>
<td>1.45</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>-.04</td>
<td>.05</td>
<td>.47</td>
<td>.96</td>
<td>.87</td>
<td>1.07</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.02</td>
<td>.08</td>
<td>.85</td>
<td>.98</td>
<td>.83</td>
<td>1.16</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>-.01</td>
<td>.07</td>
<td>.84</td>
<td>.99</td>
<td>.86</td>
<td>1.13</td>
</tr>
<tr>
<td>Reading</td>
<td>.09</td>
<td>.07</td>
<td>.23</td>
<td>1.09</td>
<td>.94</td>
<td>1.27</td>
</tr>
<tr>
<td>Mathematics</td>
<td>-.01</td>
<td>.06</td>
<td>.88</td>
<td>.99</td>
<td>.88</td>
<td>1.11</td>
</tr>
<tr>
<td>General School</td>
<td>-.06</td>
<td>.10</td>
<td>.53</td>
<td>.94</td>
<td>.77</td>
<td>1.14</td>
</tr>
<tr>
<td>General Self</td>
<td>-.05</td>
<td>.10</td>
<td>.62</td>
<td>.95</td>
<td>.78</td>
<td>1.16</td>
</tr>
<tr>
<td>A-state anxiety</td>
<td>-.00</td>
<td>.06</td>
<td>.99</td>
<td>1.00</td>
<td>.90</td>
<td>1.11</td>
</tr>
</tbody>
</table>

\[ df^{1} = 26 \quad \text{-2LogL}^{2} = 39.77 \quad \% (0)^{3} = 0 \quad \text{Siter}^{4} = 9 \]

1 the degrees of freedom after fitting the logistic model
2 minus twice the log likelihood
3 percentage of zeros among the responses.
4 number of iterations in the model fitting procedure

**Reduced Model 2**

\[ \text{logit P}(X) = b_{1}x_{1} + b_{2}x_{2} + b_{3}x_{3} + b_{4}x_{4} + b_{5}x_{5} + b_{6}x_{6} + b_{7}x_{7} + b_{8}x_{8} + b_{9}x_{9} \]

where \( x_{1,8} \) are multidimensional self concept predictors:
- \( x_{1} = \) Physical Abilities
- \( x_{2} = \) Physical Appearance
- \( x_{3} = \) Peer Relations
- \( x_{4} = \) Parent Relations
- \( x_{5} = \) Reading
- \( x_{6} = \) Mathematics
- \( x_{7} = \) General School
- \( x_{8} = \) General Self

where \( x_{9} \) is the potential confounding variable:
- \( x_{9} = \) A-trait anxiety
### Table 8.3: Reduced model 2 including SDQ-1 individual scales as predictors and the STAIC A-trait scale as the potential confounding variable

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$b$</th>
<th>SE</th>
<th>$p$</th>
<th>OR</th>
<th>95%</th>
<th>C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Abilities</td>
<td>.19</td>
<td>.09</td>
<td>.04</td>
<td>1.21</td>
<td>1.01</td>
<td>1.44</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>-.04</td>
<td>.06</td>
<td>.42</td>
<td>.96</td>
<td>.86</td>
<td>1.07</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.01</td>
<td>.09</td>
<td>.94</td>
<td>.99</td>
<td>.84</td>
<td>1.18</td>
</tr>
<tr>
<td>Parent Relations</td>
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<td>.07</td>
<td>.83</td>
<td>.98</td>
<td>.86</td>
<td>1.13</td>
</tr>
<tr>
<td>Reading</td>
<td>.09</td>
<td>.07</td>
<td>.21</td>
<td>1.10</td>
<td>.95</td>
<td>1.27</td>
</tr>
<tr>
<td>Mathematics</td>
<td>-.02</td>
<td>.06</td>
<td>.79</td>
<td>.98</td>
<td>.87</td>
<td>1.11</td>
</tr>
<tr>
<td>General School</td>
<td>-.06</td>
<td>.10</td>
<td>.56</td>
<td>.94</td>
<td>.78</td>
<td>1.14</td>
</tr>
<tr>
<td>General Self</td>
<td>-.04</td>
<td>.10</td>
<td>.68</td>
<td>.96</td>
<td>.79</td>
<td>1.16</td>
</tr>
<tr>
<td>A-trait anxiety</td>
<td>.01</td>
<td>.04</td>
<td>.70</td>
<td>1.01</td>
<td>.94</td>
<td>1.10</td>
</tr>
</tbody>
</table>

$df^1$:26  \quad -2\text{LogL}^2$:39.62  \quad \%\text{(0)}^3$:0  \quad \#\text{iter}^4$:9

---

1. the degrees of freedom after fitting the logistic model
2. minus twice the log likelihood
3. percentage of zeros among the responses.
4. number of iterations in the model fitting procedure

As Reduced Models 1 and 2 differ from the *Gold Standard model*, the estimated odds ratios (Kleinbaum, 1991c) obtained for these models may also be meaningfully different from the gold standard estimates. However, as indicated by Table 8.4, the estimated odds ratios for all predictors entered into these respective models did not differ greatly from those obtained for the *Gold Standard model*. Thus, the *Gold Standard model*, as well as both Reduced Models 1 and 2 control for confounding equally efficiently.

---

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Table 8.4  *Gold Standard* model odds ratios (OR) compared with odds ratios for Reduced model 1 and Reduced model 2

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Gold Standard OR</th>
<th>Reduced Model 1 OR</th>
<th>Reduced Model 2 OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Abilities</td>
<td>1.21</td>
<td>1.21</td>
<td>1.21</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>.96</td>
<td>.96</td>
<td>.96</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>.99</td>
<td>.98</td>
<td>.99</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>.98</td>
<td>.99</td>
<td>.98</td>
</tr>
<tr>
<td>Reading</td>
<td>1.10</td>
<td>1.09</td>
<td>1.10</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.98</td>
<td>.99</td>
<td>.98</td>
</tr>
<tr>
<td>General School</td>
<td>.94</td>
<td>.94</td>
<td>.94</td>
</tr>
<tr>
<td>General Self</td>
<td>.96</td>
<td>.95</td>
<td>.96</td>
</tr>
<tr>
<td>A-state anxiety</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>A-trait anxiety</td>
<td>1.02</td>
<td></td>
<td>1.01</td>
</tr>
</tbody>
</table>

As these three models yielded similar odds ratio estimates for all predictors entered into the respective models, an assessment of precision was required (Kleinbaum, 1991g). The model which best describes the data and controls for potential confounding is then able to be selected. Ninety-five percent confidence intervals around the odds ratio estimates are of interest when assessing for precision. The rule of thumb is, the narrower the confidence intervals, the more precise the odds ratio estimates and consequently, the more precise the model.

Thus, the model which gives the most meaningful gain in precision among all eligible models, including the *Gold Standard model*, is the one selected as best
describing the data. If none of the eligible models indicate an increase in precision the Gold Standard model remains the model of choice. The Gold Standard model is regarded as scientifically better because all relevant variables have been controlled in the analysis.

As indicated in Table 8.5, the Gold Standard model, as well as Reduced Models 1 and 2, were observed to have remarkably similar 95 percent confidence intervals on all variables entered into each respective model. Thus, in accordance with Kleinbaum's (1991g) modelling strategies, the model which best describes the data taking into account all potential confounders is the Gold Standard model.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Gold Standard 95% CI</th>
<th>Reduced Model 1 95% CI</th>
<th>Reduced Model 2 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Abilities</td>
<td>1.01 1.45</td>
<td>1.01 1.45</td>
<td>1.01 1.44</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>.86 1.07</td>
<td>.87 1.07</td>
<td>.86 1.07</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>.84 1.18</td>
<td>.83 1.16</td>
<td>.84 1.18</td>
</tr>
<tr>
<td>Parent Relations</td>
<td>.86 1.13</td>
<td>.86 1.13</td>
<td>.86 1.13</td>
</tr>
<tr>
<td>Reading</td>
<td>.95 1.27</td>
<td>.94 1.27</td>
<td>.95 1.27</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.87 1.11</td>
<td>.88 1.11</td>
<td>.87 1.11</td>
</tr>
<tr>
<td>General School</td>
<td>.78 1.15</td>
<td>.77 1.14</td>
<td>.78 1.14</td>
</tr>
<tr>
<td>General Self</td>
<td>.79 1.17</td>
<td>.78 1.16</td>
<td>.79 1.16</td>
</tr>
<tr>
<td>A-state anxiety</td>
<td>.89 1.11</td>
<td>.90 1.11</td>
<td>.94 1.10</td>
</tr>
<tr>
<td>A-trait anxiety</td>
<td>.94 1.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8.3 The Best Fitting Model

The *Gold Standard model* incorporating the eight SDQ-1 Individual scales: Physical Abilities, Physical Appearance, Peer Relations, Parent Relations, Reading, Mathematics, General School and General Self, as well as the STAIC A-state and A-trait anxiety scales, was used as the starting point for the regression procedure to determine the best fitting model (see Table 8.1). Using a backward elimination procedure the best subsets of these predictors were fitted using multiple logistic regression (Kleinbaum, 1991f). The two models providing an acceptable fit are described in Tables 8.6 and 8.7.

These models were selected according to set criteria (see Appendix B.4). A minimum *Mallows C_p value* \( (C_p = .37) \), signifying the total squared error for that model, was observed for Model A, the model comprising the five best predictors. The second choice, Model B, comprising the four best predictors, yielded the second lowest \( C_p \) value \( (C_p = .59) \). The *Likelihood Ratio Test* (LR) determines the most appropriate subsets of predictors (Kleinbaum, 1991d; 1991e) for the *Gold Standard model* (see Appendix B.5).

Model A is represented mathematically as:

**Model A**

\[
\text{logit } P(X) = b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5
\]

where  
\( x_1 = \text{Physical Abilities} \)  
\( x_2 = \text{Physical Appearance} \)  
\( x_3 = \text{Reading} \)  
\( x_4 = \text{General School} \)  
\( x_5 = \text{General Self} \)

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### Table 8.6  Model A: A subset of the five best predictors

<table>
<thead>
<tr>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>p</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Abilities</td>
<td>.19</td>
<td>.09</td>
<td>.03</td>
<td>1.21</td>
<td>1.02 – 1.44</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>-.04</td>
<td>.05</td>
<td>.45</td>
<td>.96</td>
<td>.87 – 1.06</td>
</tr>
<tr>
<td>Reading</td>
<td>.10</td>
<td>.06</td>
<td>.10</td>
<td>1.10</td>
<td>.98 – 1.23</td>
</tr>
<tr>
<td>General School</td>
<td>-.08</td>
<td>.07</td>
<td>.28</td>
<td>.93</td>
<td>.81 – 1.06</td>
</tr>
<tr>
<td>General Self</td>
<td>-.07</td>
<td>.07</td>
<td>.30</td>
<td>.93</td>
<td>.81 – 1.07</td>
</tr>
</tbody>
</table>

\[ \text{df}^{1,30} \quad \text{-2LogL}^{2,39.99} \quad \% (0)^{3,0} \quad \# \text{iter}^{4,9} \]

1. the degrees of freedom after fitting the logistic model
2. minus twice the log likelihood
3. percentage of zeros among the responses.
4. number of iterations in the model fitting procedure

---

Model B is represented mathematically as:

**Model B**

\[
\text{logit } P(X) = bx_1 + bx_2 + bx_3 + bx_4
\]

where
- \( x_1 = \text{Physical Abilities} \)
- \( x_2 = \text{Physical Appearance} \)
- \( x_3 = \text{Reading} \)
- \( x_4 = \text{General School} \)
Table 8.7 Model B: A subset of the four best predictors

<table>
<thead>
<tr>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>p</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Abilities</td>
<td>.17</td>
<td>.08</td>
<td>.04</td>
<td>1.19</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.40</td>
</tr>
<tr>
<td>Physical Appearance</td>
<td>-.06</td>
<td>.05</td>
<td>.22</td>
<td>.94</td>
<td>.86</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.03</td>
</tr>
<tr>
<td>Reading</td>
<td>.09</td>
<td>.06</td>
<td>.10</td>
<td>1.10</td>
<td>.98</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.23</td>
</tr>
<tr>
<td>General School</td>
<td>-.11</td>
<td>.07</td>
<td>.09</td>
<td>.90</td>
<td>.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.02</td>
</tr>
</tbody>
</table>

\[ df^1:31 \quad -2\text{LogL}^2:41.12 \quad \% (0)^3:0 \quad \#\text{iter}^4:9 \]

1 the degrees of freedom after fitting the logistic model
2 minus twice the log likelihood
3 percentage of zeros among the responses.
4 number of iterations in the model fitting procedure

The LR statistic, given as \(-2\text{LogL}_T - (-2\text{LogL}_E)\), was calculated to be \(LR(1) = 1.13\). As this statistic approximates the chi-square distribution, it may be shown that \(\chi^2(1) = 1.13, \text{N.S.}\). Thus, the parameter \(b_5\) fails to make a significant contribution to the model and can be dropped. The best fitting model for this data is deemed to be Model B comprising a subset of the four predictors: Physical Abilities, Physical Appearance, Reading and General School.

It would appear that when adjusting for covariates: Physical Appearance, Reading and General School; Physical Abilities makes a significant contribution to the model at the \(p < .05\) level. Indeed, Physical Abilities is the only variable entered into this model whose contribution was observed to be statistically significant. Since the null value of unity is not included in the reported confidence interval, this result is unequivocal. The covariates: Physical

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Appearance, Reading and General School, although themselves not statistically significant, contribute to the significance of Physical Abilities in the model.

### 8.4 Summary of Results

Logistic regression, a mathematical modelling procedure fitted using the principle of *maximum likelihood* (Kleinbaum, 1991d; 1991e), was considered the preferred method of multivariate analysis for this research. The technique implements methods of variable selection on the basis of statistical significance and also makes no assumptions regarding the distribution of independent variables. The principal consideration in the selection of this procedure however, was its application to the analysis of matched data.

Logistic regression for the analysis of matched data was employed to test the utility of multidimensional self concepts in the prediction of behaviour disorder. Anxiety was identified, on an *a priori* basis, as a potential confounding variable which influences the reporting of multidimensional self concepts. Thus, the A-state and A-trait anxiety scales were included in the *Gold Standard model* as potential confounding variables.

The assessment of confounding and precision was conducted through a comparison of odds ratios and 95 percent confidence intervals calculated for the *Gold Standard model*, Reduced Model 1 and Reduced model 2. It was observed that the estimated odds ratios and 95 percent confidence intervals for all predictors entered into these respective models did not differ greatly from those obtained for the *Gold Standard model*. Thus, in accordance with Kleinbaum's (1991f; 1991g) modelling strategies, the most precise model which best described
the data, taking into account all potential confounders was the *Gold Standard model*.

The *Gold Standard model* was consequently used to determine the subset of best predictors for the dichotomous outcome variable, behaviour. The best fitting model for this data comprised a subset of the four predictors: Physical Abilities, Physical Appearance, Reading and General School. The covariates: Physical Appearance, Reading and General school, although themselves not statistically significant, contributed to the statistical significance of Physical Abilities. Thus, Physical Abilities was the only variable entered into this model whose contribution was observed to be statistical significant at $p < .05$ level.

In view of these results *Hypothesis 2* which stated that

*reported self concept dimensions, as measured by the SDQ-1 Individual scales, are significant predictors of behaviour, where the presence/absence of behaviour disorder is the designated binary outcome variable*

may be accepted in the case of the SDQ-1 Physical Abilities scale. The model which best describes the data was generated using statistical methods. Thus, it may be said that this model is statistically adequate in predicting the presence of behaviour disorder. However, upon inspection it must be noted that only one self concept dimension included in the model reached statistical significance at the $p < .05$ level, thus raising questions regarding the clinical utility of the model.
Chapter 9

Discussion and Interpretation

9.1 Introduction

The interrelationships between behaviour and self concept were investigated observing sound theoretical and methodological principles. Both constructs were defined and measured using well respected, contemporary theoretical models boasting substantial empirical support. Behaviour was measured using a psychometric paradigm which defines children's behaviour in terms of quantitative deviations from the norm. Self concept was measured using the Marsh/Shavelson (Marsh & Shavelson, 1985) model of multidimensional self concepts. Additionally, the mediatory effects of anxiety were investigated through the state-trait model of anxiety. These features facilitated the validation of the research sample using normative comparisons with standard population parameters.

Several features of this research design contribute to the methodological strength and originality of this study. Pairs of subjects, those identified as behaviour disordered and those selected because of their socially appropriate behaviours, were drawn from the same cohort. This sampling initiative, together with the pair-wise category matching of subjects, reduced the influence of unwanted environmental and personal factors between the groups. The sampling strategy also ensured the equality of groups and facilitated direct peer comparison. The use of multiple logistic regression which accommodated these theoretical and methodological features empirically provided additional credibility.
to the research findings.

Theoretical and methodological principles governing research establish parameters which control the interpretive and predictive value of the results. These results are readily interpretable using empirically substantiated theoretical models. This enables direct comparison between these findings and other research based on these theoretical principles. For all these reasons, the observed results are sure to contribute significantly to our knowledge of behaviour as it relates to multidimensional self concept.

9.2 Identification and Classification of Behaviour Disorder

A comprehensive overview of the subjects' behavioural repertoires was undertaken in order to validate the implemented subject selection procedures. The class teacher was assigned a comparative role and was required to select subjects exhibiting disordered behaviour, as well as those considered to be exhibiting socially appropriate behaviour, in the school setting. Selected pairs of subjects were category matched for academic performance, family structure and the ethnicity/cultural affiliation of the primary caregiver. The subjective selection of subjects was validated using normative comparisons with designated population parameters and with a normative cohort group. In addition, the situation specificity of subjects' behavioural repertoires was ascertained by comparing teacher and caregiver ratings of subjects behaviour in the school and home settings, respectively. Thus, subjective sample selection was empirically validated using a psychometric paradigm defining behavioural competencies and problems as quantitative deviations from the norm.
9.2.1 Sample Validation

The subjects included in this study were subjectively selected according to the presence/absence of behaviour disorder in the school setting. Statistical methods were used to substantiate empirically that the groups reflected this selection criterion. The study group, a group of subjects identified as behaviourally disordered, was compared with the age appropriate CBCL/4-18 and TRF normative samples of clinically referred boys. In addition, the comparison group, a normative reference group, was compared with the age appropriate CBCL/4-18 and TRF normative sample of nonreferred boys. Empirical evidence, consequently established that the behavioural characteristics reported for the study group were similar to those reported for a clinically referred population and that behaviours reported for the comparison group were commensurate with those reported for the normal population.

Adaptive Functioning and Social Competence

Meaningful evaluation of an individual's behavioural repertoire must necessarily include that individual's social and adaptational competencies. Indeed, the perception of an individual's behavioural problems may be offset by their repertoire of socially appropriate and valued qualities. Class teachers and primary caregivers, selected as informants for this study, were consequently asked to communicate their perceptions of subjects' adaptive functioning and social competencies, in addition to their perceptions of subjects' problem behaviours. Profiles of subjects' teacher rated adaptive functioning and caregiver rated social competence were obtained using the TRF Adaptive Functioning and CBCL/4-18
Competence scales, respectively.

When compared with the TRF normative sample of referred boys, study group subjects were rated as more academically able by their class teachers. However, they were rated as significantly less adaptive than the normative sample on the Working Hard, Behaving Appropriately, Learning and Total Adaptive scales. Therefore, while these subjects were perceived as more academically able than the designated reference population, they were also perceived as less committed to their school work.

Class teacher ratings for comparison group subjects indicated that these subjects, on average, were viewed as significantly less adaptive than the TRF normative sample of nonreferred boys on all but the Behaving Appropriately scale. Thus, even though subject's academic performance and commitment to school work did not statistically meet the designated population norms, their socially appropriate behaviours were perceived as commensurate with the population parameters.

Pair-wise subject matching on the academic performance criterion may have produced a comparison group of subjects, who perhaps because of learning difficulties, lacked application to their school work. According to this criterion, approximately one third of the total sample's academic performance was rated as below average. The remaining subjects were classified as average. It is possible that the comparison group subjects were both lower in academic performance and academic ability. The study group subjects, on the other hand, may have exhibited lower levels of academic performance because of their problematic behaviour, but may possess greater academic ability than the comparison group. This premise
cannot be validated as subjects' academic ability was not specifically measured for the purposes of this study. However, anecdotal observations during data collection support this premise. It would appear that irrespective of their academic difficulties, the comparison group subjects possessed sufficient socially appropriate and valued characteristics in the school setting to offset their academic problems. Thus, as comparison subjects were selected on the basis of their adaptive behaviour patterns in the school setting, this result validates the composition of the comparison group.

Primary caregiver's perceptions of the study group subjects' social competence, when compared with the CBCL/4-18 normative sample of referred boys, indicated that ratings on the Activities, Social, School and Total Competence scales were not significantly different from those reported for the normative sample. Parallels were also drawn between primary caregivers' perceptions of comparison group subjects' social competence and the CBCL/4-18 normative sample of nonreferred boys. A significant difference between caregivers' ratings of comparison group subjects' school related competencies and school related ratings reported for the normative sample was observed. Caregivers of the comparison group subjects, on average, rated their children as significantly less academically competent than did the parents of the normative sample. These parental perceptions lend support to the view that comparison subjects, as a group, experienced learning difficulties and that these difficulties were reflected in both class teacher's and primary caregiver's reports of their demonstrated adaptational competencies.
**Problem Behaviours**

Informant ratings of subject's problem behaviours, using the TRF and CBCL/4-18 Problem scales, not only facilitate psychometric validation of the allocation of subjects to the appropriate group. These ratings also provide convenient standardised behavioural profiles for both the study and comparison groups. Normative comparisons are made possible between study and comparison group profiles of problem behaviours and the standardisation data for these instruments.

A normative comparison of class teacher rated study group problem behaviours with teacher rated problem behaviours for the TRF normative sample of referred boys indicated that the study group were rated as significantly more deviant on the Social Problems, Attention Problems, Delinquent Behaviour and Aggressive Behaviour, Externalizing and Total Problems scales. Caregivers however, rated these subjects as significantly more deviant than the CBCL/4-18 normative sample of referred boys on the Delinquent Behaviour, Aggressive Behaviour, Externalizing and Total Problems scales. Both primary caregivers and class teachers rated the study group as significantly more deviant than the respective normative samples on behavioural problems of an externalizing nature. Perceived study group deviance on the Social Problems and Attention Problems scales was found to be school specific. The results generated by this process of normative comparison suggest that the group profile of problem behaviours reported for the study group is more deviant than Achenbach's clinically referred population with respect to the above mentioned problem scales.

Teacher ratings of comparison group problem behaviours indicated that this
group was rated as significantly less deviant than the TRF normative sample of nonreferred boys on the Thought Problems, Aggressive Behaviour and Externalizing scales. A comparison of parent ratings for the CBCL/4-18 normative sample of nonreferred boys and caregiver ratings of comparison group problem behaviours indicated that comparison subjects were rated as significantly more deviant on the Withdrawn and Internalizing scales. Therefore, according to their caregivers, these subjects, on average, were perceived as more withdrawn and internalizing than the normative sample.

The caregivers' heightened awareness of their children's behavioural problems, reflected in these ratings, may stem from the prolonged, nurturing nature of the caregiver-child relationship. However, parent characteristics could also influence the rating process. It has been argued that parent psychopathology (Friedlander et al., 1986; Kazdin et al., 1983; Steinhausen et al., 1990) family circumstances (Dunn et al., 1990; Rosenberg & Joshi, 1986) and child characteristics are all inextricably linked in the rating process. Nevertheless, the comparison group, although it is characterised by introspective tendencies, is considered behaviourally representative of the nonreferred, normal population. Comparison group subjects' school related adaptive behaviour, the criteria for inclusion, was shown to be commensurate with that of the designated reference population.

*Interpretive Comments*

There are several explanations for the observed differences between these groups and their respective reference populations. The respective reference
populations were substantial in size, as well as demographically representative of the mainland states of the U.S.A. Differences in sample size, although offset by the statistical procedure used, were substantial. Although south western Sydney includes a broad range of socioeconomic, ethnic and familial types, the research sample was not demographically matched with these regional characteristics. The sample was essentially of Western European ethnic origin and the disrupted family structure predominated. As socioeconomic status was not measured, there is no empirical evidence to suggest bias in this regard.

Previous research has indicated that the tolerance of deviant behaviours may be culturally determined. Similarities exist between these results and those of Hensley (1988) and Achenbach, Hensley, Phares and Grayson (1990) who reported greater deviance in their sample of metropolitan Sydney children. It may well be that caregivers in metropolitan Sydney reporting on their children's behavioural competencies and problems are culturally influenced and on the whole less tolerant of their children's deviance. Their collective reporting would consequently reflect this by producing group behavioural profiles which are significantly more deviant than the standardisation sample of American children. This would then account for the observed differences between the research sample and the designated reference populations.

The study group, which was found to be less adaptive in a school setting than its respective reference group, also exhibited more problem behaviours across settings. On average, this group in fact displayed significantly more deviant externalizing, antisocial behaviours than the reference populations to which it was compared. The comparison group, while also less adaptive in a school setting than
its respective reference groups, was reported to demonstrate fewer problem behaviours in the school setting. Thus, for the purposes of this research, these groups of subjects were considered behaviourally representative of their respective reference populations.

9.2.2 Group Differences in Informant Ratings

This aspect of the validation process seeks to establish that the study and comparison groups are behaviourally distinct and reflect the initial subject selection criterion. Group behaviour profiles, derived from informant ratings, should reflect a presence or absence of significant behaviour disorder. In fact, a statistical comparison of the study and comparison groups' adaptational competencies and problem behaviours indicates clearly that this was achieved.

Group Comparison of Class Teacher Ratings

Class teacher ratings on the TRF Adaptive Functioning and Problem scales were tested to establish that the study and comparison groups were behaviourally discrete and reflected the selection criterion. Significant group differences in adaptive functioning were observed. Statistically significant differences were observed on all TRF Adaptive Functioning scales, with the exception of the Academic Performance scale. The observed difference in group means indicated that teachers rated the study group significantly lower than the comparison group on each of the significant Adaptive Functioning scales. A non-significant result was expected for the Academic Performance scale as study and comparison group subjects were matched on their academic performance. It would appear that the
matching process successfully controlled group differences on this scale. Thus according to these teachers, the comparison group demonstrated significantly greater adaptive skills in the school setting than study group subjects.

The difference in group means for the TRF Problem scales also indicated that these teachers perceived the study group as significantly more deviant than the comparison group. As a group, study group subjects were rated as considerably more deviant than the comparison group subjects on all problem scales, excepting the Withdrawn and Somatic Complaints scales. The difference in group means for both the Withdrawn and Somatic Complaints scales were not significantly different indicating that both groups were perceived to exhibit similar levels of deviance in the school setting on these scales.

*Group Comparison of Primary Caregiver Ratings*

Primary caregiver ratings on the CBCL/4-18 Competence and Problem scales were tested in order to determine the situational specificity of the behaviours found to be problematic in the school setting. Caregiver ratings of study group subjects' social competence, measured by the CBCL/4-18 Competence scales, were found to be significantly lower than the caregiver ratings for comparison group subjects. Comparison group subjects were thus perceived by their caregivers to be significantly more proficient in engaging in leisure activities, social encounters and school related tasks than their study group counterparts.

When caregiver ratings on the CBCL/4-18 Problem scales were compared, the study group subjects were found to be significantly more deviant than the comparison group on all but the Withdrawn, Somatic Complaints and Sex
Problems scales. Mean differences between the groups on these scales failed to reach statistical significance indicating group similitude with respect to these problem behaviours. As the Sex Problems scale is specific to the CBCL/4-18 profiles and only reportable by caregivers, its severity across settings cannot be determined. It is noteworthy however, that teacher ratings produced a similar result for the Withdrawn and Somatic Complaints scales. Thus, caregiver ratings of subject's problem behaviours demonstrated that the *study group* was considered significantly more deviant than the *comparison group* on six of the eight cross informant syndrome scales as well as the Internalizing, Externalizing and Total Problems scales.

*Interpretive Comments*

Class teacher and primary caregiver ratings of subjects' adaptational competencies and problem behaviours confirmed that the perceived behaviour of the *study group* was considered to be significantly less adaptive, less socially competent and significantly more problematic than that reported for *comparison group*. Thus, on the basis of both empirical evidence and subjective selection, and irrespective of the behavioural setting and type of informant, these subjects clearly separate into two discrete behavioural groups. On the one hand the *study group* comprises subjects who are perceived to be severely behaviour disordered, exhibiting antisocial, aggressive and delinquent tendencies. The second group, the *comparison group*, is perceived as a reference group with subjects exhibiting adaptive and socially valued behaviour in the school setting.
9.2.3 Cross Informant Ratings of Children's Behaviour

Comparative procedures were also used to ascertain the extent to which subjects' behaviour patterns were governed by situational factors. Informant variation in behavioural reporting is indicative of the situational specificity of reported behaviours. Informant agreement, on the other hand, is indicative of the generalisability of behaviour across settings. Thus, the comparison of behavioural reports tendered by multiple informants contributes significantly to our knowledge regarding the nature and severity these subjects' behavioural problems across settings. Indeed, a comparison of informant ratings tendered for study group subjects revealed that reported problem behaviours were inclined to generalise across settings. Informant ratings for the comparison group subjects indicated greater situational specificity of problem behaviours.

Informant Reporting of Adaptive Functioning and Social Competence

The congruity of primary caregiver and class teacher ratings of subjects' adaptational competencies was tested empirically using statistical methods. A comparison of caregiver and teacher ratings on the parallel CBCL/4-18 Total Competence and TRF Total Adaptive scales indicated that caregivers' ratings of study group subjects' competence were significantly higher than teachers' ratings of these subject's adaptive behaviour. As study group subjects were included in the sample because of their problematic behaviour in the school setting, it is not surprising that class teachers perceived them to be less adaptive at school.

However, a similar result was observed for the comparison group. Comparison group subjects were also more highly rated on the Total Competence
scale by their caregivers than they were on the Total Adaptive scale by their teachers. As these subjects were included in the study on the basis of their appropriate, adaptive behaviour in the school setting, this result was unexpected. However, parental over rating may well have contributed to this discrepancy. Thus, on the basis of these results it would appear that both groups are perceived by their caregivers to exhibit a higher degree of adaptive behaviour in the home setting.

*Informant Reporting of Problem Behaviours*

Class teachers' ratings of subjects' problem behaviours did not follow the trend observed in the case of subjects' adaptational competencies. While teachers' ratings of both study and comparison groups' competencies were found to be more critical than those of the primary caregivers, in the case of problem behaviours clear group differences were observed. For the study group, teacher ratings were found to be significantly higher than caregiver ratings on the parallel TRF and CBCL/4-18 Social Problems, Attention Problems, Aggressive Behaviour and Externalizing scales. This result was expected because teachers selected these subjects for inclusion in the study group.

Primary caregiver and class teacher ratings for the study group on the Somatic Complaints scale however, provided a clear departure from the previously observed trend. Caregiver ratings were significantly higher than teacher ratings on this scale. The long term, nurturing relationship between caregivers and their offspring provides a credible explanation for this observation. Caregivers would thus be more likely to be sensitive to their children's varied
somatic complaints.

The *comparison subjects'* admittance to the study was on the basis of their adaptive, socially competent behavioural repertoire at school. The expectation was that this perception of competence would generalise across settings. However, contrary to expectation significant differences in a positive direction were observed between teacher and caregiver ratings on the parallel TRF and CBCL/4-18 Somatic Complaints, Thought Problems, Delinquent Behaviour, Aggressive Behaviour, Externalizing and Total Problems scales. Thus, the *comparison group subjects* were rated as significantly more deviant on these problem scales by their caregivers than they were by their teachers. Although caregiver ratings indicate greater parental awareness of the behaviours measured by these scales, they may not necessarily be perceived as problematic. However, greater parental awareness of these behaviours is an indication that, for *comparison group subjects*, these behaviours are situation specific, or perhaps not evident to the same extent in the school setting.

Contrary to the trend observed for the *comparison group* on the previously mentioned syndrome scales to reach statistical significance in a positive direction, teacher ratings on the Attention Problems scale were significantly higher than caregivers' ratings. Attending behaviour is integral to the learning process and could be considered situation specific. A discrepancy between caregiver and teacher expectations of attending behaviours could consequently be anticipated.

For the purposes of this research, cross informant $Q$ correlations for a given subject reflect the similarity between patterns of scores on the CBCL/4-18 and TRF. Group profiles of *item and scale cross informant Q correlations* seek to
substantiate the previously observed trends using this innovative feature included in the Cross Informant Program for the CBCL/4-18, YSR and TRF (Achenbach, 1991d). Differences in mean group item and scale Q correlations were found to be significantly different from zero. The direction of these statistically significant t-statistics indicated that the degree of cross informant agreement, for both items and scales, was significantly greater for the study group than for the comparison group.

On the basis of these results, study group subjects' behaviour would appear to generalise across settings and interaction partners. A significant degree of informant agreement regarding study group subjects' problem behaviours indicates that both primary caregivers and class teachers focus on a similar set of problem behaviours. This emphasis however, demonstrated through the rating process, does not necessarily imply that highlighted problem behaviours are perceived as equally problematic by all informants.

The comparison group subjects' behaviour, when compared with the study group subjects, tended to be more situation specific in nature. As this group was selected because of their demonstrated adaptive behaviour in the school setting, greater stability of behaviour was expected across settings. However, it would appear that comparison group subjects exhibit situation specific behaviours which are emphasised by their caregivers, but which do not generalise to the school setting.

Interpretive Comments

Researchers (Dunn et al., 1990; Garrison & Earls, 1985; McConaughy et
al., 1988; Touliatos & Lindholm, 1981; Weissman et al., 1980) have previously found little consistency between reports made by informants sharing different relationships with a child. The results produced by this research indicate that this trend is not universal. In fact, only the results obtained for the comparison group, a normative cohort reference group, reflect this position.

An inspection of the degree of consistency between informant ratings through group cross informant $Q$ correlations suggests that greater informant discrepancies in the reporting of problem behaviours were found for the comparison group. This result was contrary to expectation. These subjects were admitted to the comparison group on the basis of their adaptive, socially acceptable behaviour in the school setting. There was an expectation that these behaviours were generalised across settings. In fact, results for the comparison group indicated that, when teacher and caregiver reports of children's behaviour were solicited, caregivers reported a greater number of problem behaviours. The direction of these findings support similar conclusions made by Touliatos and Lindholm (1981).

The unexpected degree of discrepancy between teacher and caregiver reporting of comparison group problem behaviours could be attributed to a number of factors. As previously mentioned, the caregiver-child relationship is an enduring relationship while teacher-pupil relationships are generally transient. However, while caregivers have a deeper knowledge of their children's behaviours, their reporting may also be influenced by their personal expectations and personal psychopathology. Behavioural standards formed through idiosyncratic familial and cultural mores do not always reflect societal values. As society's agents for
socialisation, teachers are in a good position to identify behavioural deviations from a global perspective (Osuna & Luna, 1989). Consequently, they are able to draw comparisons on a much wider basis than is possible for parents. Their ratings, reflecting societal attitudes, could differ widely with the expectations of parents who view their child's behaviour on a personal or familial level.

Teachers, although they reinforce societal mores, are not immune to the influence of their own personal world view and prejudices. Sandler (1980) has raised the possibility that school specific problem behaviours may signal that the individual's needs are not being adequately met. Such a situation may well exist for comparison subjects who, as a group, are perceived by their teachers as withdrawn and lacking in academic application. Perhaps these subjects' academic needs were not being adequately met by the school system.

Social cognition research conducted by Cadwell and Jenkins (1986) raises another interesting issue regarding the teachers' cognitive processes when completing rating instruments. They suggested that semantically similar descriptions of different behaviours may be recalled as co-varying because of their closeness in meaning and not as a result of their actual co-occurrence. This phenomenon may well have influenced ratings made for subject pairs. As behavioural ratings place a great burden on the teacher's information processing abilities (Feldman, 1981), it is possible that when asked to rate the behaviour of more than one individual, that the behavioural repertoires of the individuals were not held as discrete.

Indeed, it is possible that methodological considerations influenced the responses tendered by caregivers and class teachers on the CBCL/4-18 and TRF,
respectively. The difference between caregiver and teacher responses may have been due, partially, to the researcher reading the CBCL/4-18 questionnaire to caregivers within the context of a structured interview while teachers were given TRF questionnaires to complete at their earliest convenience. The negative focus of questionnaire items may have further confounded results. Negative behaviour statements can lead caregivers into thinking negatively about their child, not wanting to be seen as condoning behaviours that the researcher may perceive as deviant. Teachers are credited with having a global perspective on behaviour and thus may consider examples of negative behaviour within a specific context. This variation in questionnaire administration, together with the negative focus of the instruments, may have influenced group variations in caregivers responses.

Contrary to expectation however, the degree of cross informant agreement of study group subjects' problem behaviours was greater than expected. These subjects were selected on the basis of their disordered behaviour in the school setting. As it is recognised that teachers' judgements reflect societal expectations while caregivers' judgements may reflect more personal attitudes a greater degree of cross informant discrepancy was expected for this group. Although cross informant agreement was greater than expected, the results do show that teacher evaluations, when compared with those made by caregivers, were far more critical, a result also reported by Holdaway and Jensen (1983). The distinct group differences observed between caregiver-teacher agreement on study and comparison group behaviours in the home and school settings would raise some doubt that significant confounding occurred as a result of the above mentioned methodological considerations. It is far more likely that the observed group
differences in cross informant agreement were a function of the presence/absence of behaviour disorder.

9.2.4 Summation and Implications

The results of the comparative process undertaken promote the view that behaviour varies from one context and interaction partner to another (Achenbach, 1991a, 1991b, 1991c). However, this generalisation may not occur to the same degree in all situations. The behavioural repertoire exhibited by the study group was manifest cross situationally and reported as deviant by both caregivers and teachers. It could thus be said that the behaviour patterns exhibited by this group were generalised regardless of the situation or the informant. Normative comparisons with both an accepted, standardised reference population and a cohort sample indicated that, as a group, the study group subjects were perceived to be severely behaviour disordered.

By contrast, results obtained for the comparison group indicated that their behavioural repertoire was perceived as more situation specific with an increase of problem behaviours being reported by caregivers in the home setting. However, this group seems to have acquired sufficient socially appropriate and valued competencies, especially in the school setting, which may have led to their inclusion in the comparison group.

Thus, although each informant furnishes useful information regarding a child's behavioural functioning, no single informant can provide a complete picture of a child's behaviour. Each individual report provides insight into the child's interactive capacity within a particular setting, but ultimately an integrated
picture can only be obtained through a comparison of multiple reports. The applicability of empirical evidence of this nature to clinical practice is significant as it provides valuable insight prerequisite for effective diagnosis and subsequent clinical intervention. Results such as these confirm the necessity for a cross informant approach to behavioural reporting, for neither informant consistency nor informant discrepancy in reporting can be assumed to be universal.

9.3 Multidimensional Self Concept

The proposition that children identified because of their problematic behaviour and children exhibiting adaptive behaviour do not necessarily hold remarkably different self concepts has been addressed throughout this thesis. This proposition was tested using the SDQ-1, an instrument designed to elicit personal, social and school related self concept dimensions. The credibility of the results was once again established through a process of comparison using normative reference points. The relative position of subjects' multidimensional self concepts within the population of children sharing similar age/sex attributes was established using the published norms for the SDQ-1 (Marsh, 1988). This procedure broadens the scope for interpretation and permits prediction, albeit cautious.

9.3.1 Sample Validation

The SDQ-1 normative tables for sub-samples of males, grades 2-4 and males, grades 5-6 were selected as the designated reference populations. These tables facilitated direct comparison between the SDQ-1 standardisation sample
picture can only be obtained through a comparison of multiple reports. The applicability of empirical evidence of this nature to clinical practice is significant as it provides valuable insight prerequisite for effective diagnosis and subsequent clinical intervention. Results such as these confirm the necessity for a cross informant approach to behavioural reporting, for neither informant consistency nor informant discrepancy in reporting can be assumed to be universal.

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9.3.1 Sample Validation

The SDQ-1 normative tables for sub-samples of males, grades 2-4 and males, grades 5-6 were selected as the designated reference populations. These tables facilitated direct comparison between the SDQ-1 standardisation sample
and the research sample by providing specific population parameters for the designated age/sex groups included in the research sample. Statistical differences between sample means and means for the designated reference population were calculated on all SDQ-1 Individual and Total scales.

Reported results indicated that the personal, social and school self concepts of the sample were commensurate with those reported for the reference population of boys attending regular schools in the greater Sydney Metropolitan area. Thus, to the extent that the designated reference population reflects the general population, it may be concluded that regardless of their behavioural status in the school setting, the multidimensional self concepts reported by all subjects included in the study do not differ significantly from those of the general population.

9.3.2 Group Differences

A statistical comparison of group profiles supported the view that children's multidimensional self concepts are not directly related to behavioural allocation. An inspection of study and comparison group multidimensional self concepts, measured by the SDQ-1 Individual and Total scales, failed to reveal any significant differences. It was thus concluded that the study and comparison group subjects' reports of personal, social and school related self concepts did not differ significantly.

9.3.3 Multidimensional Self Concepts: Predictors of Behaviour Disorder?

Multivariate analysis was conducted to test the utility of self concept
dimensions in the prediction of behaviour disorder. Multiple logistic regression was used to test this proposition. Perhaps the greatest advantage in introducing this procedure to educational research is its modelling flexibility. Modelling strategies may be tailored to both the a priori postulates governing the research as well as any specific methodological requirements.

For the purposes of this research the logistic model was adapted to accommodate matched data (Hosmer & Lemeshow, 1989; Kleinbaum, 1991h). In addition, the important a priori postulate that anxiety may differentially influence the reporting of multidimensional self concepts was able to be incorporated into the modelling procedures by deeming anxiety a potential confounder. A potential confounding variable is defined as any variable that the researcher determines is related and antecedent to outcome status on the basis of substantive knowledge or research. Thus, after confounding and precision assessment the most appropriate full model for the analysis included the SDQ-1 Individual scales and the STAIC A-state and A-trait scales as potential confounding variables.

After fitting the multiple logistic regression, the best subset of predictors comprised Physical Abilities, Physical Appearance, Reading and General School. Although A-state and A-trait anxiety do not appear in the best fitting model as explanatory variables, their effects as potential confounding variables were controlled for because of their inclusion in the full model. Physical Abilities alone made a statistically significant contribution to the best fitting model at the $p < .05$ level. However, the presence of the listed non significant covariates was required for the Physical Abilities dimension to retain statistical significance.
Thus using statistical procedures, a statistically adequate model able to predict the allocation of a subject as behaviour disordered was generated.

The clinical allocation of an individual as behaviour disordered on the basis of the above configuration of predictors presents both theoretical and pragmatic problems. Essentially there is no a priori theoretical basis to substantiate such an allocation. It would seem that this model adequately describes the characteristics of the present data set however, it lacks predictive power in the clinical context. Thus on the basis of the observed results, one must conclude that in clinical practice, no precedent exists to advocate the use of self concept dimensions as predictors of behaviour disorder in the school setting.

9.3.4 Interpretive Comments

Studies have shown (Marsh, 1985; 1989a; 1990a; Marsh, Barnes, Cairns & Tidman, 1984) that the multidimensional self concepts of all preadolescent children are sufficiently differentiated to allow for both positive and negative evaluations to coexist on varying dimensions simultaneously. Marsh (1990a) also asserts that a universal decline in self concept throughout early childhood and into preadolescence should not be viewed as problematic for a more realistic appraisal of self develops as life experiences are integrated into the self concept. These results suggest that participants in this study, irrespective of group membership, reported sufficiently differentiated multidimensional self concepts to accommodate both high and low self concepts on varying dimensions.

Both study and comparison groups' reported multidimensional self concepts were commensurate with the normal population. Indeed, behavioural ratings
made by teachers and caregivers accurately classified the groups into presence/absence of behaviour disorder, yet no group differences were observed in these subject's multidimensional self concepts. These results parallel those previously reported by Bajuk et al. (1992) in a preliminary analysis of the data. Testing the utility of self concept dimensions in the prediction of behaviour disorder in the school setting is a unique feature of this research. Using multiple logistic regression procedures, it was established that self concept dimensions cannot be used reliably as predictors of behaviour disorder.

9.3.5 Summation and Implications

The conceptual and methodological inadequacies which have compromised self concept research in the past are addressed in this study in order to establish that an individual's behaviour does not reflect the valency of that individual's self concept. Normative comparisons with both designated reference populations and a selected cohort group were conducted to test this proposition. Using multivariate analysis, the proposition that the knowledge of an individual's self concept is not useful in predicting behavioural status was also tested.

The reported personal, social and school related self concept dimensions were compared with the normal population. It was thus concluded that the reported multidimensional self concepts of the sample paralleled those of the normal population, to the extent that the designated reference population was representative of the normal population. Sample homogeneity with regard to subjects' reported multidimensional self concepts was established through group comparison. In addition, multiple logistic regression analysis demonstrated that
the prediction of behaviour disorder using multidimensional self concepts was of little clinical value.

Several unique features enhance the credibility of the reported results. Examining the self concepts of preadolescent boys exhibiting problematic behaviours in the school setting using the Marsh/Shavelson model of multidimensional self concept (Marsh & Shavelson, 1985) is conceptually unique. The provision of valid and reliable self concept dimensions also facilitated the normative bivariate comparisons and multivariate analysis not previously undertaken in self concept research of this nature. The sampling strategies implemented to address previously identified methodological shortcomings in self concept research also contribute to the validity of the results. Comparison group subjects, not only provided a normative reference, but were also category matched with the study group subjects to control unwanted sociocultural variation. Thus, the conclusion that when potential environmental influences and personal background are controlled no significant group differences in reported multidimensional self concepts occurred has substantial conceptual and methodological credibility. It is for this reason that this research contributes significantly to the growing body of knowledge in both behavioural and self concept research.

9.4 The Self Appraisal Process

The development of self concept is said to be reliant on the evaluations of significant others, reinforcement of these evaluations and attribution for one's own behaviour (Marsh, 1988). In order to clarify the relationship between behaviour
and self concept, it is necessary to probe the intricacies of the self appraisal process. The relationship between significant others' ratings of subject's behaviour and reported multidimensional self concepts and anxiety was examined on previously defined theoretical grounds and was considered the most pragmatic method of operationalising this notion. Complex psychological process which guide self appraisals were investigated in terms of a motivational model, utilising the concept of state-trait anxiety to ascertain levels of emotional involvement when discrepant self information challenges beliefs of personal adequacy.

9.4.1 Self Appraisal and Self-Other Reporting

The congruence between an individual's self perceptions and others' perceptions of that individual's social functioning may be ascertained by investigating the relationship between the two. In this study, an indication of the congruence between self-other reporting was gained by correlating reports of subjects' multidimensional self concepts with both primary caregiver and class teacher ratings of these subjects' behavioural competencies and problems.

Behavioural Competencies and Multidimensional Self Concepts

Primary caregiver and class teacher perceived behavioural competencies, when correlated with subjects' own reports of their perceived competencies, provide one facet of the congruence between self-other perceptions. No significant relationships were observed between reported multidimensional self concepts, measured by the SDQ-1 Individual and Total scales, and teacher reported adaptive functioning, measured by the TRF Adaptive Functioning scales, for the
Study group. A similarly non significant result was obtained for the study group between the same self reports and caregiver ratings of these subject's competencies, measured by the CBCL/4-18 Competence scales. It may thus be concluded that, no linear relationship exists between study group subjects' perceived personal, social and school competencies and objective perceptions of their behaviour held by their teachers and caregivers, indicating the retention of the null hypothesis.

The outlined results parallel those previously reported by Schneider and Byrne (1989). These researchers reported that parent ratings on the CBCL Social Competence scales (Achenbach & Edelbrock, 1983) and children's self ratings were so incongruent as to suggest that parents viewed their children's social competencies from a different frame of reference. The shifting influence of parents as primary agents of socialisation during preadolescence may well account for this. The potential for the influence of salient teachers and peers to gain in credibility and valuation in the eyes of the preadolescent is heightened during this developmental period. It may well be that parent perceptions of their children's competencies remain idiosyncratic, whilst the preadolescent's view grows to accommodate broader social and environmental influences. Moreover, the results yielded by this study also suggest that class teachers lacked credibility in the eyes of subjects identified as behaviour disordered.

The comparison group subjects were chosen because of perceived appropriate behaviour patterns in the school setting. A significant level of agreement was observed between the comparison group subjects' self reported multidimensional self concepts and class teacher's reports of their adaptive
functioning. Interestingly, significant relationships were observed between teacher and self ratings of both an academic and nonacademic nature. It would appear that for the *comparison group*, teacher ratings of adaptive functioning are positively correlated with the nonacademic SDQ-1 dimensions, such as Physical Appearance, General Self, Total Nonacademic and Total Self. However, when *comparison group* subject's multidimensional self concepts were correlated with caregiver reports of social competence, congruence between self and caregiver reporting on the *school* scales was observed.

An active process of reinforcement between these *putative significant others* and *comparison subjects* may be inferred from the observed positive relationships in *self-teacher*, and also to a lesser degree in *self-caregiver reports* thus supporting the relevant research hypothesis. It would appear that when compared with *study group subjects*, *comparison subjects* attributed greater knowledge of their school related competencies and a greater degree of credibility to their class teachers, and to a lesser degree, their primary caregivers. Schneider and Byrne's (1989) contention regarding the shifting influence of parents as primary *significant others* during preadolescence also seems relevant for the *comparison group*, but not to the same extreme degree as observed for the *study group*. Indeed at face value, the results for the *study group* suggest that no reinforcement between *self-other evaluations* of personal adequacy occurs for these subjects during this preadolescent period.

*Problem Behaviours and Multidimensional Self Concepts*

The relationship between primary caregiver and class teacher perceived
problem behaviours and subjects' reports of their perceived competencies provides further insight into the nature of self-other perceptions. When teacher ratings of study group subjects' problem behaviours, measured by the TRF Problem scales, were correlated with these subjects' reported multidimensional self concepts, measured by the SDQ-1 Individual and Total scales, the two were found to be unrelated. Study group subjects' self reports and primary caregiver ratings of their problem behaviours were also found to be unrelated. By and large, there appears to be no significant linear relationship between the self-other perceptions of the study group, indicating the retention of the null hypothesis.

Results tabled for the comparison group however indicate some agreement in self-other reporting. Interestingly, here coefficients to reach statistical significance pertained primarily to social and personal functioning, rather than academic concerns. Academic self concept dimensions and teacher perceived problem behaviours remained largely unrelated. Self-teacher agreement seemed to focus on comparison group subjects' interpersonal skills rather than their academic skills. This seems intuitively logical as these subjects were selected on the basis of their demonstrated adaptive behaviours in the school setting. Additionally, if academic performance was a source of concern for these subjects, it is not surprising that self-teacher reporting for these dimensions was discrepant.

An antithetical trend was observed when self-caregiver ratings were correlated. The observed significant relationships occurred predominantly in the sphere of schooling, with Peer Relations and Total Self also featuring. Generally, coefficients relating to personal and social dimensions failed to reach statistical significance. Thus, in support of the hypothesis, comparison group results reflected
limited congruence between self-teacher and self-caregiver reporting.

Interpretive Comments

The observed agreement in self-teacher reporting of comparison group subjects' interpersonal skills was not entirely unexpected. Comparison subjects were included in the study because of their adaptive interpersonal skills in the school setting. It is consequently likely that active environmental reinforcement would occur between comparison subjects and their class teachers. These teachers, selected as putative significant others for research purposes, may well be perceived as real significant others by comparison group subjects. As real significant others their judgements would be valued and attributed a high degree of credibility. This active environmental reinforcement would thus manifest itself as the observed congruence between self-teacher perceptions.

The lack of association between self-teacher perceptions of comparison group subjects' academic skills may be accommodated using the notion of the self-serving effect. This notion proposes differential causal attributions in success and failure situations. The comparison group, chosen because of their relatively successful interpersonal skills at school, however are required to accommodate academic failure within their multidimensional self concepts. Bradley's (1978) motivational model, incorporating what he calls counterdefensive attributions, seems applicable given the observed results. He suggests that self serving attributions may be viewed as public self presentations designed to maximise public self esteem. The embarrassment of accepting responsibility for positive outcomes and denying credit for negative outcomes threatens the individual's public image. Thus, the
individual's public appraisals of causality may be distorted to engender a favourable impression. This phenomenon could well have been operating resulting in the observed lack of association between self-teacher reporting on these dimensions.

In view of the above, it is likely that comparison group subjects more readily identify with the social mores espoused by the putative significant others selected for the purposes of this research. It could be argued that this does not hold for the study group. The overwhelming lack of association between self-other reporting in this case suggests that study group subjects may not hold their class teachers, or even their primary caregiver, as real significant others. Unlike comparison group subjects, study group subjects may no longer consider these adults credible or valued sources of self information. This could then be reflected in the observed lack of association between self-other reporting for these preadolescent subjects.

As the preadolescent social horizon expands, the salience of the peer group increases dramatically whilst parental impact on the developing self diminishes (Schneider & Byrne, 1989). This developmental shift may be particularly pertinent in the case of study group subjects. It may well be that the dominant sociocultural environment, represented by the school, lacks credibility in the minds of these subjects. It is possible that study group subjects attribute significance to a salient peer group. The salient peer group, held as real significant others, take on the reinforcing role and provide desired self information which is valued and held as credible.

This explanation, although not specifically tested through self-peer reporting, accommodates the observed results using a developmental perspective.
Environmental reinforcements, which are an integral part of the self appraisal process, operate to provide positive reinforcement despite the problematic social interactions occurring at school or even at home. Thus, enabling the self concept to become increasingly differentiated by adolescence to accommodate both negative and positive self evaluations on varying dimensions.

Although this theoretical interpretation is appealing, it must be acknowledged that the instrumentation selected to measure the behaviour and self concept constructs may have inadvertently influenced these results. Theoretically speaking, correlating the CBCL/4-18 and TRF with the SDQ-1 generates numerical measures denoting the degree to which self-other perceptions are associated. On the other hand however, not only have these instruments been constructed to address contrasting constructs, but they also measure the respective constructs from varying perspectives. The CBCL/4-18 and TRF by and large address negative aspects of perceived behaviour, whilst the SDQ-1 addresses both positive and negative aspects of self perception. Furthermore, statistically speaking, it may well be that some degree of collinearity exists between the SDQ-1 scales and the CBCL/4-18 and TRF scales as these instruments all measure aspects of interpersonal functioning irrespective of their positivity or negativity.

The outlined methodological concerns are legitimate however, if these factors introduced confounding the universal trend of agreement would be evident across the groups. This was not the case. Thus, the theoretical interpretation appears more appealing and would also account for the extreme differences observed between the groups.
9.4.2 Self Appraisal, Multidimensional Self Concept and Anxiety

It has been argued that self appraisal involves not only the impact of significant relationships, but also a transaction of complex psychological and motivational processes. Indeed, the influence of adult significant others on the developing preadolescent self concept varies considerably from individual to individual. Thus, where success and failure are experienced, or where there are obvious differences between external evaluation and self perception, the resulting attributions need to be accommodated by the developing self concept. The theoretical position taken is that the motivational component associated with these psychological processes is anxiety. Inferences regarding the ego involvement associated with a given task may be made using anxiety as the indicator. This proposition was operationalised using the state-trait anxiety model (Spielberger et al., 1973; Spielberger et al., 1983).

Exposure to situations involving the evaluation of personal adequacy may evoke increases in state anxiety, measured by the STAIC A-state scale. The completion of an instrument, such as the SDQ-1, probing private perceptions and cognitions regarding a range of potentially successful and/or failed situations may evoke these anxiety states. In addition, situations which involve the evaluation of personal adequacy are more likely to be perceived as threatening by children with elevated trait anxiety, measured by the STAIC A-trait scale. Following an inspection of group differences on the A-state and A-trait scales, these scales were correlated with the SDQ-1 scales. An empirical measure of the anxiety arousal associated with the reporting of multidimensional self concepts, a task which for the purposes of this study involves the evaluation of personal adequacy, was thus
obtained.

**Group Differences in State-Trait Anxiety**

No significant group differences in the anxiety arousal reported by *study and comparison group subjects* were detected. In fact, contrary to the respective research hypothesis, the data yielded no significant group differences between mean state or trait anxiety scores. These results contradict previous research (Finch et al., 1976; Finch et al., 1974; Finch & Nelson, 1974; Montgomery & Finch, 1974) which reports qualitative differences in children's anxiety arousal patterns on the basis of the presence/absence of behavioural and/or emotional problems. Finch et al., (1976; 1974) and Finch and Nelson (1974) found emotionally disturbed children exhibited *higher levels of state anxiety* and *lower levels of trait anxiety* than well adjusted children. Paradoxically, Montgomery and Finch (1974) found their sample of emotionally disturbed children exhibited *higher levels of both state and trait anxiety* than their normal counterparts.

The results reported for this study indicate that, on average, the levels of both state and trait anxiety reported by boys exhibiting severe disordered behaviour and their normal counterparts were not significantly different. It may well be that the nature of the disturbance dictates the extent to which anxiety arousal is experienced or even reported. This would account for the variety of findings reported by researchers using the same measurement instrument.

**State-Trait Anxiety and Multidimensional Self Concept**

Anxiety arousal associated with the reporting of multidimensional self
concept was investigated in order to examine the inferred role of ego involvement during reporting. The A-state and A-trait anxiety scales were correlated with the SDQ-1 self concept scales. Contrary to the respective research hypothesis, results for the *study group* indicated that these dimensions were largely unrelated. However, in support of the relevant research hypothesis, results for the *comparison group* revealed a strong negative relationship between the reporting of state anxiety and multidimensional self concept. It may be argued that being confronted with items representing personal, social and school self concepts aroused anxiety for these subjects. School related self concept dimensions appear salient for the *comparison group* further supporting the notion that these subjects may have been experiencing serious academic difficulties.

The *comparison group* results closely parallel previous research (Many & Many, 1975; Nunn et al., 1983; Rosenberg, 1962) which also reported a clear inverse relationship between self esteem and anxiety. This association however, was not observed for the *study group*. Reports of multidimensional self concepts and both state and trait anxiety were largely unrelated for this group of subjects. The reported results suggest clear group differences in the relationship between reported anxiety and multidimensional self concepts.

*Interpretive Comments*

The reported results contribute significantly to an emerging pattern of group differences. No significant differences in state or trait anxiety were observed between *study and comparison groups*. Furthermore, only *comparison group* data yielded a clear negative relationship between state anxiety and selected
self concept dimensions. Study group subjects’ reported multidimensional self concepts and reports of both state and trait were found to be unrelated.

It is proposed that state anxiety is indicative of the ego involvement associated with the completion of a task requiring evaluations of personal adequacy. The observed results would suggest that comparison group subjects experienced significant ego involvement reporting school related self concept dimensions. This is further evidence supporting the notion that these subjects were focussed on their own poor academic achievements and that reporting on this aspect of their schooling evoked considerable anxiety. However, the reporting of self concept evoked little ego involvement for study group subjects.

Indeed, the results also raised questions regarding the utility of state-trait anxiety theory. According to state-trait anxiety theory (Spielberger et al., 1973; Spielberger et al., 1983), a direct link exists between trait anxiety and the frequency and intensity of anxiety states. These results support no such link. In fact according to these results, state and trait anxiety appear to operate independently with group differences in the association between anxiety and self concept evident only on the state anxiety dimension.

9.4.3 Summation and Implications

Distinct population differences between preadolescent boys identified as behaviour disordered and those exhibiting socially appropriate behaviours have emerged from this investigation of the self appraisal process. The reported multidimensional self concepts of the study group were not related to teacher or caregiver reports of these children's adaptive functioning, social competence and
problem behaviours. The perceptions of these adult significant others, presumed to be representing the dominant sociocultural environment, appear not to have been reflected in reports of study group subjects' multidimensional self concepts. Indeed, these subjects' reporting of multidimensional self concept was also found to be largely unrelated to their reports of anxiety arousal. It would appear that, for the study group, the reporting of personal, social and academic self concepts did not evoke ego involvement and thus was not associated with feelings of anxiety.

As proposed earlier, the child's sociocultural environment and location in the social structure is germane in the differential valuation of significant others. It seems that the opinions held by the putative significant others, selected for the purposes of this research, may not have been valued or attributed credibility by study group subjects. Credible and valued self information is said to be gained from those held as real significant others. During preadolescence, the perceptions of siblings, peers, or in this case adults other than those whose reports were solicited, may be attributed significance. Study group subjects' real significant others, providing credible and valued self information, could thus include any of these alternative individuals.

The observed lack of association between study group subjects' reporting of their self concept and anxiety arousal provides further support for this notion. This result suggests that source devaluation has not occurred to accommodate differences between external evaluation and self perception. On the contrary, it would suggest that these sources of self information are perceived as irrelevant and that there is little threat to the self system being experienced by this group.
This trend however, was not observed for the comparison group. Considerable congruence was observed between comparison group subjects' reported multidimensional self concepts and reports of their behavioural competencies made by their teachers and caregivers. It seems likely that considerable reinforcement of perceptions occurred between comparison group subjects and these putative significant others selected for research purposes. Thus, one may postulate that these putative significant others were in fact perceived by comparison group subjects as real significant others, with their opinions being valued and/or attributed credibility.

The strong association between school related self concept dimensions and state anxiety indicates that for comparison group subjects the ego involvement associated with the reporting of these dimensions aroused considerable anxiety. It could be argued that ego involvement, inferred through the arousal of state anxiety, may suggest that these subjects were motivated to protect and enhance either their private or public image or both. As a group, the comparison group subjects appear to have experienced significant academic difficulties. In view of this, the preceding argument seems a credible explanation for the observed pattern of results and also supports the Many and Many (1975) argument that anxiety occurs when the individual expects to be, or actually is, rejected by the self or others.

9.5 Synopsis

Emerging profiles of the study and comparison groups suggest that the groups are perceived as behaviourally discrete by both their class teachers and
primary caregivers. In addition, clear group differences have also emerged with regard to the congruence of self-other ratings and the mediatory role played by anxiety during a self appraisal task. However, no significant group differences in reported multidimensional self concepts were found. Indeed, statistical comparison of the research sample with the SDQ-1 standardisation sample indicated that subjects' multidimensional self concepts were commensurate with those reported for a normal population. The ramifications of these results with respect to the perceived salience of home and school environments for boys identified as behaviour disordered are to be further explored.
10.1 Perceptions of Interpersonal Adequacy:

A Systematic Examination

This study examines the perceptions of interpersonal adequacy held by preadolescent behaviour disordered boys. Theoretical and methodological principles were selected to provide a unique appraisal of the complex association between behaviour and self concept making this research unlike any other currently available. The methodological inadequacies, reportedly compromising the merit of past self concept research, were addressed using an innovative research design. Furthermore, both constructs were defined using well respected, contemporary theoretical models boasting substantial empirical support and making direct comparisons with other research using these paradigms possible.

Unlike previous research, the pair-wise category matching of subjects was able to reduce variation in both pairs of informants' and subjects' sociocultural backgrounds. This procedure produced a sample comprising two equal groups for study. Additionally, both groups represented a cohort of subjects drawn from similar sociocultural backgrounds. Pairs of subjects were drawn from the same class and matched on: academic performance in key skills areas, family structure and ethnic/cultural affiliation of the primary caregiver. By reducing the effects of these extraneous factors, identified through a priori theory and research as
potential confounding variables, the observed discrepancies could be directly attributed to the constructs studied.

Pairs of subjects were selected by the class teacher on the basis of perceived presence/absence of behaviour disorder in the school setting. Thus, the sample comprised two distinct groups of boys, one a group identified as behaviour disordered, and the other a normative reference group for the school setting. Behavioural informants for each pair of subjects were limited to the class teacher and each subject's primary caregiver. These features of the research methodology support the notion that the negative impact of problematic behaviour on the individual's socialisation experiences may only be fully realised when considered in this normative, developmental context. Thus, unlike the majority of behavioural research also investigating self concept, the behaviourally deviant subjects were not enrolled in psychiatric day or inpatient programs and the informants selected were not the personnel associated with such highly specialised, intensive therapeutic programs.

A psychometric paradigm (Achenbach, 1991c) defining children's behaviour problems as quantitative deviations from the norm was considered the most appropriate for the purposes of this research. Children's experiential differences related to sex, race, socioeconomic background and cognitive ability affect behavioural reporting, as does the informant's idiosyncratic background and the nature of the interaction (Achenbach & Edelbrock, 1984). Thus, the behavioural reports of two types of informants sharing different settings with the child were sought. Class teachers was selected to report on subject's behaviour adjustment to the school setting and primary caregivers provided behavioural reports from
the home setting. These informants, representing the subject's immediate sociocultural environment, are said to play an important confirming role in the socialisation process and were thus assigned as putative significant others (Rosenberg, 1973) for the purposes of this research.

Validation of this subjectively selected sample was achieved through a statistical comparison with the age appropriate CBCL/4-18 and TRF demographically matched clinically referred and nonreferred samples of boys (Achenbach, 1991a; 1991b). It was thus established empirically that as a group, the study group was representative of this clinically referred population. On average, these subjects exhibited excessive anti-social behaviours. The comparison group, selected as a normative reference group, behaviourally met the inclusion criteria. On average however, this group appeared to struggle academically and also exhibited some internalizing behaviours.

Class teacher and primary caregiver reports of subjects' social competence, adaptive behaviour and problem behaviour clearly separated the groups on the basis of their ascribed behavioural status. Significant group differences were also observed in cross informant reporting. When compared with caregiver ratings of study group subjects' behavioural competencies and problems, teachers' ratings were found to classify subjects as significantly more deviant. The reverse was observed for the comparison group. Furthermore, the association between teacher and caregiver reporting was found to be significantly greater for the study group when responses to the 89 problem items assigned to both the CBCL/4-18 and TRF were correlated. This congruence in reporting suggests that the study group subjects' behavioural repertoire tended to generalise across settings. The
comparison group subjects' behaviour seemed more situationally determined.

The SDQ-1 was selected to measure the multidimensional self concepts of these subjects. Advocates of this multidimensional model propose that by preadolescence children's self concepts are sufficiently differentiated to incorporate perceptions of personal strength and weakness in various facets of their lives. Correspondingly, it is proposed that children whose behaviours are perceived as problematic, do not acquiesce and perceive themselves negatively and therefore personally and socially inadequate.

In order to place the multidimensional self concepts of these subjects within a normative framework, statistical comparisons were conducted using the age appropriate SDQ-1 standardisation sample as the designated normal population. The personal, social and school self concepts of the sample were commensurate with those reported for the reference population of preadolescent boys attending regular primary schools in the greater Sydney Metropolitan area. It would appear that regardless of their behavioural status in the school setting, the multidimensional self concepts of this research sample do not differ greatly from those of the general population, at least to the extent that the designated reference population is representative of the normal population.

Moreover, although teachers' and caregivers' behavioural reports clearly differentiated the groups according to their ascribed behavioural status, the study and comparison group subjects' reported multidimensional self concepts did not significantly differ. According to statistical prerequisites, multiple logistic regression analysis generated a model comprising a subset of self concept dimensions which best predict the presence of behaviour disorder. The best
fitting model comprised four SDQ-1 dimensions: Physical Abilities, Physical Appearance, Reading and General School. Although this model adequately fulfils statistical criteria, on a priori theoretical grounds its clinical predictive utility is questionable. It would appear that valid prediction of behavioural status from reported multidimensional self concept is a difficult task.

In order to gain a deeper understanding of the relationship between behaviour and self concept, the self appraisal process was investigated. Self appraisals occur through experiences with the environment and significant others and are guided by complex psychological processes (Shavelson et al., 1976). Self-teacher and self-caregiver ratings were both compared to ascertain the extent to which environmental influences and the perceptions of significant others were reflected in subjects' multidimensional self concepts. Self ratings comprised subjects' reported multidimensional self concepts. Teacher and caregiver ratings were objective communications regarding subjects' behavioural competencies and problems. This procedure produced clear group differences. Both self-teacher and self-caregiver ratings for the study group were found to be generally unrelated. However, self-teacher and self-caregiver ratings for the comparison group were found to be substantially related.

These results were interpreted using Rosenberg's (1973) notions of valuation and credibility which are reflected in the degree of significance accorded to the other by an individual. The obvious discrepancy between study group subjects' reported self concepts and both teachers' and caregivers' objective behavioural ratings lead one to suspect that the opinions of these putative significant others are not attributed credibility or valued by these subjects.
Nevertheless, environmental reinforcement of these subjects' self concepts may occur through a salient subculture which is valued and attributed credibility, thus accounting for these results.

An intuitively appealing explanation for the positive self concepts reported by study group subjects involves a motivational explanation for self serving attributions of causality. One could postulate that inflated self concepts are most likely are a result of conscious distortions employed to maintain both private and public image in the face of discrepant self-other information. The state-trait anxiety model provided a compatible, pragmatic conceptual and methodological framework with which to test this premise. Episodes of state anxiety are said to be triggered by situations involving the evaluation of personal adequacy. Trait anxiety, on the other hand, measures the individual's propensity to experience anxiety states. No significant group differences were found for either state or trait anxiety. However, clear group differences emerged when state and trait anxiety were correlated with reported multidimensional self concepts. Study group reports of both state and trait anxiety were found to be largely unrelated to their reported multidimensional self concepts. It would appear that this group experienced little ego involvement during the completion of this task. Results for the comparison group, on the other hand, indicated a significant inverse effect between reports of state anxiety and multidimensional self concept.

In accordance with state-trait anxiety theory, high state anxiety is indicative of ego involvement during the completion of tasks involving the evaluations of personal adequacy. In view of the significant inverse association between comparison group subjects' reported state anxiety and reports of their school
related self concepts, inferences regarding the motivational processes influencing these self appraisals might be drawn. Bradley (1978) suggests that under certain conditions the individual's needs may best be served by accepting responsibility for negative outcomes. The embarrassment of accepting undue credit for positive outcomes and denying credit for negative outcomes resulting in public intimidation, would threaten the individual's positive public image. Thus, public appraisals may be distorted to engender a favourable impression. It seems logical to suggest that comparison group subjects' reported anxiety arousal associated with the reporting of their school related self concepts may have been indicative of what Bradley (1978) calls counterdefensive attributions. These subjects' apparent academic failure coupled with their socially appropriate and valued behavioural characteristics add credibility to this argument.

The observed lack of association between reported anxiety and reported self concept for the study group subjects suggests the psychological processes employed by these subjects during self appraisal differ from their normative reference group. Riess et al. (1981) have in fact postulated two psychological processes which may operate during self appraisal. In addition to the explanation which holds for comparison group results, they suggest that self serving attributions may also be guided by unconscious, unwitting distortions in perception. This explanation reflects an actual bias in private perceptions of objective causality. A complete picture of study group reporting suggests this may be the process operating during self appraisal for these subjects.

These inferences regarding the psychological processes operating during self appraisal are made cautiously as exploring self serving attributions of causality
per se, was beyond the scope of this investigation. However, the reported configurations of results for each group would suggest that these study and comparison group subjects did indeed employ different psychological mechanisms when confronted with the self reporting task. It may well be that the nature of the disturbance, the task and the level of ego involvement determine the psychological process employed during self appraisal.

10.2 Conclusions

The study group was a group of boys exhibiting extreme anti-social behaviour. Both teachers and caregivers classified this group as such. However, these subjects reported multidimensional self concepts commensurate with the normal population, to the extent that the designated reference populations were representative of the normal population. In addition, no statistically significant group differences in reported multidimensional self concepts were observed between the study group and their normative reference group, the comparison group. The reporting of multidimensional self concepts was not associated with anxiety arousal for this group and self-other reports clearly indicated little evident association.

In view of these results the notion that putative significant others selected for the purposes of this research lacked credibility and were not valued by this group was proffered. The confirming role of significant others may be assumed by representatives of a salient subculture, not the dominant sociocultural environment represented by putative significant others. Positive multidimensional self concepts are thus maintained through environmental reinforcement and the
reinforcement of these real significant others. The lack of ego involvement associated with the reporting of multidimensional self concepts suggests that, for the study group, such self appraisals may involve valid representations of self perceptions.

An alternate explanation however, accommodates the trend observed for the comparison group, a normative reference group selected for comparative purposes. On average, this group comprised subjects experiencing academic distress and exhibiting withdrawn behaviour. Nevertheless, their prosocial behaviour was found to be commensurate with normative population parameters and thus the group met the set criteria for the purposes of this research. An inspection of cross informant ratings indicated that, when compared with teacher ratings, caregiver ratings for comparison group subjects' problem behaviours were more critical. It would appear that these subjects exhibited more situation specific behaviours than did the study group.

Comparison of self-other ratings for the comparison group indicated considerable agreement between self-teacher ratings, and to a lesser extent between self-caregiver ratings. On the basis of these results, it would appear that these subjects hold the putative significant others selected for research purposes as their real significant others, attributing their opinions with credibility. Thus, one may speculate that when confronted by negative self information from these real significant others and also asked to appraise their personal adequacy, these subjects experience considerable anxiety. The significant inverse effect between reports of state anxiety arousal and multidimensional self concepts observed for the comparison group in fact appeared to bear this out. This emerging
behavioural profile suggests that when confronted with the discrepant self information regarding their academic attainment, the *comparison group subjects* may have engaged *counterdefensive attributions* to engender a favourable impression and maintain a positive public image. Thus, on the basis of the results observed for both groups, the psychological processes associated with self appraisal may depend on the salience of the task and the audience, as well as the nature of the behavioural disturbance.

### 10.3 Recommendations

Findings, although contrary to conventional thought, support the notion that the self concepts of preadolescent boys exhibiting problematic behaviour are not necessarily depressed, leading to feelings of personal inadequacy. When potential environmental influences and subjects' personal backgrounds are controlled through category matching, the multidimensional self concepts of these boys are commensurate with those of the normal population. Furthermore, the clinical utility of self concept dimensions in the prediction of behavioural outcome has been shown to be limited on *a priori* theoretical grounds. Comparisons with appropriate reference populations indicate that the sample was representative of designated reference populations with reference to ascribed behavioural status and reported multidimensional self concepts. This then validates prudent extrapolation of these results to the wider population. It is however, suggested that further research using larger samples would enhance the power of these consequential findings.

It would be useful to further investigate links between the valency of
reported multidimensional self concepts and the character of an individual's 
behavioural disturbance. It is recognised that not all behavioural/emotional 
disturbances share the same sequelae or manifest themselves in the same way 
thus, such an investigation may generate knowledge that is clinically useful. This 
research has already provided useful insight regarding the self systems of boys 
exhibiting aggressive, anti-social and delinquent behaviours. Further research may 
provide useful insight regarding other types of behavioural disturbances.

Empirical validation of the applicability of the revised 1991 CBCL/4-18 
and TRF profiles to Australian populations should precede further between 
network research using these instruments. Comparisons between the clinically 
referred and nonreferred normative samples for the CBCL/4-18 and TRF and the 
study and comparison groups, respectively point to possible cultural differences in 
reporting behavioural deviance. Results indicated that caregivers and teachers of 
these Australian subjects appear less tolerant of deviance and systematically rated 
subjects' behaviour accordingly. This was evidenced by the fact that subjects were 
rated as less socially competent and more deviant by both parties than their 
designated American reference populations. Similar findings were reported by 
Achenbach, Hensley, Phares and Grayson (1990) who used pre-1991 CBCL 
profiles (Achenbach & Edelbrock, 1983) in their research.

This work has drawn tentative parallels between the perceptions of 
interpersonal adequacy held by preadolescent boys identified as behaviourally 
disordered and the psychological and/or motivational processes enlisted during 
self appraisal. Specific examination of the attributional style employed by boys 
exhibiting disordered behaviour was beyond the scope of this already imposing
work. However, in view of the reported results, it would appear that differential psychological and motivational processes, based on ascribed behavioural status, play a significant role in self appraisals. Indeed, further inspection of the relationship between these differential processes and behavioural classifications would strengthen the postulates expounded on the basis of the observed results. It may well be that the nature of the disturbance governs the psychological and motivational processes enlisted during self appraisal however, this requires further investigation.

This research was conducted with the belief that empirical knowledge should be utilised to promote the well being of the individual and enhance service provision to this aim. Clinically, an appropriate battery of self report measures may provide useful insight into the nature of preadolescent self appraisals, as well as the status of constructs being reported. It is also recommended that local standardisation of the revised 1991 CBCL/4-18 and TRF profiles should take place in order to enhance the discriminatory power of this respected instrument when used with Australian populations. These results indicate that population differences may exist in the tolerance of deviant behaviour, with Australian significant others showing less tolerance than their American counterparts.

Finally, it may be useful to ponder the perceived relevance of a seemingly critical social environment for preadolescent boys already exhibiting severe behaviour disorder. Teachers, and even caregivers, whose opinions lack perceived credibility and valuation may have little impact on the preadolescent self system. Consequently, any effective behavioural intervention must first ensure that it possesses a measure of credibility in the eyes of the recipient in order to promote
self involvement. This may only occur if effective and relevant clinical intervention occurs at an earlier age before the differentiation of self concept peaks. Here the use of appropriate well respected, contemporary instrumentation observing sound theoretical and methodological principles may be crucial. Effective therapeutic intervention is reliant upon accurate diagnosis. The validity and reliability of instrumentation has always been recognised as paramount for research purposes. It is also paramount in clinical work.

This research has demonstrated that the reported multidimensional self concepts of the preadolescent boys sampled were commensurate with those reported for the normal population. Indeed, it was also established that knowledge of an individual's multidimensional self concepts was not clinically useful in the prediction of behaviour disorder. The association between ascribed behavioural status and reported self concept appears very limited. However, a clear relationship between ascribed behavioural status and the differential psychological and/or motivational processes enlisted during self appraisal was observed using reported anxiety as a pragmatic indicator. In view of the definitive results reported, future research investigating the relationship between ascribed behavioural status and differential attributional style is strongly recommended.
References


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# Appendix A

## Instruments

### A.1 CBCL/4-18 parent questionnaire

**CHILD BEHAVIOR CHECKLIST FOR AGES 4-18**

**PARENTS' USUAL TYPE OF WORK:**
- For office use only.
- Please check one—e.g., auto mechanic, high school teacher, homemaker, housewife, salesperson, blue collar, etc.

<table>
<thead>
<tr>
<th>Child's Name</th>
<th>PARENTS' TYPE OF WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Child's Birthday</th>
<th>Father's Job Title</th>
<th>Mother's Job Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Today's Date**

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grade in School**

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Not Attending School**

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**I. Please list the sports your child most likes to take part in. For example: swimming, baseball, skateboarding, bike riding, fishing, etc.**

<table>
<thead>
<tr>
<th>Compared to others of the same age, about how much time does he/she spend in each?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>a.</td>
</tr>
<tr>
<td>b.</td>
</tr>
<tr>
<td>c.</td>
</tr>
</tbody>
</table>

**Compared to others of the same age, how well does he/she do in each one?**

<table>
<thead>
<tr>
<th>Don't Know</th>
<th>Below Average</th>
<th>Average</th>
<th>Above Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**II. Please list your child's favorite hobbies, activities, and games, other than sports. For example: stamps, dolls, books, piano, crafts, car, skating, etc. (Do not include listening to radio or TV.)**

<table>
<thead>
<tr>
<th>Compared to others of the same age, about how much time does he/she spend in each?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>a.</td>
</tr>
<tr>
<td>b.</td>
</tr>
<tr>
<td>c.</td>
</tr>
</tbody>
</table>

**Compared to others of the same age, how well does he/she do in each one?**

<table>
<thead>
<tr>
<th>Don't Know</th>
<th>Below Average</th>
<th>Average</th>
<th>Above Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**III. Please list any organizations, clubs, teams, or groups your child belongs to.**

<table>
<thead>
<tr>
<th>Compared to others of the same age, how active is he/she in each?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>a.</td>
</tr>
<tr>
<td>b.</td>
</tr>
<tr>
<td>c.</td>
</tr>
</tbody>
</table>

**IV. Please list any jobs or chores your child has. For example: paper route, babysitting, making beds, working in store, etc. (Include both paid and unpaid jobs and chores.)**

<table>
<thead>
<tr>
<th>Compared to others of the same age, how well does he/she carry them out?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>a.</td>
</tr>
<tr>
<td>b.</td>
</tr>
<tr>
<td>c.</td>
</tr>
</tbody>
</table>

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PAGE 1
V. 1. About how many close friends does your child have? □ None □ 1 □ 2 or 3 □ 4 or more
(Do not include brothers & sisters)
2. About how many times a week does your child do things with any friends outside of regular school hours?
□ Less than 1 □ 1 or 2 □ 3 or more
(Do not include brothers & sisters)

VI. Compared to others of his/her age, how well does your child:

<table>
<thead>
<tr>
<th></th>
<th>Worse</th>
<th>About Average</th>
<th>Better</th>
<th>□ Has no brothers or sisters</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Get along with his/her brothers &amp; sisters?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Get along with other kids?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Behave with his/her parents?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Play and work by himself/herself?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VII. 1. For ages 8 and older—performance in academic subjects: (If child is not being taught, please give reason)
Not being taught because

<table>
<thead>
<tr>
<th>Subject</th>
<th>Falling</th>
<th>Below Average</th>
<th>Average</th>
<th>Above average</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Reading, English, or Language Arts</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>b. History or Social Studies</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>c. Arithmetic or Math</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>d. Science</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>e. Other academic subjects—(for example computer courses, foreign language, business, etc.)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>f. Other academic subjects—(for example computer courses, foreign language, business, etc.)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>g. Other academic subjects—(for example computer courses, foreign language, business, etc.)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

2. Is your child in a special class or special school? □ No □ Yes—what kind of class or school?

3. Has your child repeated a grade? □ No □ Yes—grade and reason

4. Has your child had any academic or other problems in school? □ No □ Yes—please describe

When did these problems start?
Have these problems ended? □ No □ Yes—when?

Does your child have any illness, physical disability, or mental handicap? □ No □ Yes—please describe

What concerns you most about your child?

Please describe the best things about your child:

270
Below is a list of items that describe children and youth. For each item that describes your child now or within the past 6 months, please circle the 2 if the item is very true or often true of your child. Circle the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, circle the 0. Please answer all items as well as you can, even if some do not seem to apply to your child.

0 = Not True (as far as you know)  
1 = Somewhat or Sometimes True  
2 = Very True or Often True

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30</td>
<td></td>
</tr>
<tr>
<td>Acts too young for his/her age</td>
<td>Fears he/she might think or do something bad</td>
</tr>
<tr>
<td>Allergy (describe):</td>
<td>Feels he/she has to be perfect</td>
</tr>
<tr>
<td>Argues a lot</td>
<td>Feels or complains that no one loves him/her</td>
</tr>
<tr>
<td>Asthma</td>
<td>Feels others are out to get him/her</td>
</tr>
<tr>
<td>Behaves like opposite sex</td>
<td>Feels worthless or inferior</td>
</tr>
<tr>
<td>Bowel movements outside toilet</td>
<td>Gets hurt a lot, accident-prone</td>
</tr>
<tr>
<td>Bragging, boasting</td>
<td>Gets in many fights</td>
</tr>
<tr>
<td>Can't concentrate, can't pay attention for long</td>
<td>Gets teased a lot</td>
</tr>
<tr>
<td>Can't get his/her mind off certain thoughts</td>
<td>Hangs around with others who get in trouble</td>
</tr>
<tr>
<td>Cruel to animals</td>
<td></td>
</tr>
<tr>
<td>Cruel, bullying, or meanness to others</td>
<td></td>
</tr>
<tr>
<td>Daydreams or gets lost in his/her thoughts</td>
<td></td>
</tr>
<tr>
<td>Deliberately harms self or attempts suicide</td>
<td></td>
</tr>
<tr>
<td>Demands a lot of attention</td>
<td></td>
</tr>
<tr>
<td>Destroys his/her own things</td>
<td></td>
</tr>
<tr>
<td>Destroys things belonging to his/her family or others</td>
<td></td>
</tr>
<tr>
<td>Disobedient at home</td>
<td></td>
</tr>
<tr>
<td>Disobedient at school</td>
<td></td>
</tr>
<tr>
<td>Doesn't eat well</td>
<td></td>
</tr>
<tr>
<td>Doesn't get along with other kids</td>
<td></td>
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<tr>
<td>Doesn't seem to feel guilty after misbehaving</td>
<td></td>
</tr>
<tr>
<td>Easily jealous</td>
<td></td>
</tr>
<tr>
<td>Eats or drinks things that are not food—don't include sweets (describe):</td>
<td></td>
</tr>
<tr>
<td>Fears certain animals, situations, or places, other than school (describe):</td>
<td></td>
</tr>
<tr>
<td>Feels going to school</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please see other side
| 0 | 1 | 2 | 57. Physically attacks people (describe): |
| 0 | 1 | 2 | 58. Picks nose, skin, or other parts of body (describe): |
| 0 | 1 | 2 | 59. Plays with own sex parts in public |
| 0 | 1 | 2 | 60. Plays with own sex parts too much |
| 0 | 1 | 2 | 61. Poor school work |
| 0 | 1 | 2 | 62. Poorly coordinated or clumsy |
| 0 | 1 | 2 | 63. Prefers being with older kids |
| 0 | 1 | 2 | 64. Prefers being with younger kids |
| 0 | 1 | 2 | 65. Refuses to talk |
| 0 | 1 | 2 | 66. Repeats certain acts over and over; computations (describe): |
| 0 | 1 | 2 | 67. Runs away from home |
| 0 | 1 | 2 | 68. Screams a lot |
| 0 | 1 | 2 | 69. Secretive, keeps things to self |
| 0 | 1 | 2 | 70. Sees things that aren't there (describe): |
| 0 | 1 | 2 | 71. Self-conscious or easily embarrassed |
| 0 | 1 | 2 | 72. Sets fires |
| 0 | 1 | 2 | 73. Sexual problems (describe): |
| 0 | 1 | 2 | 74. Showing off or clowning |
| 0 | 1 | 2 | 75. Shy or timid |
| 0 | 1 | 2 | 76. Sleeps less than most kids |
| 0 | 1 | 2 | 77. Sleeps more than most kids during day and/or night (describe): |
| 0 | 1 | 2 | 78. Smears or plays with bowel movements |
| 0 | 1 | 2 | 79. Speech problem (describe): |
| 0 | 1 | 2 | 80. Stares blankly |
| 0 | 1 | 2 | 81. Steals at home |
| 0 | 1 | 2 | 82. Steals outside the home |
| 0 | 1 | 2 | 83. Stores up things he/she doesn't need (describe): |
| 0 | 1 | 2 | 84. Strange behavior (describe): |
| 0 | 1 | 2 | 85. Strange ideas (describe): |
| 0 | 1 | 2 | 86. Stubborn, sulky, or irritable |
| 0 | 1 | 2 | 87. Sudden changes in mood or feelings |
| 0 | 1 | 2 | 88. Sucks a lot |
| 0 | 1 | 2 | 89. Suspicious |
| 0 | 1 | 2 | 90. Swearing or obscene language |
| 0 | 1 | 2 | 91. Talks about killing self |
| 0 | 1 | 2 | 92. Talks or walks in sleep (describe): |
| 0 | 1 | 2 | 93. Talks too much |
| 0 | 1 | 2 | 94. Teases a lot |
| 0 | 1 | 2 | 95. Temper tantrums or hot temper |
| 0 | 1 | 2 | 96. Thinks about sex too much |
| 0 | 1 | 2 | 97. Threatens people |
| 0 | 1 | 2 | 98. Thumb-sucking |
| 0 | 1 | 2 | 99. Too concerned with neatness or cleanliness |
| 0 | 1 | 2 | 100. Trouble sleeping (describe): |
| 0 | 1 | 2 | 101. Truancy, skips school |
| 0 | 1 | 2 | 102. Underactive, slow moving, or lacks energy |
| 0 | 1 | 2 | 103. Unhappy, sad, or depressed |
| 0 | 1 | 2 | 104. Unusually loud |
| 0 | 1 | 2 | 105. Uses alcohol or drugs for nonmedical purpose (describe): |
| 0 | 1 | 2 | 106. Vandalism |
| 0 | 1 | 2 | 107. Wets self during the day |
| 0 | 1 | 2 | 108. Wets the bed |
| 0 | 1 | 2 | 109. Whining |
| 0 | 1 | 2 | 110. Wishes to be of opposite sex |
| 0 | 1 | 2 | 111. Withdrawn, doesn't get involved with others |
| 0 | 1 | 2 | 112. Worsens |

**PLEASE BE SURE YOU HAVE ANSWERED ALL ITEMS.**

**UNDERLINE ANY YOU ARE CONCERNED ABOUT.**
A.2 1991 CBCL/4-18 profile: Parent reported competence for boys aged 6-11 years

<table>
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<th>T Score</th>
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### Activities

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<th>Activities</th>
<th>Social</th>
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<tbody>
<tr>
<td>1.0 I.A. # of sports</td>
<td>0.0 I.I.A. # of organization</td>
<td>0.0 VII.I. Mean performance</td>
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<td>1.0 I.B. Mean of participation &amp; skill in sports</td>
<td>1.0 B.Mean of participation in organization</td>
<td>1.0 2.Special class</td>
</tr>
<tr>
<td>1.0 I.I.A. # of friends</td>
<td>1.0 V.I. # of friends</td>
<td>1.0 3.Repeated grade</td>
</tr>
<tr>
<td>2.0 II.B. Mean of participation &amp; skill in activities with friends</td>
<td>2.0 2. Frequency of contact with friends</td>
<td>0.0 4.School problems</td>
</tr>
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<td>1.0 IV.A. # of jobs</td>
<td>0.3 VI.A. Behavior with others</td>
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<tr>
<td>2.0 B. Mean job quality</td>
<td>1.0 B. Behavior alone</td>
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<td>27 T Score</td>
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</table>

### Notes

- Total score for each scale is rounded to nearest 0.5.
- Dashes indicate the score was not computed due to missing data.
- On Activities and Social Skills, if one item is missing, the mean of the other items is substituted.

---

Copyright 1991 by T.R. Achenbach
Univ. Associates in Psychiatry
University of Vermont
1 South Prospect St.
Burlington, VT 05401-3456
### A.3 1991 CBCL/4-18 profile: Parent reported problems for boys aged 4-11 years

<table>
<thead>
<tr>
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<th>1991 CBCL Profile - Boys 4-11</th>
<th>Externalizing</th>
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</table>

**VITALITY**

- 16 = TOTSCORE 10
- TOT T 8
- INTERNAL 2
- EXTERNAL 4
- EXT T 6
- + Clinical

**OTHER PROBS**

- 0 = 5. Inattention
- 20 = 5. Impulsivity
- 20 = 5. Aggression

**Internalizing**

- 5 = 16 = 20 = 24

**Externalizing**

- 3 = 13 = 24

**Depression**

- 5 = 13

**Delinquency**

- 3 = 11

**Aggression**

- 2 = 9

**Behavioral**

- 2 = 5

**Attention Deficit**

- 2 = 9

**Behavioral Symptoms**

- 2 = 5

---

**Items Not on Cross-Informant Construct**

- 0.47 = Night Mares
- 0.57 = Somnolence
- 0.44 = Headache

---

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T.R. Achenbach

**University of Vermont**

F.R. Propper

**Burlington, VT 05401-3456**

---

**Scores**

- 10 = TOTSCORE
- 10 = TOT T
- 10 = INTERNAL
- 10 = EXTERNAL
- 10 = EXT T

---

**Scores on Sex**

- 10 = TSCORE
- 10 = TSCORE
- 10 = TSCORE

---

**Probe Syndrome**

- 10 = TSCORE
- 10 = TSCORE

---

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TEACHER'S REPORT FORM

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The information from this form will also be used for comparison with other information about this pupil. Please answer as well as you can, even if you lack full information. Scores on individual items will be combined to identify general patterns of behavior. Feel free to write additional comments beside each item and in the spaces provided on page 2.

PUPIL'S NAME

SEX

Boy [ ]

Girl [ ]

AGE


ETHNIC GROUP OR RACE


FATHER'S NAME

TYPE OF WORK


MOTHER'S NAME

TYPE OF WORK


TODAY'S DATE


PUPIL'S BIRTHDATE of knowing


GRADE

OF SCHOOL


NAME

OF SCHOOL


1. How long have you known this pupil? ______ months


3. How much time does he/she spend in your class per week?

4. What kind of class is it? (Please be specific, e.g., regular 5th grade, 7th grade math, etc.)

5. Has he/she ever been referred for special class placement, testing, or tutoring?

6. Has he/she ever repeated a grade?

7. Current school performance—list academic subjects and check column that indicates pupil's performance:

   Academic Subject | 1. Far below grade | 2. Somewhat below grade | 3. At grade level | 4. Somewhat above grade | 5. Far above grade

   Subject 1
   Subject 2
   Subject 3
   Subject 4
   Subject 5

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101 Edition

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VIII. Compared to typical pupils of the same age

1. How fast a reader working?
   □ □ □ □ □
2. How approximately in reading (writing)?
   □ □ □ □ □
3. How much in reading (writing)?
   □ □ □ □ □
4. How happy a reader?
   □ □ □ □ □

IX. Most recent achievement test scores (if available)

<table>
<thead>
<tr>
<th>Name of test</th>
<th>Subject</th>
<th>Date</th>
<th>Percentile or grade level obtained</th>
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</tbody>
</table>

X. IQ, readiness, or aptitude tests if available:

<table>
<thead>
<tr>
<th>Name of test</th>
<th>Date</th>
<th>IQ or equivalent scores</th>
</tr>
</thead>
<tbody>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Does this pupil have any illness, physical disability, or mental handicap?  (X) Yes  (O) No

What concerns you most about this pupil?

Please describe the best things about this pupil:

Please feel free to write any comments about this pupil's work, behavior, or potential, using extra pages if necessary.
Below is a list of items that describe pupils. For each item that describes the pupil well or within the past 2 months, please circle the 3 if the item is very true or often true of the pupil. Circle the 1 if the item is somewhat or sometimes true of the pupil. If the item is not true of the pupil, circle the 0. Please answer all items as well as you can even if some do not seem to apply to this pupil.

<table>
<thead>
<tr>
<th>Item</th>
<th>0 = Not True (as far as you know)</th>
<th>1 = Somewhat or Sometimes True</th>
<th>2 = Very True or Often True</th>
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<tbody>
<tr>
<td>1.</td>
<td>Acts too young for his/her age</td>
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<td>2.</td>
<td>Home or makes other odd noises in class</td>
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<tr>
<td>3.</td>
<td>Argues a lot</td>
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<td>4.</td>
<td>Farts to laugh things happen start</td>
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<tr>
<td>5.</td>
<td>Behaves like opposite sex</td>
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<tr>
<td>6.</td>
<td>Often, talks back to staff</td>
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<tr>
<td>7.</td>
<td>Bragging, boasting</td>
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<tr>
<td>8.</td>
<td>Can’t concentrate, can’t pay attention for long</td>
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<tr>
<td>9.</td>
<td>Can’t get teacher mind off certain thoughts; Obsessions described</td>
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<td>10.</td>
<td>Can’t sit still, restless, or hyperactive</td>
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<td>11.</td>
<td>cling to adults or too dependent</td>
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<td>12.</td>
<td>Compares to loneliness</td>
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<td>13.</td>
<td>Confused or seems to be in a fog</td>
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<td>14.</td>
<td>Cries a lot</td>
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<tr>
<td>15.</td>
<td>Fidgets</td>
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<td>16.</td>
<td>Cowardly, bulling, oranness to others</td>
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<td>17.</td>
<td>Daydreams or gets lost in his/her thoughts</td>
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<td>18.</td>
<td>Defensively harms self or threatens suicide</td>
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<td>19.</td>
<td>Demands a lot of attention</td>
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<td>20.</td>
<td>Destroys his/her own things</td>
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<td>21.</td>
<td>Denies property belonging to others</td>
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<td>22.</td>
<td>Difficulty following directions</td>
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<td>23.</td>
<td>Disobedient at school</td>
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<td>24.</td>
<td>Disturbs other pupils</td>
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<td>Doesn’t get along with others</td>
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<td>26.</td>
<td>Doesn’t seem to feel guilty after misbehaving</td>
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<td>27.</td>
<td>Eats or drinks things that are not food - don’t include sweets described</td>
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<td>28.</td>
<td>Fears certain animals, situations, or places other than school described</td>
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<td>29.</td>
<td>Fears going to school</td>
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Please see other side
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<th>Item</th>
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<th>Description</th>
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<td>Physically attacks people</td>
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<td>58.</td>
<td>3</td>
<td>Hates noise, sm. or other parts of body described</td>
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<td>59.</td>
<td>3</td>
<td>Sleeps in class</td>
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<td>60.</td>
<td>3</td>
<td>Lethargic or unmotivated</td>
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<td>61.</td>
<td>3</td>
<td>Poor school work</td>
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<tr>
<td>62.</td>
<td>3</td>
<td>Finds coordinative or clumsy</td>
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<td>63.</td>
<td>3</td>
<td>Refuses to be with older children or youths</td>
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<tr>
<td>64.</td>
<td>3</td>
<td>Refuses to be with younger children</td>
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<td>65.</td>
<td>2</td>
<td>Refuses to talk</td>
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<td>66.</td>
<td>2</td>
<td>Refuses certain acts or over and over, compulsions described</td>
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<tr>
<td>67.</td>
<td>2</td>
<td>Disrupts class discipline</td>
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<tr>
<td>68.</td>
<td>2</td>
<td>Screams or threats</td>
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<td>69.</td>
<td>2</td>
<td>Secretly keeps things to self</td>
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<td>70.</td>
<td>2</td>
<td>Sees things that aren't there described</td>
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<tr>
<td>71.</td>
<td>2</td>
<td>Self-conscious or easily embarrassed</td>
</tr>
<tr>
<td>72.</td>
<td>2</td>
<td>Hates work</td>
</tr>
<tr>
<td>73.</td>
<td>2</td>
<td>Behaves irresponsibly described</td>
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<td>74.</td>
<td>2</td>
<td>Showing off or clowning</td>
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<tr>
<td>75.</td>
<td>2</td>
<td>Sly or liased</td>
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<tr>
<td>76.</td>
<td>2</td>
<td>Explosive and unpredictable behavior</td>
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<td>77.</td>
<td>2</td>
<td>Demands must be met immediately, easily frustrated</td>
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<tr>
<td>78.</td>
<td>2</td>
<td>Unpredictable, easily distracted</td>
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<tr>
<td>79.</td>
<td>2</td>
<td>Speech problems described</td>
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<td>80.</td>
<td>2</td>
<td>Sleeps frequently</td>
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<td>2</td>
<td>Fails hurt when criticized</td>
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<tr>
<td>82.</td>
<td>2</td>
<td>Steals</td>
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<tr>
<td>83.</td>
<td>2</td>
<td>Steals things things that don't need described</td>
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<td>84.</td>
<td>2</td>
<td>Strange behavior described</td>
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<td>85.</td>
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<td>Strange ways described</td>
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<td>2</td>
<td>Suicide, attempts, or threats</td>
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<td>87.</td>
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<td>Sudden changes in mood or behavior</td>
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<td>88.</td>
<td>2</td>
<td>Tends a lot</td>
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<td>89.</td>
<td>2</td>
<td>Uncommunicative</td>
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<td>90.</td>
<td>2</td>
<td>Swearing or obscene language</td>
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<td>91.</td>
<td>2</td>
<td>Talks about killing self</td>
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<tr>
<td>92.</td>
<td>2</td>
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<td>Temper tantrums or hot temper</td>
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<td>100.</td>
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<td>Fails to carry out assigned tasks</td>
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<td>103.</td>
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*PLEASE BE SURE YOU HAVE ANSWERED ALL ITEMS*
### 1991 TRF profile: Teacher reported adaptive functioning for boys aged 5-11 years

#### 1991 Teacher's Report Form Profile

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#### SUM of ITEMS

- VIII: Academic Performance
- VIII-1: Raw
- VIII-2: Score
- VIII-3: Raw
- VIII-4: Score

#### Copyright 1991

by T.H. Ashbrook

University Associate in Psychiatry
University of Vermont
7 South Prospect Street
Burlington, Vermont 05401-3456

...
### A.6 1991 TRF profile: Teacher reported problems for boys aged 5-11 years

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#### Note on Cross-Informant Construct

Copyright 1991, T.R. Achenbach
A.7  Cross informant comparison of scores for the 89 problem items assigned to the CBCL/4-18, TRF and YSR

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* "CBCL" 1/48: Boy aged 8. Filled out on 06/27/92 by Mother. Cards 02, 03, Agency.  
* "TRF, 1" 1/48: Boy aged 8. Filled out on 06/27/92 by Teacher. Cards 02, 03, Agency.  
* "TRF, 2" 1/48: Boy aged 8. Filled out on 06/27/92 by Teacher. Cards 02, 03, Agency.

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University Associates in Psychiatry, University of Vermont  
1 South Prospect Street, Burlington, Vermont 05401-3456
A.8 Cross informant comparison of Q correlations between the 89 problem items and eight syndrome scales assigned to the CBCL/4-18, TRF and YSR

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- **Borderline Clinical Range**
- **Clinical Range**
- **X** = Missing Data

### T Scores for 8 Syndrome Scales Common to CBCL, YSR and TRF

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<td>6. Attention Problems</td>
<td>84+++</td>
<td>84+++</td>
<td>81+</td>
<td>81+</td>
<td>81+</td>
</tr>
<tr>
<td>7. Delinquent Behavior</td>
<td>84+++</td>
<td>84+++</td>
<td>73+</td>
<td>73+</td>
<td>73+</td>
</tr>
<tr>
<td>8. Aggressive Behavior</td>
<td>86+++</td>
<td>86+++</td>
<td>87+</td>
<td>87+</td>
<td>87+</td>
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</table>

### Q Correlations Between Scales

<table>
<thead>
<tr>
<th>For this Subject</th>
<th>For Reference Samples</th>
<th>Agreement between</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT.CBCL x ME.CBCL</td>
<td>.76</td>
<td>Mother and Mother is above average.</td>
</tr>
<tr>
<td>MT.CBCL x TRF.1</td>
<td>.76</td>
<td>Mother and Teacher 1 is above average.</td>
</tr>
<tr>
<td>MT.CBCL x TRF.2</td>
<td>.76</td>
<td>Mother and Teacher 2 is above average.</td>
</tr>
<tr>
<td>ME.CBCL x TRF.1</td>
<td>.76</td>
<td>Mother and Teacher 1 is above average.</td>
</tr>
<tr>
<td>ME.CBCL x TRF.2</td>
<td>.76</td>
<td>Mother and Teacher 2 is above average.</td>
</tr>
</tbody>
</table>
A.9  SDQ-1 questionnaire

SELF-DESCRIPTION QUESTIONNAIRE-1

SDQ

Your Name: ____________________________  Circle one:  Boy  Girl
School: ____________________________________  Grade: _______ Age: _____
Teacher: ____________________________________  Date: ____________

This is a chance to look at yourself. It is not a test. There are no right answers, and everyone will have different answers. Be sure that your answers show how you feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE. We will keep your answers private and not show them to anyone.

When you are ready to begin, please read each sentence and choose an answer. You may read quietly to yourself as you read aloud. There are five possible answers for each question: "True," "False," and three answers in between. There are five boxes next to each sentence, one for each of the answers. The answers are written at the top of the boxes. Choose your answer to a sentence and make a check mark in the box under the answer you choose. DO NOT say your answer out loud or talk about it with anyone else.

Before you start, there are three examples below. A student, Bob, has already answered two of these sentences to show you how to do it. In the third example you must choose your own answer and put in your own check mark.

EXAMPLES

1. I like to read comic books ..................... 1  [ ] [ ] [ ] [ ] [ ]

Bob checked the box under the answer "True." This means that he really likes to read comic books. If Bob did not like to read comic books very much, he would have answered "False" or "Mostly False."

2. In general, I am neat and tidy .................. 2  [ ] [ ] [ ] [ ] [ ]

Bob answered "Sometimes False, Sometimes True," because he is not very neat, but he is not very messy either.

3. I like to watch TV ............................... 3  [ ] [ ] [ ] [ ] [ ]

For this sentence you have to choose the answer that is best for you. First you must decide if the sentence is "True," "False," or "Mostly True," or somewhere in between. If you really like to watch TV, a lot, you would answer "True" by making a check mark in the first box. If you hate watching TV, you would answer "False" by making a check mark in the first box. If your answer is somewhere in between, then you would choose one of the other three boxes.

If you want to change an answer you have marked, you should cross out the check mark and put a new check mark in another box on the same line.

For all the sentences be sure that your check mark is on the same line as the sentence you are answering. You should have one answer and only one answer for each sentence. Do not leave out any of the sentences. Once you have started, PLEASE DO NOT TALK. Turn over the page and begin.

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| Statement                                                                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|--------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| I am good looking                                                         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I'm good at all SCHOOL SUBJECTS                                           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I can run fast                                                           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I get good marks in READING                                              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| My parents understand me                                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I hate MATHEMATICS                                                       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I have lots of friends                                                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I like the way I look                                                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I enjoy doing work in all SCHOOL SUBJECTS                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I like to run and play hard                                             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I like READING                                                           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| My parents are usually unhappy or disappointed with what I do           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Work in mathematics is easy for me                                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I make friends easily                                                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I have a pleasant looking face                                          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I get good marks in all SCHOOL SUBJECTS                                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I hate sports and games                                                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I'm good at READING                                                      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I like my parents                                                        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I look forward to MATHEMATICS                                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Most kids have more friends than I do                                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I am a nice looking person                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I hate all SCHOOL SUBJECTS                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I enjoy sports and games                                                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I am interested in READING                                               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| My parents like me                                                       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
27. I get good marks in MATHEMATICS ................. 27
28. I get along with kids easily ......................... 28
29. I do lots of important things ....................... 29
30. I am ugly .............................................. 30
31. I learn things quickly in all SCHOOL SUBJECTS .. 31
32. I have good muscles ................................. 32
33. I am dumb at reading ............................... 33
34. If I have children of my own, I want to bring them up like my parents raised me .......... 34
35. I am interested in MATHEMATICS ................ 35
36. I am easy to like .................................... 36
37. Overall, I am no good .............................. 37
38. Other kids think I am good looking ............... 38
39. I am interested in all SCHOOL SUBJECTS ........ 39

40. I am good at sports .................................. 40
41. I enjoy doing work in READING ................. 41
42. My parents and I spend a lot of time together ... 42
43. I learn things quickly in MATHEMATICS .......... 43
44. Other kids want me to be their friend ............ 44
45. In general, I like being the way I am ............. 45
46. I have a good looking body ........................ 46
47. I am dumb in all SCHOOL SUBJECTS ............ 47
48. I can run a long way without stopping .......... 48
49. Work in READING is easy for me .................. 49
50. My parents are easy to talk to ..................... 50
51. I like MATHEMATICS ................................ 51
52. I have more friends than most other kids ........ 52
<table>
<thead>
<tr>
<th></th>
<th>FALSE</th>
<th>MOSTLY FALSE</th>
<th>MOSTLY TRUE</th>
<th>TRUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>53. Overall I have a lot to be proud of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. I'm better looking than most of my friends</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>55. I look forward to all SCHOOL SUBJECTS</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>56. I am a good athlete</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57. I look forward to READING</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>58. I get along well with my parents</td>
<td></td>
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<td></td>
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<tr>
<td>59. I'm good at MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>60. I am popular with kids of my own age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61. I can't do anything right</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62. I have nice features like nose, and eyes, and hair</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63. Work in all SCHOOL SUBJECTS is easy for me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64. I'm good at throwing a ball</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65. I hate READING</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66. My parents and I have a lot of fun together</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67. I can do things as well as most other people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68. I enjoy doing work in MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69. Most other kids like me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70. Other people think I am a good person</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>71. I like all SCHOOL SUBJECTS</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>72. A lot of things about me are good</td>
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<td></td>
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</tr>
<tr>
<td>73. I learn things quickly in READING</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74. I'm as good as most other people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75. I am dumb at MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76. When I do something, I do it well</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SELF-DESCRIPTION QUESTIONNAIRE-I

SDQ

SCORING AND PROFILE BOOKLET

HERBERT W. MARSH

CHILD'S NAME: ____________________________
DATE: __________________________________
SCHOOL: __________________________________
TEACHER: ________________________________
SEX: □ M  □ F  AGE: ______  GRADE: ______

THE PSYCHOLOGICAL CORPORATION
HARCOURT BRACE JOVANOVICH, INC.

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Score Calculation and Summary

**INDIVIDUAL SCALE SCORES.** For each scale, write the scores for the items listed in the blanks beside the item numbers. Sum the item scores within each scale and write the total raw score in the blank provided below the item scores.

<table>
<thead>
<tr>
<th>Physical Abilities</th>
<th>Physical Appearance</th>
<th>Peer Relations</th>
<th>Parent Relations</th>
<th>Reading</th>
<th>Mathematics</th>
<th>General-School</th>
<th>General-Self</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
</tr>
<tr>
<td>3</td>
<td>(3.64)</td>
<td>(3.53)</td>
<td>7</td>
<td>(4.46)</td>
<td>5</td>
<td>(4.38)</td>
<td>4</td>
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<tr>
<td>10</td>
<td>(4.14)</td>
<td>(3.64)</td>
<td>14</td>
<td>(4.01)</td>
<td>19</td>
<td>(4.80)</td>
<td>11</td>
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<tr>
<td>24</td>
<td>(4.66)</td>
<td>(3.35)</td>
<td>28</td>
<td>(4.12)</td>
<td>26</td>
<td>(4.79)</td>
<td>18</td>
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<tr>
<td>32</td>
<td>(3.71)</td>
<td>(3.43)</td>
<td>36</td>
<td>(3.73)</td>
<td>34</td>
<td>(4.30)</td>
<td>25</td>
</tr>
<tr>
<td>40</td>
<td>(4.28)</td>
<td>(3.23)</td>
<td>44</td>
<td>(3.86)</td>
<td>42</td>
<td>(4.10)</td>
<td>41</td>
</tr>
<tr>
<td>46</td>
<td>(3.85)</td>
<td>(3.42)</td>
<td>52</td>
<td>(3.35)</td>
<td>50</td>
<td>(4.27)</td>
<td>49</td>
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<tr>
<td>56</td>
<td>(3.89)</td>
<td>(3.15)</td>
<td>60</td>
<td>(3.96)</td>
<td>58</td>
<td>(4.53)</td>
<td>57</td>
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<tr>
<td>64</td>
<td>(4.36)</td>
<td>(3.70)</td>
<td>69</td>
<td>(4.02)</td>
<td>66</td>
<td>(4.34)</td>
<td>73</td>
</tr>
</tbody>
</table>

**RAW SCALE TOTALS**

TOTAL NONACADEMIC. Copy the Raw Scale Totals for Physical Abilities, Physical Appearance, Peer Relations, and Parent Relations into the blanks provided below. Sum these scores and divide by 4 to get the Total Nonacademic raw score.

\[
\text{TOTAL NONACADEMIC} = \frac{(\text{Physical Abilities}) + (\text{Physical Appearance}) + (\text{Peer Relations}) + (\text{Parent Relations})}{4}
\]

TOTAL ACADEMIC. Copy the Raw Scale Totals for Reading, Mathematics, and General-School into the blanks provided below. Sum these scores and divide by 3 to get the Total Academic raw score.

\[
\text{TOTAL ACADEMIC} = \frac{(\text{Reading}) + (\text{Mathematics}) + (\text{General-School})}{3}
\]

TOTAL SELF. Copy the Total Nonacademic and Total Academic raw scores into the blanks provided below. Sum these scores and divide by 2 to get the Total Self raw score.

\[
\text{TOTAL SELF} = \frac{(\text{Total Nonacademic}) + (\text{Total Academic})}{2}
\]

CONTROL SCORES (See Appendix A of the Manual for instructions on calculating Control raw scores.)

<table>
<thead>
<tr>
<th>Control Score 1</th>
<th>Control Score 2</th>
<th>Control Score 3</th>
<th>Control Score 4</th>
<th>Control Score 5</th>
<th>Control Score 6</th>
</tr>
</thead>
</table>

* Substitute the item mean for missing responses only if three or fewer responses are left blank.

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T-Score Profile

Directions: Transfer the raw scores for the individual and total scales (and control scores) from page 2 to the spaces provided below the profile. Then, convert the raw scores to percentile ranks and T scores using the tables in Appendices A and B of the Manual. Record these values in the spaces provided and plot the T scores on the profile.

*General-Self norms are not available for grades 2-4.
Note: T scores falling in the shaded area (i.e., T scores of 50 or above) represent above-average self-concept; however, because of the skewed distribution of the scores, T scores above 50 are not readily interpretable.
Control Score Calculation

<table>
<thead>
<tr>
<th>Item 3</th>
<th>Item 44</th>
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<td>Item 62</td>
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<td>Item 4</td>
<td>Item 7</td>
<td>Item 20</td>
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<tr>
<td>Item 9</td>
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<td>Item 31</td>
<td>Item 26</td>
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<td>Item 54</td>
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<td>Item 38</td>
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<tr>
<td>Item 50</td>
<td>Item 11</td>
<td>Item 66</td>
<td>Item 2</td>
</tr>
<tr>
<td>Item 27</td>
<td>Item 59</td>
<td>Item 2</td>
<td>Item 24</td>
</tr>
<tr>
<td>Item 55</td>
<td>Item 71</td>
<td>Item 35</td>
<td>Item 7</td>
</tr>
<tr>
<td>Item 15</td>
<td>Item 22</td>
<td>Item 38</td>
<td>Item 10</td>
</tr>
<tr>
<td>Item 60</td>
<td>Item 69</td>
<td>Item 32</td>
<td>Item 24</td>
</tr>
<tr>
<td>Item 11</td>
<td>Item 25</td>
<td>Item 15</td>
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<tr>
<td>Item 35</td>
<td>Item 51</td>
<td>Item 64</td>
<td>Item 0</td>
</tr>
<tr>
<td>Item 2</td>
<td>Item 16</td>
<td>Item 59</td>
<td>Item 58</td>
</tr>
</tbody>
</table>

CONTROL SCORE 1

CONTROL SCORE 2

CONTROL SCORE 3

CONTROL SCORE 4: Negativity Bias

CONTROL SCORE 5: Positivity Bias

CONTROL SCORE 6: Total Absolute Value

CONTROL SCORE 7: Total Signed Value


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A.11 Program file for the SDQ-1 data base using Clinical Reporting System software

..Schema for SDQ table
..set descriptions on

key ID

field names

ID; Identification number

Group; Group of child
/type Labelled:15 is
  Study
  Comparison
/end

Grade; Grade at testing

Age; Age (in months) at testing

Perf; Teacher rated school performance
/type Labelled:15 is
  Below grade
  Grade level
  Above grade
/end

Family; Family structure
/type Labelled:12 is
  Intact
  Disrupted
/end

Ethnic; Cultural origin of mother or custodial guardian
/type Labelled:20 is
  Aboriginal
  Oceanica
  Western European
  Eastern European
  Mediterranean
  Middle Eastern
  Asian
  Latin American
/end

A1; I am good looking
A1M; Mean of A1
A2; I'm good at all SCHOOL SUBJECTS
A2M; Mean of A2
A3; I can run fast
A3M; Mean of A3
A4; I get good marks in READING
A4M; Mean of A4
A5; My parents understand me
A5M; Mean of A5
A6; I hate MATHEMATICS
A6M; Mean of A6
A6R; I hate MATHEMATICS
A7; I have lots of friends
A7M; Mean of A7
A8; I like the way I look
A8M; Mean of A8
A9; I enjoy doing work in all SCHOOL SUBJECTS
A9M; Mean of A9
A10; I like to run and play hard
A10M; Mean of A10
A11; I like READING
A11M; Mean of A11
A12; My parents are usually unhappy or disappointed with what I do
A12M; Mean of A12
A12R; My parents are usually unhappy or disappointed with what I do

.free form Self-Description Questionnaire
.window 1,1,80,23,0

ID -- Group ----------------- Grade when tested --
Age at testing ---- (months) School Performance ------------
Family Structure ----------------- Ethnicity -------------

1 I am good looking 1 -- M ---,---
2 I'm good at all SCHOOL SUBJECTS 2 -- M ---,---
3 I can run fast 3 -- M ---,---
4 I get good marks in reading 4 -- M ---,---
5 My parents understand me 5 -- M ---,---
6 I hate MATHMATICS 6 -- M ---,---
6R I hate MATHMATICS R6 ---
7 I have lots of friends 7 -- M ---,---
8 I like the way I look 8 -- M ---,---
9 I enjoy doing work in all SCHOOL SUBJECTS 9 -- M ---,---
10 I like to run and play hard 10 -- M ---,---
11 I like READING 11 -- M ---,---
12 My parents are usually unhappy or 12 -- M ---,---
disappointed with what I do
12R My parents are usually unhappy or  R12 --
disappointed with what I do

.field names
A13; Work in mathematics is easy for me
A13M; Mean of A13
A14; I make friends easily
A14M; Mean of A14
A15; I have a pleasant looking face
A15M; Mean of A15
A16; I get good marks in all SCHOOL SUBJECTS
A16M; Mean of A16
A17; I hate sports and games
A17M; Mean of A17
A17R; I hate sports and games
A18; I'm good at READING
A18M; Mean of A18
A19; I like my parents
A19M; Mean of A19
A20; I look forward to MATHMATICS
A20M; Mean of A20
A21; Most kids have more friends than I do
A21M; Mean of A21
A21R; Most kids have more friends than I do
A22; I am a nice looking person
A22M; Mean of A22
A23; I hate all SCHOOL SUBJECTS
A23M; Mean of A23
A23R; I hate all SCHOOL SUBJECTS
A24; I enjoy sports and games
A24M; Mean of A24
A25; I am interested in READING
A25M; Mean of A25
A26; My parents like me
A26M; Mean of A26
A27; I get good marks in MATHMATICS
A27M; Mean of A27
A28; I get along with kids easily
A28M; Mean of A28

/free form Self-Description Questionnaire
/window 1,1,80,23,0

13 Work in mathematics is easy for me 13 -- M ---,---
14 I make friends easily 14 -- M ---,---
15 I have a pleasant looking face 15 -- M ---,---
16 I get good marks in all SCHOOL SUBJECTS 16 -- M ---,---
17 I hate sports and games 17 -- M ---,---

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17R I hate sports and games  
18 I'm good at READING  
19 I like my parents  
20 I look forward to MATHEMATICS  
21 Most kids have more friends than I do  
21R Most kids have more friends than I do  
22 I am a nice looking person  
23 I hate all SCHOOL SUBJECTS  
23R I hate all SCHOOL SUBJECTS  
24 I enjoy sports and games  
25 I am interested in READING  
26 My parents like me  
27 I get good marks in MATHEMATICS  
28 I get along with kids easily  
29 I do lots of important things  
30 I like ugly  
30R I am ugly  
31 I learn things quickly in all SCHOOL SUBJECTS  
31R I learn things quickly in all SCHOOL SUBJECTS  
32 I have good muscles  
32R I have good muscles  
33 I am dumb at reading  
33R I am dumb at reading  
34 If I have children of my own, I want to bring them up like my parents raised me  
34R If I have children of my own, I want to bring them up like my parents raised me  
35 I am interested in MATHEMATICS  
35R I am interested in MATHEMATICS  
36 I am easy to like  
36R I am easy to like  
37 Overall, I am no good  
38 Other kids think I am good looking  
38R Other kids think I am good looking  
39 I am interested in all SCHOOL SUBJECTS  
39R I am interested in all SCHOOL SUBJECTS  
40 I am good at sports  
41 I enjoy doing work in READING  
42R My parents and I spend a lot of time together  
43 I learn things quickly in MATHEMATICS  
43R I learn things quickly in MATHEMATICS  
44 Other kids want me to be their friend  
44R Other kids want me to be their friend
In general, I like being the way I am
I have a good looking body
I am dumb in all SCHOOL SUBJECTS
I am dumb in all SCHOOL SUBJECTS
I can run a long way without stopping
Work in READING is easy for me
My parents are easy to talk to
I like MATHEMATICS
I have more friends than most other kids
Overall I have a lot to be proud of
I'm better looking than most of my friends
I look forward to all SCHOOL SUBJECTS
I look forward to READING
I get along well with my parents
I'm good at MATHEMATICS
I am popular with kids of my own age
I can't do anything right
I have nice features like nose, and eyes, and hair

Work in all SCHOOL SUBJECTS is easy for me
I'm good at throwing a ball
I hate READING
My parents and I have a lot of fun together
A66M; Mean of A66
A67; I can do things as well as most other people
A67M; Mean of A67
A68; I enjoy work in MATHEMATICS
A68M; Mean of A68
A69; Most other kids like me
A69M; Mean of A69
A70; Other people think I am a good person
A70M; Mean of A70
A71; I like all SCHOOL SUBJECTS
A71M; Mean of A71
A72; A lot of things about me are good
A72M; Mean of A72
A73; I learn things quickly in READING
A73M; Mean of A73
A74; I'm as good as most other people
A74M; Mean of A74
A75; I am dumb at MATHEMATICS
A75M; Mean of A75
A75R; I am dumb at MATHEMATICS
A76; When I do something, I do it well
A76M; Mean of A76

.free form Self-Description Questionnaire

.window 1,1,80,23,0

63 Work in all SCHOOL SUBJECTS is easy for me
64 I'm good at throwing a ball
65 I hate READING
66 My parents and I have a lot of fun together
67 I can do things as well as most other people
68 I enjoy work in MATHEMATICS
69 Most other kids like me
70 Other people think I am a good person
71 I like all SCHOOL SUBJECTS
72 A lot of things about me are good
73 I learn things quickly in READING
74 I'm as good as most other people
75 I am dumb at MATHEMATICS
75R I am dumb at MATHEMATICS
76 When I do something, I do it well

.end

.field names
A77; Physical abilities, Raw score
A77A; Physical abilities, Percentile
A78; Physical appearance, Raw score
A78A; Physical appearance, Percentile
A79; Peer relations, Raw score
A79A; Peer relations, Percentile
A79B; Peer relations, T score
A80; Parent relations, Raw score
A80A; Parent relations, Percentile
A80B; Parent relations, T score
A81; Reading, Raw score
A81A; Reading, Percentile
A81B; Reading, T score
A82; Mathematics, Raw score
A82A; Mathematics, Percentile
A82B; Mathematics, T score
A83; General school, Raw score
A83A; General school, Percentile
A83B; General school, T score
A84; General self, Raw score
A84A; General self, Percentile
A84B; General self, T score
A85; Total nonacademic, Raw score
A85A; Total nonacademic, Percentile
A85B; Total nonacademic, T score
A86; Total academic, Raw score
A86A; Total academic, Percentile
A86B; Total academic, T score
A87; Total self, Raw score
A87A; Total self, Percentile
A87B; Total self, T score

.free form Score Calculation and Summary
.window 1,1,80,23,0

Individual Scale Total for Physical Abilities
---.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Physical Appearance
---.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Peer Relations
---.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Parent Relations
---.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Reading
---.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Mathematics
---.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for General School
---.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for General Self
---.(Raw Score) --- (Percentile) --- (T Score)

Total Scales for Nonacademic ---.(Raw Score) ---(Percentile) ---(T Score)
Total Scales for Academic ---.(Raw Score) ---(Percentile) ---(T Score)
Total Scales for Self ---.(Raw Score) ---(Percentile) ---(T Score)

.field names
C1A; Control subscore 1A
C1B; Control subscore 1B
C1C; Control subscore 1C
C1D; Control subscore 1D
C1E; Control subscore 1E
C1F; Control subscore 1F
C1G; Control subscore 1G
C1H; Control subscore 1H
C1I; Control subscore 1I
C1J; Control subscore 1J
C1K; Control subscore 1K
C1L; Control subscore 1L
C1M; Control subscore 1M
C1N; Control subscore 1N
C1O; Control subscore 1O
C1P; Control subscore 1P
C1Q; Control subscore 1Q
C1R; Control subscore 1R
C1S; Control subscore 1S
C1T; Control subscore 1T
A88B; Control score 1 Inconsistency on correlated item pairs, Raw score
A88A; Control score 1 Inconsistency on correlated item pairs, Percentile
A88B; Control score 1 Inconsistency on correlated item pairs, T score

.. .
C2A; Control subscore 2A
C2B; Control subscore 2B
C2C; Control subscore 2C
C2D; Control subscore 2D
C2E; Control subscore 2E
C2F; Control subscore 2F
C2G; Control subscore 2G
C2H; Control subscore 2H
C2I; Control subscore 2I
C2J; Control subscore 2J
C2K; Control subscore 2K
C2L; Control subscore 2L
C2M; Control subscore 2M
C2N; Control subscore 2N
C2O; Control subscore 2O
C2P; Control subscore 2P
C2Q; Control subscore 2Q
C2R; Control subscore 2R
C2S; Control subscore 2S
C27: Control subscore 2T
A89: Control score 2 Consistency on uncorrelated item pairs, Raw score
A89A: Control score 2 Consistency on uncorrelated item pairs, Percentile
A89B: Control score 2 Consistency on uncorrelated item pairs, T score

-free form Control Score Calculation for Control Scores 1 & 2 & 3
-window 1,1,80,23,0

Control Score 1A --- Control Score 1B --- Control Score 1C ---
Control Score 1D --- Control Score 1E --- Control Score 1F ---
Control Score 1G --- Control Score 1H --- Control Score 1I ---
Control Score 1J --- Control Score 1K --- Control Score 1L ---
Control Score 1M --- Control Score 1N --- Control Score 1O ---
Control Score 1P --- Control Score 1Q --- Control Score 1R ---
Control Score 1S --- Control Score 1T ---

Control Score 1: Inconsistency on Correlated Item Pairs
---- (Raw Score) ---- (Percentile) ---- (T Score)

Control Score 2A --- Control Score 2B --- Control Score 2C ---
Control Score 2D --- Control Score 2E --- Control Score 2F ---
Control Score 2G --- Control Score 2H --- Control Score 2I ---
Control Score 2J --- Control Score 2K --- Control Score 2L ---
Control Score 2M --- Control Score 2N --- Control Score 2O ---
Control Score 2P --- Control Score 2Q --- Control Score 2R ---
Control Score 2S --- Control Score 2T ---

Control Score 2: Consistency on Uncorrelated Item Pairs
---- (Raw Score) ---- (Percentile) ---- (T Score)

-end

.field names
A90: Control score 3 Noncontingent summary, Raw score
A90A: Control score 3 Noncontingent summary, Percentile
A90B: Control score 3 Noncontingent summary, T Score
C4A: Control subscore 4A
C4B: Control subscore 4B
C4C: Control subscore 4C
C4D: Control subscore 4D
C4E: Control subscore 4E
C4F: Control subscore 4F
C4G: Control subscore 4G
C4H: Control subscore 4H
C4I: Control subscore 4I
C4J: Control subscore 4J
A91: Control score 4 Negativity bias, Raw score
A91A: Control score 4 Negativity bias, Percentile
A91B: Control score 4 Negativity bias, T score
C5A: Control subscore 5A
C5B: Control subscore 5B
C5C: Control subscore 5C
C5D: Control subscore 5D
C5E: Control subscore 5E
C5F: Control subscore 5F
C5G: Control subscore 5G
C5H: Control subscore 5H
C5I: Control subscore 5I
C5J: Control subscore 5J
A92: Control score 5 Positivity bias, Raw score
A92A: Control score 5 Positivity bias, Percentile
A92B: Control score 5 Positivity bias, T score
A93: Control score 6 Individual profile variation, Raw score
A93A: Control score 6 Individual profile variation, Percentile
A93B: Control score 6 Individual profile variation, T score

-free form Control Score Calculation for Control Scores 4 & 5 & 6
-window 1,1,80,23,0

Control Score 3: Noncontingent Summary
---- (Raw Score) ---- (Percentile) ---- (T Score)

Control Score 4A --- Control Score 4B --- Control Score 4C ---
Control Score 4D --- Control Score 4E --- Control Score 4F ---
Control Score 4G --- Control Score 4H --- Control Score 4I ---

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Control Score 4J ----.--

Control Score 4: Negativity Bias
----.-- (Raw Score) ---- (Percentile) ---- (T Score)

Control Score 5A ----.-- Control Score 5B ----.-- Control Score 5C ----.--
Control Score 5D ----.-- Control Score 5E ----.-- Control Score 5F ----.--
Control Score 5G ----.-- Control Score 5H ----.-- Control Score 5I ----.--

Control Score 5: Positivity Bias
----.-- (Raw Score) ---- (Percentile) ---- (T Score)

Control Score 6: Individual Profile Variation
----.-- (Raw Score) ---- (Percentile) ---- (T Score)
.end

.field names
C6M; Child's mean scale
C6D77; Deviation score for physical abilities
C6D78; Deviation score for physical appearance
C6D79; Deviation score for peer relations
C6D80; Deviation score for parent relations
C6D81; Deviation score for reading
C6D82; Deviation score for mathematics
C6D83; Deviation score for general school
C6S077; Squared deviation score for physical abilities
C6S078; Squared deviation score for physical appearance
C6S079; Squared deviation score for peer relations
C6S080; Squared deviation score for parent relations
C6S081; Squared deviation score for reading
C6S082; Squared deviation score for mathematics
C6S083; Squared deviation score for general school
C6V; Child's Scale Variance

.free form Control Score Calculation for Control Score 6
.window 1,1,80,23,0

Child's Scale Mean

Deviation Score for Physical Abilities
Deviation Score for Physical Appearance
Deviation Score for Peer Relations
Deviation Score for Parent Relations
Deviation Score for Reading
Deviation Score for Mathematics
Deviation Score for General School

Squared Deviation Score for Physical Abilities
Squared Deviation Score for Physical Appearance
Squared Deviation Score for Peer Relations
Squared Deviation Score for Parent Relations
Squared Deviation Score for Reading
Squared Deviation Score for Mathematics
Squared Deviation Score for General School

Child's Scale Variance

.end

.Update
A77:=(A3+A10+A24+A32+A40+A48+A56+A64)
A78:=(A1+A8+A15+A22+A38+A46+A54+A62)
A79:=(A7+A14+A28+A36+A44+A52+A60+A69)
A80:=(A5+A19+A26+A34+A42+A50+A58+A66)
A81:=(A4+A11+A18+A25+A33+A41+A49+A57)
A82:=(A13+A20+A27+A35+A43+A51+A59+A68)
A83:=(A2+A9+A16+A31+A39+A55+A63+A71)
A84:=(A29+A45+A53+A67+A70+A72+A74+A76)
A85:=(A77+A78+A79+A80)/4
A86:=(A81+A82+A83)/3
A87:=(A85+A86)/2
C1A:=ABS(A3-A48)
C1B:=ABS(A38-A54)
C1C := \text{ABS}(A44-A69)
C1D := \text{ABS}(A41-A57)
C1E := \text{ABS}(A43-A59)
C1F := \text{ABS}(A48-A56)
C1G := \text{ABS}(A22-A66)
C1H := \text{ABS}(A19-A26)
C1I := \text{ABS}(A18-A49)
C1J := \text{ABS}(A5-A71)
C1K := \text{ABS}(A3-A56)
C1L := \text{ABS}(A14-A28)
C1M := \text{ABS}(A50-A11)
C1N := \text{ABS}(A27-A59)
C1O := \text{ABS}(A55-A71)
C1P := \text{ABS}(A15-A22)
C1Q := \text{ABS}(A60-A69)
C1R := \text{ABS}(A11-A25)
C1S := \text{ABS}(A35-A51)
C1T := \text{ABS}(A2-A16)

A88 := (C1A+C1B+C1C+C1D+C1E+C1F+C1G+C1H+C1I+C1J+C1K+C1L+C1M+C1N+C1O+C1P+C1Q+C1R+C1S+C1T)

C2A := \text{ABS}(A10-A2)
C2B := \text{ABS}(A15-A58)
C2C := \text{ABS}(A5-A16)
C2D := \text{ABS}(A43-A19)
C2E := \text{ABS}(A16-A5)
C2F := \text{ABS}(A24-A62)
C2G := \text{ABS}(A7-A20)
C2H := \text{ABS}(A5B-A13)
C2I := \text{ABS}(A68-A77)
C2J := \text{ABS}(A31-A26)
C2K := \text{ABS}(A54-A19)
C2L := \text{ABS}(A36-A19)
C2M := \text{ABS}(A66-A2)
C2N := \text{ABS}(A2-A26)
C2O := \text{ABS}(A35-A7)
C2P := \text{ABS}(A38-A10)
C2Q := \text{ABS}(A52-A24)
C2R := \text{ABS}(A13-A26)
C2S := \text{ABS}(A9-A64)
C2T := \text{ABS}(A59-A58)


A90 := (A89-A88)

C4A := \text{ABS}((A17R8)-A77)
C4B := \text{ABS}((A21R8)-A79)
C4C := \text{ABS}((A33R8)-A81)
C4D := \text{ABS}((A6R8)-A82)
C4E := \text{ABS}((A23R8)-A83)
C4F := \text{ABS}((A30R8)-A78)
C4G := \text{ABS}((A12R8)-A80)
C4H := \text{ABS}((A65R8)-A81)
C4I := \text{ABS}((A75R8)-A82)
C4J := \text{ABS}((A47R8)-A83)

C5A := ((A17R8)-A77)
C5B := ((A21R8)-A79)
C5C := ((A33R8)-A81)
C5D := ((A6R8)-A82)
C5E := ((A23R8)-A83)
C5F := ((A30R8)-A78)
C5G := ((A12R8)-A80)
C5H := ((A65R8)-A81)
C5I := ((A75R8)-A82)
C5J := ((A47R8)-A83)

A91 := ((C4A+C4B+C4C+C4D+C4E+C4F+C4G+C4H+C4I+C4J)/B)

A92 := ((C5A+C5B+C5C+C5D+C5E+C5F+C5G+C5H+C5I+C5J)/B)

C6M := ((A77+A78+A80+A81+A82+A83)/7)
C6D77 := (C6M - A77)
C6D78 := (C6M - A78)
C6D79 := (C6M - A79)
C6D80 := (C6M - A80)
C6D81 := (C6M - A81)
C6D82 := (C6M - A82)
C6D83 := (C6M - A83)
...
C6D77 := (C6D77 + C6D78 + C6D79 + C6D80 + C6D81 + C6D82 + C6D83) / 6
...
A93 := sqrt(6V)
.end
...
.update entry
...(A77) Physical Abilities, Percentiles & T Scores for Grade 4 Males
.if grade = 4 & A77 < 10
  A77A := 1
  A77B := 1
.endif
.if grade = 4 & A77 = 10
  A77A := 1
  A77B := 3
.endif
.if grade = 4 & A77 = 11
  A77A := 1
  A77B := 5
.endif
.if grade = 4 & A77 = 12
  A77A := 1
  A77B := 7
.endif
.if grade = 4 & A77 = 13
  A77A := 1
  A77B := 9
.endif
.if grade = 4 & A77 = 14
  A77A := 1
  A77B := 11
.endif
.if grade = 4 & A77 = 15
  A77A := 1
  A77B := 13
.endif
.if grade = 4 & A77 = 16
  A77A := 1
  A77B := 14
.endif
.if grade = 4 & A77 = 17
  A77A := 1
  A77B := 16
.endif
.if grade = 4 & A77 = 18
  A77A := 1
  A77B := 18
.endif
.if grade = 4 & A77 = 19
  A77A := 1
  A77B := 20
.endif
.if grade = 4 & A77 = 20
  A77A := 1
  A77B := 22
.endif
.if grade = 4 & A77 = 21
  A77A := 2
  A77B := 24

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.endif 
.if grade=4 & A77=22 
A77A:=2 
A77B:=26 
.endif 
.if grade=4 & A77=23 
A77A:=3 
A77B:=27 
.endif 
.if grade=4 & A77=24 
A77A:=4 
A77B:=29 
.endif 
.if grade=4 & A77=25 
A77A:=5 
A77B:=31 
.endif 
.if grade=4 & A77=26 
A77A:=7 
A77B:=33 
.endif 
.if grade=4 & A77=27 
A77A:=10 
A77B:=35 
.endif 
.if grade=4 & A77=28 
A77A:=12 
A77B:=37 
.endif 
.if grade=4 & A77=29 
A77A:=14 
A77B:=39 
.endif 
.if grade=4 & A77=30 
A77A:=17 
A77B:=40 
.endif 
.if grade=4 & A77=31 
A77A:=21 
A77B:=42 
.endif 
.if grade=4 & A77=32 
A77A:=24 
A77B:=44 
.endif 
.if grade=4 & A77=33 
A77A:=28 
A77B:=46 
.endif 
.if grade=4 & A77=34 
A77A:=33 
A77B:=48 
.endif 
.if grade=4 & A77=35 
A77A:=39 
A77B:=50 
.endif 
.if grade=4 & A77=36 
A77A:=45 
A77B:=52 
.endif 
.if grade=4 & A77=37 
A77A:=51 
A77B:=53 
.endif 
.if grade=4 & A77=38 
A77A:=57 
A77B:=55 
.endif 
.if grade=4 & A77=39 
A77A:=69 
A77B:=57 
.endif 
.if grade=4 & A77=40
A77A:=87
A77B:=59
.endif
...(A77) Physical Abilities, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A77=8
   A77A:=1
   A77B:=3
.endif
.if grade=5 & A77=9
   A77A:=1
   A77B:=5
.endif
.if grade=5 & A77=10
   A77A:=1
   A77B:=6
.endif
.if grade=5 & A77=11
   A77A:=1
   A77B:=8
.endif
.if grade=5 & A77=12
   A77A:=1
   A77B:=10
.endif
.if grade=5 & A77=13
   A77A:=1
   A77B:=12
.endif
.if grade=5 & A77=14
   A77A:=1
   A77B:=14
.endif
.if grade=5 & A77=15
   A77A:=1
   A77B:=16
.endif
.if grade=5 & A77=16
   A77A:=1
   A77B:=17
.endif
.if grade=5 & A77=17
   A77A:=1
   A77B:=19
.endif
.if grade=5 & A77=18
   A77A:=1
   A77B:=21
.endif
.if grade=5 & A77=19
   A77A:=2
   A77B:=23
.endif
.if grade=5 & A77=20
   A77A:=2
   A77B:=25
.endif
.if grade=5 & A77=21
   A77A:=4
   A77B:=26
.endif
.if grade=5 & A77=22
   A77A:=4
   A77B:=28
.endif
.if grade=5 & A77=23
   A77A:=5
   A77B:=30
.endif
.if grade=5 & A77=24
   A77A:=6
   A77B:=32
.endif
.if grade=5 & A77=25
   A77A:=8

302
A77B := 34
.endif
.if grade=5 & A77=26
  A77A := 10
  A77B := 35
.endif
.if grade=5 & A77=27
  A77A := 12
  A77B := 37
.endif
.if grade=5 & A77=28
  A77A := 14
  A77B := 39
.endif
.if grade=5 & A77=29
  A77A := 17
  A77B := 41
.endif
.if grade=5 & A77=30
  A77A := 21
  A77B := 43
.endif
.if grade=5 & A77=31
  A77A := 25
  A77B := 44
.endif
.if grade=5 & A77=32
  A77A := 30
  A77B := 46
.endif
.if grade=5 & A77=33
  A77A := 35
  A77B := 48
.endif
.if grade=5 & A77=34
  A77A := 41
  A77B := 50
.endif
.if grade=5 & A77=35
  A77A := 47
  A77B := 52
.endif
.if grade=5 & A77=36
  A77A := 53
  A77B := 53
.endif
.if grade=5 & A77=37
  A77A := 61
  A77B := 55
.endif
.if grade=5 & A77=38
  A77A := 69
  A77B := 57
.endif
.if grade=5 & A77=39
  A77A := 79
  A77B := 59
.endif
.if grade=5 & A77=40
  A77A := 92
  A77B := 61
.endif
...(A78) Physical Appearance, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A78=8
  A78A := 1
  A78B := 24
.endif
.if grade=4 & A78=9
  A78A := 1
  A78B := 25
.endif
.if grade=4 & A78=10
  A78A := 2
  A78B := 27
.endif
.if grade=4 & A78=11
  A78A:=3
  A78B:=28
.endif
.if grade=4 & A78=12
  A78A:=3
  A78B:=29
.endif
.if grade=4 & A78=13
  A78A:=4
  A78B:=30
.endif
.if grade=4 & A78=14
  A78A:=5
  A78B:=32
.endif
.if grade=4 & A78=15
  A78A:=6
  A78B:=33
.endif
.if grade=4 & A78=16
  A78A:=8
  A78B:=34
.endif
.if grade=4 & A78=17
  A78A:=11
  A78B:=35
.endif
.if grade=4 & A78=18
  A78A:=13
  A78B:=36
.endif
.if grade=4 & A78=19
  A78A:=14
  A78B:=38
.endif
.if grade=4 & A78=20
  A78A:=16
  A78B:=39
.endif
.if grade=4 & A78=21
  A78A:=18
  A78B:=40
.endif
.if grade=4 & A78=22
  A78A:=20
  A78B:=41
.endif
.if grade=4 & A78=23
  A78A:=23
  A78B:=42
.endif
.if grade=4 & A78=24
  A78A:=27
  A78B:=44
.endif
.if grade=4 & A78=25
  A78A:=31
  A78B:=45
.endif
.if grade=4 & A78=26
  A78A:=34
  A78B:=46
.endif
.if grade=4 & A78=27
  A78A:=38
  A78B:=47
.endif
.if grade=4 & A78=28
  A78A:=42
  A78B:=49
.endif
.if grade=4 & A78=29
A7BA:=46
A7BB:=50
.endif
.if grade=4 & A78=30
A7BA:=50
A7BB:=51
.endif
.if grade=4 & A78=31
A7BA:=54
A7BB:=52
.endif
.if grade=4 & A78=32
A7BA:=59
A7BB:=53
.endif
.if grade=4 & A78=33
A7BA:=64
A7BB:=55
.endif
.if grade=4 & A78=34
A7BA:=66
A7BB:=56
.endif
.if grade=4 & A78=35
A7BA:=69
A7BB:=57
.endif
.if grade=4 & A78=36
A7BA:=73
A7BB:=58
.endif
.if grade=4 & A78=37
A7BA:=78
A7BB:=59
.endif
.if grade=4 & A78=38
A7BA:=81
A7BB:=61
.endif
.if grade=4 & A78=39
A7BA:=86
A7BB:=62
.endif
.if grade=4 & A78=40
A7BA:=95
A7BB:=63
.endif
...(A78) Physical Appearance, Percentiles & T Scores for grade 5 Males
.if grade=5 & A78=8
A7BA:=1
A7BB:=25
.endif
.if grade=5 & A78=9
A7BA:=2
A7BB:=26
.endif
.if grade=5 & A78=10
A7BA:=2
A7BB:=28
.endif
.if grade=5 & A78=11
A7BA:=3
A7BB:=29
.endif
.if grade=5 & A78=12
A7BA:=3
A7BB:=30
.endif
.if grade=5 & A78=13
A7BA:=4
A7BB:=31
.endif
.if grade=5 & A78=14
A7BA:=6
A78B = 33

.endif
.if grade=5 & A78=15
A78A = 7
A78B = 34
.endif
.if grade=5 & A78=16
A78A = 9
A78B = 35
.endif
.if grade=5 & A78=17
A78A = 11
A78B = 36
.endif
.if grade=5 & A78=18
A78A = 13
A78B = 37
.endif
.if grade=5 & A78=19
A78A = 15
A78B = 39
.endif
.if grade=5 & A78=20
A78A = 17
A78B = 40
.endif
.if grade=5 & A78=21
A78A = 19
A78B = 41
.endif
.if grade=5 & A78=22
A78A = 22
A78B = 42
.endif
.if grade=5 & A78=23
A78A = 25
A78B = 44
.endif
.if grade=5 & A78=24
A78A = 29
A78B = 45
.endif
.if grade=5 & A78=25
A78A = 33
A78B = 46
.endif
.if grade=5 & A78=26
A78A = 37
A78B = 47
.endif
.if grade=5 & A78=27
A78A = 42
A78B = 49
.endif
.if grade=5 & A78=28
A78A = 46
A78B = 50
.endif
.if grade=5 & A78=29
A78A = 50
A78B = 51
.endif
.if grade=5 & A78=30
A78A = 54
A78B = 52
.endif
.if grade=5 & A78=31
A78A = 58
A78B = 53
.endif
.if grade=5 & A78=32
A78A = 62
A78B = 55
.endif
if grade=5 & A78=33
    A78A:=67
    A78B:=56
endif
if grade=5 & A78=34
    A78A:=71
    A78B:=57
endif
if grade=5 & A78=35
    A78A:=76
    A78B:=58
endif
if grade=5 & A78=36
    A78A:=80
    A78B:=60
endif
if grade=5 & A78=37
    A78A:=84
    A78B:=61
endif
if grade=5 & A78=38
    A78A:=88
    A78B:=62
endif
if grade=5 & A78=39
    A78A:=91
    A78B:=63
endif
if grade=5 & A78=40
    A78A:=96
    A78B:=65
endif
...(A79) Peer Relations, Percentiles & T Scores for Grade 4 Males
if grade=4 & A79=8
    A79A:=1
    A79B:=14
endif
if grade=4 & A79=9
    A79A:=1
    A79B:=15
endif
if grade=4 & A79=10
    A79A:=1
    A79B:=17
endif
if grade=4 & A79=11
    A79A:=1
    A79B:=18
endif
if grade=4 & A79=12
    A79A:=1
    A79B:=20
endif
if grade=4 & A79=13
    A79A:=1
    A79B:=21
endif
if grade=4 & A79=14
    A79A:=2
    A79B:=23
endif
if grade=4 & A79=15
    A79A:=2
    A79B:=24
endif
if grade=4 & A79=16
    A79A:=3
    A79B:=26
endif
if grade=4 & A79=17
    A79A:=3
    A79B:=27
endif
if grade=4 & A79=18

307
A79A:=4
A79B:=29
.endif
.if grade=4 & A79=19
A79A:=5
A79B:=30
.endif
.if grade=4 & A79=20
A79A:=6
A79B:=32
.endif
.if grade=4 & A79=21
A79A:=8
A79B:=33
.endif
.if grade=4 & A79=22
A79A:=9
A79B:=35
.endif
.if grade=4 & A79=23
A79A:=11
A79B:=36
.endif
.if grade=4 & A79=24
A79A:=13
A79B:=38
.endif
.if grade=4 & A79=25
A79A:=15
A79B:=39
.endif
.if grade=4 & A79=26
A79A:=18
A79B:=41
.endif
.if grade=4 & A79=27
A79A:=21
A79B:=42
.endif
.if grade=4 & A79=28
A79A:=25
A79B:=44
.endif
.if grade=4 & A79=29
A79A:=29
A79B:=45
.endif
.if grade=4 & A79=30
A79A:=33
A79B:=47
.endif
.if grade=4 & A79=31
A79A:=38
A79B:=49
.endif
.if grade=4 & A79=32
A79A:=63
A79B:=50
.endif
.if grade=4 & A79=33
A79A:=49
A79B:=52
.endif
.if grade=4 & A79=34
A79A:=55
A79B:=53
.endif
.if grade=4 & A79=35
A79A:=62
A79B:=55
.endif
.if grade=4 & A79=36
A79A:=68
A79B:=56
.endif
.if grade=4 & A79=37
   A79A:=74
   A79B:=58
.endif
.if grade=4 & A79=38
   A79A:=79
   A79B:=59
.endif
.if grade=4 & A79=39
   A79A:=86
   A79B:=61
.endif
.if grade=4 & A79=40
   A79A:=94
   A79B:=62
.endif
.(A79) Peer Relations, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A79=8
   A79A:=1
   A79B:=12
.endif
.if grade=5 & A79=9
   A79A:=1
   A79B:=14
.endif
.if grade=5 & A79=10
   A79A:=1
   A79B:=16
.endif
.if grade=5 & A79=11
   A79A:=1
   A79B:=17
.endif
.if grade=5 & A79=12
   A79A:=1
   A79B:=19
.endif
.if grade=5 & A79=13
   A79A:=1
   A79B:=20
.endif
.if grade=5 & A79=14
   A79A:=1
   A79B:=22
.endif
.if grade=5 & A79=15
   A79A:=2
   A79B:=24
.endif
.if grade=5 & A79=16
   A79A:=3
   A79B:=25
.endif
.if grade=5 & A79=17
   A79A:=3
   A79B:=27
.endif
.if grade=5 & A79=18
   A79A:=4
   A79B:=28
.endif
.if grade=5 & A79=19
   A79A:=4
   A79B:=30
.endif
.if grade=5 & A79=20
   A79A:=6
   A79B:=32
.endif
.if grade=5 & A79=21
   A79A:=7
   A79B:=33
.endif
A79B: =64
.
.endif

...(A80) Parent Relations, Percentiles & T Scores for Grade 4 Males
.
.if ABO<12
  ABOA: =1
  ABOB: =1

.endif

.if grade=4 & ABO=12
  ABOA: =1
  ABOB: =1
.
endif

.if grade=4 & ABO=13
  ABOA: =1
  ABOB: =3
.
endif

.if grade=4 & ABO=14
  ABOA: =1
  ABOB: =5
.
endif

.if grade=4 & ABO=15
  ABOA: =1
  ABOB: =7
.
endif

.if grade=4 & ABO=16
  ABOA: =1
  ABOB: =9
.
endif

.if grade=4 & ABO=17
  ABOA: =1
  ABOB: =12
.
endif

.if grade=4 & ABO=18
  ABOA: =1
  ABOB: =14
.
endif

.if grade=4 & ABO=19
  ABOA: =2
  ABOB: =16
.
endif

.if grade=4 & ABO=20
  ABOA: =2
  ABOB: =18
.
endif

.if grade=4 & ABO=21
  ABOA: =2
  ABOB: =20
.
endif

.if grade=4 & ABO=22
  ABOA: =2
  ABOB: =22
.
endif

.if grade=4 & ABO=23
  ABOA: =2
  ABOB: =24
.
endif

.if grade=4 & ABO=24
  ABOA: =2
  ABOB: =26
.
endif

.if grade=4 & ABO=25
  ABOA: =5
  ABOB: =28
.
endif

.if grade=4 & ABO=26
  ABOA: =4
  ABOB: =30
.
endif

.if grade=4 & ABO=27
  ABOA: =6
  ABOB: =32
.
endif

.if grade=4 & ABO=28
  ABOA: =8
  ABOB: =34
.endif
.if grade=4 & ABO=29
ABOA:=9
ABOB:=36
.endif
.if grade=4 & ABO=30
ABOA:=11
ABOB:=38
.endif
.if grade=4 & ABO=31
ABOA:=13
ABOB:=40
.endif
.if grade=4 & ABO=32
ABOA:=17
ABOB:=42
.endif
.if grade=4 & ABO=33
ABOA:=22
ABOB:=44
.endif
.if grade=4 & ABO=34
ABOA:=27
ABOB:=46
.endif
.if grade=4 & ABO=35
ABOA:=33
ABOB:=48
.endif
.if grade=4 & ABO=36
ABOA:=61
ABOB:=50
.endif
.if grade=4 & ABO=37
ABOA:=69
ABOB:=52
.endif
.if grade=4 & ABO=38
ABOA:=76
ABOB:=54
.endif
.if grade=4 & ABO=39
ABOA:=81
ABOB:=57
.endif
.if grade=4 & ABO=40
ABOA:=86
ABOB:=59
.endif
...(ABO) Parent Relations, Percentiles & T Scores for Grade 5 Males
.if grade=5 & ABO=12
ABOA:=1
ABOB:=3
.endif
.if grade=5 & ABO=13
ABOA:=1
ABOB:=5
.endif
.if grade=5 & ABO=14
ABOA:=1
ABOB:=7
.endif
.if grade=5 & ABO=15
ABOA:=1
ABOB:=9
.endif
.if grade=5 & ABO=16
ABOA:=1
ABOB:=11
.endif
.if grade=5 & ABO=17
ABOA:=1
ABOB:=13
.endif
.if grade=5 & ABO=18
  ABOA:=1
  ABOB:=15
.endif
.if grade=5 & ABO=19
  ABOA:=1
  ABOB:=17
.endif
.if grade=5 & ABO=20
  ABOA:=1
  ABOB:=19
.endif
.if grade=5 & ABO=21
  ABOA:=2
  ABOB:=21
.endif
.if grade=5 & ABO=22
  ABOA:=2
  ABOB:=23
.endif
.if grade=5 & ABO=23
  ABOA:=3
  ABOB:=25
.endif
.if grade=5 & ABO=24
  ABOA:=4
  ABOB:=27
.endif
.if grade=5 & ABO=25
  ABOA:=4
  ABOB:=29
.endif
.if grade=5 & ABO=26
  ABOA:=5
  ABOB:=31
.endif
.if grade=5 & ABO=27
  ABOA:=7
  ABOB:=33
.endif
.if grade=5 & ABO=28
  ABOA:=8
  ABOB:=35
.endif
.if grade=5 & ABO=29
  ABOA:=10
  ABOB:=37
.endif
.if grade=5 & ABO=30
  ABOA:=12
  ABOB:=39
.endif
.if grade=5 & ABO=31
  ABOA:=15
  ABOB:=41
.endif
.if grade=5 & ABO=32
  ABOA:=19
  ABOB:=43
.endif
.if grade=5 & ABO=33
  ABOA:=24
  ABOB:=45
.endif
.if grade=5 & ABO=34
  ABOA:=30
  ABOB:=47
.endif
.if grade=5 & ABO=35
  ABOA:=36
  ABOB:=49
.endif
.if grade=5 & ABO=36
  ABOA:=43

313
A80A:=51
.endif  
.if grade=5 & A80=37
  A80A:=51
  A80B:=53
.endif
.if grade=5 & A80=38
  A80A:=59
  A80B:=55
.endif
.if grade=5 & A80=39
  A80A:=71
  A80B:=57
.endif
.if grade=5 & A80=40
  A80A:=88
  A80B:=59
.endif

...(A81) Reading, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A81=8
  A81A:=1
  A81B:=19
.endif
.if grade=4 & A81=9
  A81A:=1
  A81B:=21
.endif
.if grade=4 & A81=10
  A81A:=1
  A81B:=22
.endif
.if grade=4 & A81=11
  A81A:=2
  A81B:=23
.endif
.if grade=4 & A81=12
  A81A:=2
  A81B:=24
.endif
.if grade=4 & A81=13
  A81A:=3
  A81B:=26
.endif
.if grade=4 & A81=14
  A81A:=3
  A81B:=27
.endif
.if grade=4 & A81=15
  A81A:=4
  A81B:=28
.endif
.if grade=4 & A81=16
  A81A:=5
  A81B:=30
.endif
.if grade=4 & A81=17
  A81A:=6
  A81B:=31
.endif
.if grade=4 & A81=18
  A81A:=7
  A81B:=32
.endif
.if grade=4 & A81=19
  A81A:=8
  A81B:=34
.endif
.if grade=4 & A81=20
  A81A:=9
  A81B:=35
.endif
.if grade=4 & A81=21
  A81A:=11
  A81B:=36

314
.endif
  .if grade=4 & A81=22
    A81A:=12
    A81B:=38
  .endif
  .if grade=4 & A81=23
    A81A:=14
    A81B:=39
  .endif
  .if grade=4 & A81=24
    A81A:=17
    A81B:=40
  .endif
  .if grade=4 & A81=25
    A81A:=20
    A81B:=41
  .endif
  .if grade=4 & A81=26
    A81A:=22
    A81B:=43
  .endif
  .if grade=4 & A81=27
    A81A:=25
    A81B:=44
  .endif
  .if grade=4 & A81=28
    A81A:=28
    A81B:=45
  .endif
  .if grade=4 & A81=29
    A81A:=31
    A81B:=47
  .endif
  .if grade=4 & A81=30
    A81A:=35
    A81B:=48
  .endif
  .if grade=4 & A81=31
    A81A:=39
    A81B:=49
  .endif
  .if grade=4 & A81=32
    A81A:=43
    A81B:=51
  .endif
  .if grade=4 & A81=33
    A81A:=47
    A81B:=52
  .endif
  .if grade=4 & A81=34
    A81A:=51
    A81B:=53
  .endif
  .if grade=4 & A81=35
    A81A:=57
    A81B:=54
  .endif
  .if grade=4 & A81=36
    A81A:=63
    A81B:=56
  .endif
  .if grade=4 & A81=37
    A81A:=70
    A81B:=57
  .endif
  .if grade=4 & A81=38
    A81A:=76
    A81B:=58
  .endif
  .if grade=4 & A81=39
    A81A:=82
    A81B:=60
  .endif
  .if grade=4 & A81=40
A81A:=93
A81B:=61
.endif
..(A81) Reading, Percentiles & T Scores for Grade 5 Males
..if grade=5 & A81=8
   A81A:=1
   A81B:=22
..endif
..if grade=5 & A81=9
   A81A:=1
   A81B:=23
..endif
..if grade=5 & A81=10
   A81A:=1
   A81B:=25
..endif
..if grade=5 & A81=11
   A81A:=1
   A81B:=26
..endif
..if grade=5 & A81=12
   A81A:=2
   A81B:=27
..endif
..if grade=5 & A81=13
   A81A:=3
   A81B:=28
..endif
..if grade=5 & A81=14
   A81A:=4
   A81B:=30
..endif
..if grade=5 & A81=15
   A81A:=5
   A81B:=31
..endif
..if grade=5 & A81=16
   A81A:=6
   A81B:=32
..endif
..if grade=5 & A81=17
   A81A:=7
   A81B:=33
..endif
..if grade=5 & A81=18
   A81A:=8
   A81B:=35
..endif
..if grade=5 & A81=19
   A81A:=10
   A81B:=36
..endif
..if grade=5 & A81=20
   A81A:=13
   A81B:=37
..endif
..if grade=5 & A81=21
   A81A:=15
   A81B:=39
..endif
..if grade=5 & A81=22
   A81A:=17
   A81B:=40
..endif
..if grade=5 & A81=23
   A81A:=20
..endif
..if grade=5 & A81=24
   A81A:=24
   A81B:=42
..endif
..if grade=5 & A81=25
   A81A:=27
..endif

316
.endif
.if grade=5 & A81=26
  A81A:=29
  A81B:=45
.endif
.if grade=5 & A81=27
  A81A:=32
  A81B:=46
.endif
.if grade=5 & A81=28
  A81A:=36
  A81B:=47
.endif
.if grade=5 & A81=29
  A81A:=40
  A81B:=49
.endif
.if grade=5 & A81=30
  A81A:=44
  A81B:=50
.endif
.if grade=5 & A81=31
  A81A:=49
  A81B:=51
.endif
.if grade=5 & A81=32
  A81A:=54
  A81B:=53
.endif
.if grade=5 & A81=33
  A81A:=59
  A81B:=54
.endif
.if grade=5 & A81=34
  A81A:=63
  A81B:=55
.endif
.if grade=5 & A81=35
  A81A:=68
  A81B:=56
.endif
.if grade=5 & A81=36
  A81A:=72
  A81B:=58
.endif
.if grade=5 & A81=37
  A81A:=77
  A81B:=59
.endif
.if grade=5 & A81=38
  A81A:=83
  A81B:=60
.endif
.if grade=5 & A81=39
  A81A:=88
  A81B:=62
.endif
.if grade=5 & A81=40
  A81A:=95
  A81B:=63
.endif
.*(A82) Mathematics, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A82=8
  A82A:=1
  A82B:=23
.endif
.if grade=4 & A82=9
  A82A:=2
  A82B:=24
.endif
.if grade=4 & A82=10
  A82A:=2
  A82B:=25
.endif
   .if grade=4 & A82=11
   A82A:=3
   A82B:=27
   .endif
   .if grade=4 & A82=12
   A82A:=4
   A82B:=28
   .endif
   .if grade=4 & A82=13
   A82A:=4
   A82B:=29
   .endif
   .if grade=4 & A82=14
   A82A:=5
   A82B:=30
   .endif
   .if grade=4 & A82=15
   A82A:=6
   A82B:=31
   .endif
   .if grade=4 & A82=16
   A82A:=7
   A82B:=32
   .endif
   .if grade=4 & A82=17
   A82A:=8
   A82B:=34
   .endif
   .if grade=4 & A82=18
   A82A:=9
   A82B:=35
   .endif
   .if grade=4 & A82=19
   A82A:=10
   A82B:=36
   .endif
   .if grade=4 & A82=20
   A82A:=12
   A82B:=37
   .endif
   .if grade=4 & A82=21
   A82A:=14
   A82B:=38
   .endif
   .if grade=4 & A82=22
   A82A:=16
   A82B:=40
   .endif
   .if grade=4 & A82=23
   A82A:=18
   A82B:=41
   .endif
   .if grade=4 & A82=24
   A82A:=21
   A82B:=42
   .endif
   .if grade=4 & A82=25
   A82A:=24
   A82B:=43
   .endif
   .if grade=4 & A82=26
   A82A:=27
   A82B:=44
   .endif
   .if grade=4 & A82=27
   A82A:=29
   A82B:=45
   .endif
   .if grade=4 & A82=28
   A82A:=32
   A82B:=47
   .endif
   .if grade=4 & A82=29

318
A82A:=36
A82B:=48
.endif
.if grade=4 & A82=30
A82A:=40
A82B:=49
.endif
.if grade=4 & A82=31
A82A:=43
A82B:=50
.endif
.if grade=4 & A82=32
A82A:=47
A82B:=51
.endif
.if grade=4 & A82=33
A82A:=51
A82B:=52
.endif
.if grade=4 & A82=34
A82A:=54
A82B:=54
.endif
.if grade=4 & A82=35
A82A:=58
A82B:=55
.endif
.if grade=4 & A82=36
A82A:=63
A82B:=56
.endif
.if grade=4 & A82=37
A82A:=68
A82B:=57
.endif
.if grade=4 & A82=38
A82A:=72
A82B:=58
.endif
.if grade=4 & A82=39
A82A:=77
A82B:=59
.endif
.if grade=4 & A82=40
A82A:=90
A82B:=61
.endif
.(A82) Mathematics, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A82=8
A82A:=1
A82B:=26
.endif
.if grade=5 & A82=9
A82A:=2
A82B:=27
.endif
.if grade=5 & A82=10
A82A:=3
A82B:=28
.endif
.if grade=5 & A82=11
A82A:=3
A82B:=29
.endif
.if grade=5 & A82=12
A82A:=4
A82B:=30
.endif
.if grade=5 & A82=13
A82A:=6
A82B:=32
.endif
.if grade=5 & A82=14
A82A:=7
319
A2B:=33
.endif
.if grade=5 & A2B=15
 A2A:=7
 A2B:=34
.endif
.if grade=5 & A2B=16
 A2A:=9
 A2B:=35
.endif
.if grade=5 & A2B=17
 A2A:=11
 A2B:=36
.endif
.if grade=5 & A2B=18
 A2A:=13
 A2B:=37
.endif
.if grade=5 & A2B=19
 A2A:=15
 A2B:=39
.endif
.if grade=5 & A2B=20
 A2A:=17
 A2B:=39
.endif
.if grade=5 & A2B=21
 A2A:=20
 A2B:=41
.endif
.if grade=5 & A2B=22
 A2A:=22
 A2B:=42
.endif
.if grade=5 & A2B=23
 A2A:=24
 A2B:=43
.endif
.if grade=5 & A2B=24
 A2A:=27
 A2B:=44
.endif
.if grade=5 & A2B=25
 A2A:=30
 A2B:=45
.endif
.if grade=5 & A2B=26
 A2A:=33
 A2B:=46
.endif
.if grade=5 & A2B=27
 A2A:=36
 A2B:=47
.endif
.if grade=5 & A2B=28
 A2A:=40
 A2B:=48
.endif
.if grade=5 & A2B=29
 A2A:=43
 A2B:=50
.endif
.if grade=5 & A2B=30
 A2A:=46
 A2B:=51
.endif
.if grade=5 & A2B=31
 A2A:=49
 A2B:=52
.endif
.if grade=5 & A2B=32
 A2A:=53
 A2B:=53
.endif
.if grade=5 & A82=33
  A82A:=57
  A82B:=54
.endif
.if grade=5 & A82=34
  A82A:=60
  A82B:=55
.endif
.if grade=5 & A82=35
  A82A:=64
  A82B:=56
.endif
.if grade=5 & A82=36
  A82A:=68
  A82B:=57
.endif
.if grade=5 & A82=37
  A82A:=73
  A82B:=58
.endif
.if grade=5 & A82=38
  A82A:=77
  A82B:=60
.endif
.if grade=5 & A82=39
  A82A:=83
  A82B:=61
.endif
.if grade=5 & A82=40
  A82A:=93
  A82B:=62
.endif
...(AB3) General School, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A83=8
  A83A:=1
  A83B:=19
.endif
.if grade=4 & A83=9
  A83A:=1
  A83B:=20
.endif
.if grade=4 & A83=10
  A83A:=1
  A83B:=22
.endif
.if grade=4 & A83=11
  A83A:=1
  A83B:=23
.endif
.if grade=4 & A83=12
  A83A:=2
  A83B:=24
.endif
.if grade=4 & A83=13
  A83A:=2
  A83B:=26
.endif
.if grade=4 & A83=14
  A83A:=3
  A83B:=27
.endif
.if grade=4 & A83=15
  A83A:=3
  A83B:=29
.endif
.if grade=4 & A83=16
  A83A:=3
  A83B:=30
.endif
.if grade=4 & A83=17
  A83A:=4
  A83B:=31
.endif
.if grade=4 & A83=18

321
A83A:=5
A83B:=33
.endif
.if grade=4 & A83=19
A83A:=6
A83B:=34
.endif
.if grade=4 & A83=20
A83A:=8
A83B:=36
.endif
.if grade=4 & A83=21
A83A:=11
A83B:=37
.endif
.if grade=4 & A83=22
A83A:=13
A83B:=38
.endif
.if grade=4 & A83=23
A83A:=16
A83B:=40
.endif
.if grade=4 & A83=24
A83A:=19
A83B:=41
.endif
.if grade=4 & A83=25
A83A:=22
A83B:=43
.endif
.if grade=4 & A83=26
A83A:=26
A83B:=44
.endif
.if grade=4 & A83=27
A83A:=29
A83B:=45
.endif
.if grade=4 & A83=28
A83A:=34
A83B:=47
.endif
.if grade=4 & A83=29
A83A:=39
A83B:=48
.endif
.if grade=4 & A83=30
A83A:=45
A83B:=50
.endif
.if grade=4 & A83=31
A83A:=50
A83B:=51
.endif
.if grade=4 & A83=32
A83A:=55
A83B:=52
.endif
.if grade=4 & A83=33
A83A:=60
A83B:=54
.endif
.if grade=4 & A83=34
A83A:=65
A83B:=55
.endif
.if grade=4 & A83=35
A83A:=71
A83B:=57
.endif
.if grade=4 & A83=36
A83A:=76
A83B:=58
.endif
.if grade=4 & A83=37
   A83A:=80
   A83B:=59
.endif
.if grade=4 & A83=38
   A83A:=84
   A83B:=61
.endif
.if grade=4 & A83=39
   A83A:=88
   A83B:=62
.endif
.if grade=4 & A83=40
   A83A:=95
   A83B:=64
.endif
...(A83) General School, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A83=8
   A83A:=1
   A83B:=23
.endif
.if grade=5 & A83=9
   A83A:=1
   A83B:=24
.endif
.if grade=5 & A83=10
   A83A:=1
   A83B:=25
.endif
.if grade=5 & A83=11
   A83A:=1
   A83B:=27
.endif
.if grade=5 & A83=12
   A83A:=2
   A83B:=28
.endif
.if grade=5 & A83=13
   A83A:=3
   A83B:=30
.endif
.if grade=5 & A83=14
   A83A:=4
   A83B:=31
.endif
.if grade=5 & A83=15
   A83A:=5
   A83B:=32
.endif
.if grade=5 & A83=16
   A83A:=7
   A83B:=34
.endif
.if grade=5 & A83=17
   A83A:=8
   A83B:=35
.endif
.if grade=5 & A83=18
   A83A:=10
   A83B:=36
.endif
.if grade=5 & A83=19
   A83A:=13
   A83B:=38
.endif
.if grade=5 & A83=20
   A83A:=15
   A83B:=39
.endif
.if grade=5 & A83=21
   A83A:=18
   A83B:=41
.endif
.if grade=5 & A83=22
    A83A:=20
    A83B:=42
.endif
.if grade=5 & A83=23
    A83A:=24
    A83B:=43
.endif
.if grade=5 & A83=24
    A83A:=28
    A83B:=45
.endif
.if grade=5 & A83=25
    A83A:=33
    A83B:=46
.endif
.if grade=5 & A83=26
    A83A:=38
    A83B:=47
.endif
.if grade=5 & A83=27
    A83A:=43
    A83B:=49
.endif
.if grade=5 & A83=28
    A83A:=48
    A83B:=50
.endif
.if grade=5 & A83=29
    A83A:=53
    A83B:=52
.endif
.if grade=5 & A83=30
    A83A:=57
    A83B:=53
.endif
.if grade=5 & A83=31
    A83A:=62
    A83B:=54
.endif
.if grade=5 & A83=32
    A83A:=67
    A83B:=56
.endif
.if grade=5 & A83=33
    A83A:=72
    A83B:=57
.endif
.if grade=5 & A83=34
    A83A:=77
    A83B:=58
.endif
.if grade=5 & A83=35
    A83A:=82
    A83B:=60
.endif
.if grade=5 & A83=36
    A83A:=86
    A83B:=61
.endif
.if grade=5 & A83=37
    A83A:=89
    A83B:=63
.endif
.if grade=5 & A83=38
    A83A:=93
    A83B:=64
.endif
.if grade=5 & A83=39
    A83A:=96
    A83B:=65
.endif
.if grade=5 & A83=40
    A83A:=98
A83b:=67
.endif
...(A84) General Self, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A84=8
A84A:=1
A84B:=3
.endif
.if grade=5 & A84=9
A84A:=1
A84B:=4
.endif
.if grade=5 & A84=10
A84A:=1
A84B:=6
.endif
.if grade=5 & A84=11
A84A:=1
A84B:=8
.endif
.if grade=5 & A84=12
A84A:=1
A84B:=10
.endif
.if grade=5 & A84=13
A84A:=1
A84B:=12
.endif
.if grade=5 & A84=14
A84A:=1
A84B:=14
.endif
.if grade=5 & A84=15
A84A:=1
A84B:=16
.endif
.if grade=5 & A84=16
A84A:=2
A84B:=18
.endif
.if grade=5 & A84=17
A84A:=2
A84B:=19
.endif
.if grade=5 & A84=18
A84A:=2
A84B:=21
.endif
.if grade=5 & A84=19
A84A:=2
A84B:=23
.endif
.if grade=5 & A84=20
A84A:=3
A84B:=25
.endif
.if grade=5 & A84=21
A84A:=4
A84B:=27
.endif
.if grade=5 & A84=22
A84A:=4
A84B:=29
.endif
.if grade=5 & A84=23
A84A:=5
A84B:=31
.endif
.if grade=5 & A84=24
A84A:=5
A84B:=32
.endif
.if grade=5 & A84=25
A84A:=6
A84B:=34
.endif
.if grade=5 & A8==26
  A8A=:7
  A8B=:36
.endif
.if grade=5 & A8==27
  A8A=:10
  A8B=:38
.endif
.if grade=5 & A8==28
  A8A=:12
  A8B=:40
.endif
.if grade=5 & A8==29
  A8A=:16
  A8B=:42
.endif
.if grade=5 & A8==30
  A8A=:21
  A8B=:44
.endif
.if grade=5 & A8==31
  A8A=:27
  A8B=:45
.endif
.if grade=5 & A8==32
  A8A=:33
  A8B=:47
.endif
.if grade=5 & A8==33
  A8A=:40
  A8B=:49
.endif
.if grade=5 & A8==34
  A8A=:48
  A8B=:51
.endif
.if grade=5 & A8==35
  A8A=:56
  A8B=:53
.endif
.if grade=5 & A8==36
  A8A=:63
  A8B=:55
.endif
.if grade=5 & A8==37
  A8A=:71
  A8B=:57
.endif
.if grade=5 & A8==38
  A8A=:79
  A8B=:58
.endif
.if grade=5 & A8==39
  A8A=:87
  A8B=:60
.endif
.if grade=5 & A8==40
  A8A=:96
  A8B=:62
.endif
.(A8) Total Nonacademic Scores, Percentiles & T Scores for Grade 4 Males
.if A8>7.49 & A8<9.50
  A8A=:1
  A8B=:1
.endif
.if A8>9.49 & A8<10.50
  A8A=:1
  A8B=:2
.endif
.if A8>10.49 & A8<11.50
  A8A=:1
  A8B=:4
.endif
.endif
.if grade=4 & A85>11.49 & A85<12.50
   A85A:=1
   A85B:=6
.endif
.if grade=4 & A85>12.49 & A85<13.50
   A85A:=1
   A85B:=8
.endif
.if grade=4 & A85>13.49 & A85<14.50
   A85A:=1
   A85B:=10
.endif
.if A85>14.49 & A85<15.50
   A85A:=1
   A85B:=13
.endif
.if A85>15.49 & A85<16.50
   A85A:=1
   A85B:=15
.endif
.if A85>16.49 & A85<17.50
   A85A:=1
   A85B:=17
.endif
.if A85>17.49 & A85<18.50
   A85A:=1
   A85B:=19
.endif
.if grade=4 & A85>18.49 & A85<19.50
   A85A:=1
   A85B:=21
.endif
.if grade=4 & A85>19.49 & A85<20.50
   A85A:=1
   A85B:=23
.endif
.if grade=4 & A85>20.49 & A85<21.50
   A85A:=1
   A85B:=25
.endif
.if grade=4 & A85>21.49 & A85<22.50
   A85A:=2
   A85B:=27
.endif
.if grade=4 & A85>22.49 & A85<23.50
   A85A:=3
   A85B:=29
.endif
.if grade=4 & A85>23.49 & A85<24.50
   A85A:=4
   A85B:=31
.endif
.if grade=4 & A85>24.49 & A85<25.50
   A85A:=6
   A85B:=33
.endif
.if grade=4 & A85>25.49 & A85<26.50
   A85A:=9
   A85B:=35
.endif
.if grade=4 & A85>26.49 & A85<27.50
   A85A:=12
   A85B:=37
.endif
.if grade=4 & A85>27.49 & A85<28.50
   A85A:=17
   A85B:=39
.endif
.if grade=4 & A85>28.49 & A85<29.50
   A85A:=21
   A85B:=41
.endif
.if grade=4 & A85>29.49 & A85<30.50
   A85A:=26

327
A85B:=43
.endif
.if grade=4 & A85>30.49 & A85<31.50
  A85A:=31
  A85B:=46
.endif
.if grade=4 & A85>31.49 & A85<32.50
  A85A:=36
  A85B:=48
.endif
.if grade=4 & A85>32.49 & A85<33.50
  A85A:=43
  A85B:=50
.endif
.if grade=4 & A85>33.49 & A85<34.50
  A85A:=51
  A85B:=52
.endif
.if grade=4 & A85>34.49 & A85<35.50
  A85A:=59
  A85B:=54
.endif
.if grade=4 & A85>35.49 & A85<36.50
  A85A:=67
  A85B:=56
.endif
.if grade=4 & A85>36.49 & A85<37.50
  A85A:=75
  A85B:=58
.endif
.if grade=4 & A85>37.49 & A85<38.50
  A85A:=82
  A85B:=60
.endif
.if grade=4 & A85>38.49 & A85<39.50
  A85A:=89
  A85B:=62
.endif
.if grade=4 & A85>39.49 & A85<40.50
  A85A:=96
  A85B:=64
.endif
.(A85) Total Nonacademic Scores, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A85>11.49 & A85<12.50
  A85A:=1
  A85B:=7
.endif
.if grade=5 & A85>12.49 & A85<13.50
  A85A:=1
  A85B:=9
.endif
.if grade=5 & A85>13.49 & A85<14.50
  A85A:=1
  A85B:=11
.endif
.if grade=5 & A85>18.49 & A85<19.50
  A85A:=1
  A85B:=22
.endif
.if grade=5 & A85>19.49 & A85<20.50
  A85A:=1
  A85B:=24
.endif
.if grade=5 & A85>20.49 & A85<21.50
  A85A:=2
  A85B:=26
.endif
.if grade=5 & A85>21.49 & A85<22.50
  A85A:=3
  A85B:=28
.endif
.if grade=5 & A85>22.49 & A85<23.50
  A85A:=3
  A85B:=30

328
.endif
.if grade=5 & A85>23.49 & A85<24.50
   A85A:=5
   A85B:=32
.endif
.if grade=5 & A85>24.49 & A85<25.50
   A85A:=7
   A85B:=34
.endif
.if grade=5 & A85>25.49 & A85<26.50
   A85A:=10
   A85B:=36
.endif
.if grade=5 & A85>26.49 & A85<27.50
   A85A:=13
   A85B:=39
.endif
.if grade=5 & A85>27.49 & A85<28.50
   A85A:=18
   A85B:=41
.endif
.if grade=5 & A85>28.49 & A85<29.50
   A85A:=23
   A85B:=43
.endif
.if grade=5 & A85>29.49 & A85<30.50
   A85A:=30
   A85B:=45
.endif
.if grade=5 & A85>30.49 & A85<31.50
   A85A:=36
   A85B:=47
.endif
.if grade=5 & A85>31.49 & A85<32.50
   A85A:=43
   A85B:=49
.endif
.if grade=5 & A85>32.49 & A85<33.50
   A85A:=50
   A85B:=51
.endif
.if grade=5 & A85>33.49 & A85<34.50
   A85A:=58
   A85B:=53
.endif
.if grade=5 & A85>34.49 & A85<35.50
   A85A:=66
   A85B:=56
.endif
.if grade=5 & A85>35.49 & A85<36.50
   A85A:=74
   A85B:=58
.endif
.if grade=5 & A85>36.49 & A85<37.50
   A85A:=82
   A85B:=60
.endif
.if grade=5 & A85>37.49 & A85<38.50
   A85A:=89
   A85B:=62
.endif
.if grade=5 & A85>38.49 & A85<39.50
   A85A:=95
   A85B:=64
.endif
.if grade=5 & A85>39.49 & A85<40.50
   A85A:=99
   A85B:=66
.endif
.(A86) Total Academic Scores, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A86>7.49 & A86<8.50
   A86A:=1
   A86B:=15
.endif
.if grade=4 & A6>8.49 & A86<9.50
  A6A=1
  A6B=17
.endif

.if grade=4 & A6>9.49 & A86<10.50
  A6A=1
  A6B=18
.endif

.if grade=4 & A6>10.49 & A86<11.50
  A6A=1
  A6B=20
.endif

.if grade=4 & A6>11.49 & A86<12.50
  A6A=1
  A6B=21
.endif

.if grade=4 & A6>12.49 & A86<13.50
  A6A=2
  A6B=23
.endif

.if grade=4 & A6>13.49 & A86<14.50
  A6A=2
  A6B=24
.endif

.if grade=4 & A6>14.49 & A86<15.50
  A6A=2
  A6B=26
.endif

.if grade=4 & A6>15.49 & A86<16.50
  A6A=3
  A6B=27
.endif

.if grade=4 & A6>16.49 & A86<17.50
  A6A=4
  A6B=29
.endif

.if grade=4 & A6>17.49 & A86<18.50
  A6A=4
  A6B=30
.endif

.if grade=4 & A6>18.49 & A86<19.50
  A6A=5
  A6B=32
.endif

.if grade=4 & A6>19.49 & A86<20.50
  A6A=6
  A6B=33
.endif

.if grade=4 & A6>20.49 & A86<21.50
  A6A=8
  A6B=35
.endif

.if grade=4 & A6>21.49 & A86<22.50
  A6A=10
  A6B=36
.endif

.if grade=4 & A6>22.49 & A86<23.50
  A6A=12
  A6B=38
.endif

.if grade=4 & A6>23.49 & A86<24.50
  A6A=15
  A6B=39
.endif

.if grade=4 & A6>24.49 & A86<25.50
  A6A=18
  A6B=41
.endif

.if grade=4 & A6>25.49 & A86<26.50
  A6A=22
  A6B=42
.endif

.if grade=4 & A6>26.49 & A86<27.50
  A6A=26

330
A66B:=44
.endif
.if grade=4 & A6B>27.49 & A6B<28.50
A66A:=31
A66B:=46
.endif
.if grade=4 & A6B>28.49 & A6B<29.50
A66A:=37
A66B:=47
.endif
.if grade=4 & A6B>29.49 & A6B<30.50
A66A:=42
A66B:=49
.endif
.if grade=4 & A6B>30.49 & A6B<31.50
A66A:=47
A66B:=50
.endif
.if grade=4 & A6B>31.49 & A6B<32.50
A66A:=52
A66B:=52
.endif
.if grade=4 & A6B>32.49 & A6B<33.50
A66A:=57
A66B:=53
.endif
.if grade=4 & A6B>33.49 & A6B<34.50
A66A:=62
A66B:=55
.endif
.if grade=4 & A6B>34.49 & A6B<35.50
A66A:=68
A66B:=56
.endif
.if grade=4 & A6B>35.49 & A6B<36.50
A66A:=73
A66B:=58
.endif
.if grade=4 & A6B>36.49 & A6B<37.50
A66A:=79
A66B:=59
.endif
.if grade=4 & A6B>37.49 & A6B<38.50
A66A:=85
A66B:=61
.endif
.if grade=4 & A6B>38.49 & A6B<39.50
A66A:=91
A66B:=62
.endif
.if grade=4 & A6B>39.49 & A6B<40.50
A66A:=97
A66B:=64
.endif
..(A66 Total Academic Scores, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A6B>7.49 & A6B<8.50
A66A:=1
A66B:=17
.endif
.if grade=5 & A6B>8.49 & A6B<9.50
A66A:=1
A66B:=18
.endif
.if grade=5 & A6B>9.49 & A6B<10.50
A66A:=1
A66B:=20
.endif
.if grade=5 & A6B>10.49 & A6B<11.50
A66A:=1
A66B:=21
.endif
.if grade=5 & A6B>11.49 & A6B<12.50
A66A:=1
A66B:=23

331
.endif
.if grade=5 & A86>=12.49 & A86<13.50
   A86A:=2
   A86B:=25
.endif
.if grade=5 & A86>=13.49 & A86<14.50
   A86A:=2
   A86B:=26
.endif
.if grade=5 & A86>=14.49 & A86<15.50
   A86A:=3
   A86B:=28
.endif
.if grade=5 & A86>=15.49 & A86<16.50
   A86A:=3
   A86B:=29
.endif
.if grade=5 & A86>=16.49 & A86<17.50
   A86A:=4
   A86B:=31
.endif
.if grade=5 & A86>=17.49 & A86<18.50
   A86A:=5
   A86B:=32
.endif
.if grade=5 & A86>=18.49 & A86<19.50
   A86A:=7
   A86B:=34
.endif
.if grade=5 & A86>=19.49 & A86<20.50
   A86A:=9
   A86B:=36
.endif
.if grade=5 & A86>=20.49 & A86<21.50
   A86A:=12
   A86B:=37
.endif
.if grade=5 & A86>=21.49 & A86<22.50
   A86A:=15
   A86B:=39
.endif
.if grade=5 & A86>=22.49 & A86<23.50
   A86A:=18
   A86B:=40
.endif
.if grade=5 & A86>=23.49 & A86<24.50
   A86A:=21
   A86B:=42
.endif
.if grade=5 & A86>=24.49 & A86<25.50
   A86A:=26
   A86B:=44
.endif
.if grade=5 & A86>=25.49 & A86<26.50
   A86A:=31
   A86B:=45
.endif
.if grade=5 & A86>=26.49 & A86<27.50
   A86A:=36
   A86B:=47
.endif
.if grade=5 & A86>=27.49 & A86<28.50
   A86A:=41
   A86B:=48
.endif
.if grade=5 & A86>=28.49 & A86<29.50
   A86A:=47
   A86B:=50
.endif
.if grade=5 & A86>=29.49 & A86<30.50
   A86A:=53
   A86B:=51
.endif
.if grade=5 & A86>=30.49 & A86<31.50
   A86A:=

333
A87B:=17
endif
if grade=4 & A87>16.49 & A87<17.50
A87A:=1
A87B:=19
endif
if grade=4 & A87>17.49 & A87<18.50
A87A:=1
A87B:=21
endif
if grade=4 & A87>18.49 & A87<19.50
A87A:=1
A87B:=23
endif
if grade=4 & A87>19.49 & A87<20.50
A87A:=1
A87B:=25
endif
if grade=4 & A87>20.49 & A87<21.50
A87A:=1
A87B:=27
endif
if grade=4 & A87>21.49 & A87<22.50
A87A:=3
A87B:=29
endif
if grade=4 & A87>22.49 & A87<23.50
A87A:=4
A87B:=31
endif
if grade=4 & A87>23.49 & A87<24.50
A87A:=5
A87B:=33
endif
if grade=4 & A87>24.49 & A87<25.50
A87A:=8
A87B:=35
endif
if grade=4 & A87>25.49 & A87<26.50
A87A:=10
A87B:=37
endif
if grade=4 & A87>26.49 & A87<27.50
A87A:=14
A87B:=39
endif
if grade=4 & A87>27.49 & A87<28.50
A87A:=18
A87B:=41
endif
if grade=4 & A87>28.49 & A87<29.50
A87A:=24
A87B:=43
endif
if grade=4 & A87>29.49 & A87<30.50
A87A:=30
A87B:=45
endif
if grade=4 & A87>30.49 & A87<31.50
A87A:=37
A87B:=47
endif
if grade=4 & A87>31.49 & A87<32.50
A87A:=43
A87B:=49
endif
if grade=4 & A87>32.49 & A87<33.50
A87A:=54
A87B:=51
endif
if grade=4 & A87>33.49 & A87<34.50
A87A:=62
A87B:=54
endif
A87A:=2
A87B:=28
.endif
.if grade=5 & A87>21.49 & A87<22.50
A87A:=3
A87B:=31
.endif
.if grade=5 & A87>22.49 & A87<23.50
A87A:=5
A87B:=33
.endif
.if grade=5 & A87>23.49 & A87<24.50
A87A:=8
A87B:=35
.endif
.if grade=5 & A87>24.49 & A87<25.50
A87A:=11
A87B:=37
.endif
.if grade=5 & A87>25.49 & A87<26.50
A87A:=15
A87B:=39
.endif
.if grade=5 & A87>26.49 & A87<27.50
A87A:=20
A87B:=41
.endif
.if grade=5 & A87>27.49 & A87<28.50
A87A:=26
A87B:=44
.endif
.if grade=5 & A87>28.49 & A87<29.50
A87A:=32
A87B:=46
.endif
.if grade=5 & A87>29.49 & A87<30.50
A87A:=39
A87B:=48
.endif
.if grade=5 & A87>30.49 & A87<31.50
A87A:=47
A87B:=50
.endif
.if grade=5 & A87>31.49 & A87<32.50
A87A:=55
A87B:=52
.endif
.if grade=5 & A87>32.49 & A87<33.50
A87A:=64
A87B:=54
.endif
.if grade=5 & A87>33.49 & A87<34.50
A87A:=72
A87B:=57
.endif
.if grade=5 & A87>34.49 & A87<35.50
A87A:=79
A87B:=59
.endif
.if grade=5 & A87>35.49 & A87<36.50
A87A:=86
A87B:=61
.endif
.if grade=5 & A87>36.49 & A87<37.50
A87A:=91
A87B:=63
.endif
.if grade=5 & A87>37.49 & A87<38.50
A87A:=95
A87B:=65
.endif
.if grade=5 & A87>38.49 & A87<39.50
A87A:=98
A87B:=67
.endif
.if grade=5 & A87>39.49 & A87<40.50
 A87A:=-99
 A87B:=-70
.endif
...(ABB) Control Score 1, Percentiles & T Scores
.if ABB=0
 ABBa:=98
 ABBB:=71
.endif
.if ABB=1
 ABBa:=97
 ABBB:=69
.endif
.if ABB=2
 ABBa:=95
 ABBB:=67
.endif
.if ABB=3
 ABBa:=94
 ABBB:=66
.endif
.if ABB=4
 ABBa:=92
 ABBB:=64
.endif
.if ABB=5
 ABBa:=89
 ABBB:=62
.endif
.if ABB=6
 ABBa:=86
 ABBB:=60
.endif
.if ABB=7
 ABBa:=82
 ABBB:=58
.endif
.if ABB=8
 ABBa:=73
 ABBB:=56
.endif
.if ABB=9
 ABBa:=67
 ABBB:=54
.endif
.if ABB=10
 ABBa:=60
 ABBB:=51
.endif
.if ABB=11
 ABBa:=50
 ABBB:=50
.endif
.if ABB=12
 ABBa:=44
 ABBB:=49
.endif
.if ABB=13
 ABBa:=40
 ABBB:=47
.endif
.if ABB=14
 ABBa:=34
 ABBB:=46
.endif
.if ABB=15
 ABBa:=27
 ABBB:=44
.endif
.if ABB=16
 ABBa:=21
 ABBB:=42
.endif
if A88 = 17
A88A = 18
A88B = 41
endif
if A88 = 18
A88A = 16
A88B = 40
endif
if A88 = 19
A88A = 14
A88B = 39
endif
if A88 = 20
A88A = 11
A88B = 38
endif
if A88 = 21
A88A = 9
A88B = 36
endif
if A88 = 22
A88A = 7
A88B = 35
endif
if A88 = 23
A88A = 5
A88B = 34
endif
if A88 = 24
A88A = 4
A88B = 33
endif
if A88 = 25
A88A = 3
A88B = 32
endif
if A88 = 26
A88A = 3
A88B = 31
endif
if A88 = 27
A88A = 2
A88B = 29
endif
if A88 = 28
A88A = 1
A88B = 28
endif
if A88 = 29
A88A = 1
A88B = 27
endif
if A88 = 30
A88A = 1
A88B = 26
endif
if A88 = 31
A88A = 1
A88B = 24
endif
if A88 = 32
A88A = 1
A88B = 19
endif
if A88 > 32
A88A = 1
A88B = 13
endif
...(A89) Control Score 2, Percentiles & T Scores
if A89 = 0
A89A = 1
A89B = 22
endif
if A89 = 1
A99A:=1
A99B:=26
.endif
.if A89=2
A89A:=1
A89B:=28
.endif
.if A89=3
A89A:=2
A89B:=29
.endif
.if A89=4
A89A:=2
A89B:=30
.endif
.if A89=5
A89A:=3
A89B:=31
.endif
.if A89=6
A89A:=4
A89B:=32
.endif
.if A89=7
A89A:=4
A89B:=33
.endif
.if A89=8
A89A:=5
A89B:=34
.endif
.if A89=9
A89A:=6
A89B:=35
.endif
.if A89=10
A89A:=8
A89B:=36
.endif
.if A89=11
A89A:=9
A89B:=37
.endif
.if A89=12
A89A:=11
A89B:=37
.endif
.if A89=13
A89A:=12
A89B:=38
.endif
.if A89=14
A89A:=14
A89B:=39
.endif
.if A89=15
A89A:=17
A89B:=41
.endif
.if A89=16
A89A:=20
A89B:=42
.endif
.if A89=17
A89A:=23
A89B:=42
.endif
.if A89=18
A89A:=25
A89B:=43
.endif
.if A89=19
A89A:=27
A89B:=44
.endif
.if A89=20
A89A:=30
A89B:=45
.endif
.if A89=21
A89A:=33
A89B:=46
.endif
.if A89=22
A89A:=36
A89B:=46
.endif
.if A89=23
A89A:=39
A89B:=47
.endif
.if A89=24
A89A:=42
A89B:=48
.endif
.if A89=25
A89A:=46
A89B:=49
.endif
.if A89=26
A89A:=50
A89B:=50
.endif
.if A89=27
A89A:=53
A89B:=51
.endif
.if A89=28
A89A:=57
A89B:=52
.endif
.if A89=29
A89A:=60
A89B:=52
.endif
.if A89=30
A89A:=62
A89B:=53
.endif
.if A89=31
A89A:=65
A89B:=54
.endif
.if A89=32
A89A:=69
A89B:=55
.endif
.if A89=33
A89A:=71
A89B:=56
.endif
.if A89=34
A89A:=74
A89B:=56
.endif
.if A89=35
A89A:=76
A89B:=57
.endif
.if A89=36
A89A:=79
A89B:=58
.endif
.if A89=37
A89A:=81
A89B:=59
.endif
.if A89=38

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A89A:=83
A89B:=60
.endif
.if A89=39
A89A:=84
A89B:=60
.endif
.if A89=40
A89A:=85
A89B:=60
.endif
.if A89=41
A89A:=86
A89B:=61
.endif
.if A89=42
A89A:=88
A89B:=62
.endif
.if A89=43
A89A:=90
A89B:=63
.endif
.if A89=44
A89A:=91
A89B:=63
.endif
.if A89=45
A89A:=91
A89B:=64
.endif
.if A89=46
A89A:=92
A89B:=64
.endif
.if A89=47
A89A:=94
A89B:=65
.endif
.if A89=48
A89A:=95
A89B:=66
.endif
.if A89=49
A89A:=95
A89B:=67
.endif
.if A89=50
A89A:=96
A89B:=67
.endif
.if A89=51
A89A:=96
A89B:=68
.endif
.if A89=52
A89A:=97
A89B:=69
.endif
.if A89=52 & A89<55
A89A:=98
A89B:=70
.endif
.if A89=55
A89A:=98
A89B:=71
.endif
.if A89=56
A89A:=99
A89B:=72
.endif
.if A89=57
A89A:=99
A89B:=73

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..(A90) Control Score 3, Percentiles & T Scores
.if A90<=-10
   A90A:=1
   A90B:=23
.endif
.if A90>-10 & A90<=-5
   A90A:=1
   A90B:=26
.endif
.if A90=-5
   A90A:=1
   A90B:=28
.endif
.if A90=-4
   A90A:=2
   A90B:=30
.endif
.if A90=-3
   A90A:=3
   A90B:=32
.endif
.if A90=-2
   A90A:=4
   A90B:=33
.endif
.if A90=-1
   A90A:=6
   A90B:=34
.endif
.if A90=0
   A90A:=7
   A90B:=36
.endif
.if A90=1
   A90A:=9
   A90B:=37
.endif
.if A90=2
   A90A:=12
   A90B:=38
.endif
.if A90=3
   A90A:=14
   A90B:=39
.endif
.if A90=4
   A90A:=17
   A90B:=40
.endif
.if A90=5
   A90A:=20
   A90B:=42
.endif
.if A90=6
   A90A:=24
   A90B:=43
.endif
.if A90=7
   A90A:=27
   A90B:=44
.endif
.if A90=8
  A90A:=30
  A90B:=45
.endif
.if A90=9
  A90A:=34
  A90B:=46
.endif
.if A90=10
  A90A:=38
  A90B:=47
.endif
.if A90=11
  A90A:=42
  A90B:=48
.endif
.if A90=12
  A90A:=45
  A90B:=49
.endif
.if A90=13
  A90A:=48
  A90B:=50
.endif
.if A90=14
  A90A:=52
  A90B:=51
.endif
.if A90=15
  A90A:=56
  A90B:=52
.endif
.if A90=16
  A90A:=60
  A90B:=52
.endif
.if A90=17
  A90A:=63
  A90B:=53
.endif
.if A90=18
  A90A:=66
  A90B:=54
.endif
.if A90=19
  A90A:=70
  A90B:=55
.endif
.if A90=20
  A90A:=72
  A90B:=56
.endif
.if A90=21
  A90A:=75
  A90B:=57
.endif
.if A90=22
  A90A:=78
  A90B:=58
.endif
.if A90=23
  A90A:=80
  A90B:=58
.endif
.if A90=24
  A90A:=82
  A90B:=59
.endif
.if A90=25
  A90A:=84
  A90B:=60
.endif
.if A90=26
  A90A:=86
A90B:=61
.endif
.if A90=27
A90A:=87
A90B:=61
.endif
.if A90=28
A90A:=89
A90B:=62
.endif
.if A90=29
A90A:=90
A90B:=63
.endif
.if A90=30
A90A:=91
A90B:=64
.endif
.if A90=31
A90A:=92
A90B:=64
.endif
.if A90=32
A90A:=93
A90B:=65
.endif
.if A90=33
A90A:=94
A90B:=65
.endif
.if A90=34
A90A:=94
A90B:=66
.endif
.if A90=35
A90A:=95
A90B:=67
.endif
.if A90=36
A90A:=96
A90B:=67
.endif
.if A90=37
A90A:=96
A90B:=68
.endif
.if A90>37 & A90<40
A90A:=97
A90B:=69
.endif
.if A90=40
A90A:=98
A90B:=70
.endif
.if A90=41
A90A:=98
A90B:=71
.endif
.if A90=41 & A90<46
A90A:=99
A90B:=73
.endif
.if A90=46
A90A:=99
A90B:=75
.endif
.if A90=47
A90A:=99
A90B:=77
.endif
.if A90=47
A90A:=99
A90B:=80
.endif
.. (A91) Control Score 4, Percentiles & T Scores
    .if A91<0.50
        A91A:=99
        A91B:=73
    .endif
    .if A91>0.49 & A91<1.50
        A91A:=98
        A91B:=70
    .endif
    .if A91>1.49 & A91<2.50
        A91A:=96
        A91B:=68
    .endif
    .if A91>2.49 & A91<3.50
        A91A:=94
        A91B:=67
    .endif
    .if A91>3.49 & A91<4.50
        A91A:=91
        A91B:=64
    .endif
    .if A91>4.49 & A91<5.50
        A91A:=87
        A91B:=61
    .endif
    .if A91>5.49 & A91<6.50
        A91A:=80
        A91B:=58
    .endif
    .if A91>6.49 & A91<7.50
        A91A:=72
        A91B:=56
    .endif
    .if A91>7.49 & A91<8.50
        A91A:=63
        A91B:=53
    .endif
    .if A91>8.49 & A91<9.50
        A91A:=53
        A91B:=51
    .endif
    .if A91>9.49 & A91<10.50
        A91A:=43
        A91B:=48
    .endif
    .if A91>10.49 & A91<11.50
        A91A:=34
        A91B:=46
    .endif
    .if A91>11.49 & A91<12.50
        A91A:=27
        A91B:=44
    .endif
    .if A91>12.49 & A91<13.50
        A91A:=21
        A91B:=42
    .endif
    .if A91>13.49 & A91<14.50
        A91A:=16
        A91B:=40
    .endif
    .if A91>14.49 & A91<15.50
        A91A:=12
        A91B:=38
    .endif
    .if A91>15.49 & A91<16.50
        A91A:=8
        A91B:=37
    .endif
    .if A91>16.49 & A91<17.50
        A91A:=6
        A91B:=35
    .endif
    .if A91>17.49 & A91<18.50

345
A91A := 5
A91B := 33
.endif
.if A91>18.49 & A91<19.50
A91A := 4
A91B := 32
.endif
.if A91>19.49 & A91<20.50
A91A := 2
A91B := 30
.endif
.if A91>20.49 & A91<21.50
A91A := 2
A91B := 29
.endif
.if A91>21.49 & A91<22.50
A91A := 1
A91B := 27
.endif
.if A91>22.49 & A91<23.50
A91A := 1
A91B := 24
.endif
.if A91>23.49 & A91<24.50
A91A := 1
A91B := 18
.endif
.if A91>24.49 & A91<25.50
A91A := 1
A91B := 17
.endif
.if A91>25.49
A91A := 1
A91B := 13
.endif
...(A92) Control Score 5, Percentiles & T Scores
.if A92<=-18.50
A92A := 1
A92B := 23
.endif
.if A92>-18.49 & A92<-16.50
A92A := 1
A92B := 26
.endif
.if A92>-16.49 & A92<-15.50
A92A := 1
A92B := 27
.endif
.if A92>-15.49 & A92<-14.50
A92A := 1
A92B := 28
.endif
.if A92>-14.49 & A92<-13.50
A92A := 2
A92B := 29
.endif
.if A92>-13.49 & A92<-12.50
A92A := 2
A92B := 30
.endif
.if A92>-12.49 & A92<-11.50
A92A := 3
A92B := 32
.endif
.if A92>-11.49 & A92<-10.50
A92A := 5
A92B := 34
.endif
.if A92>-10.49 & A92<-9.50
A92A := 7
A92B := 36
.endif
.if A92>-9.49 & A92<-8.50
A92A := 10
A92B:=37
.endif
.if A92>8.49 & A92<-7.50
A92A:=14
A92B:=39
.endif
.if A92>7.49 & A92<-6.50
A92A:=19
A92B:=41
.endif
.if A92>6.49 & A92<-5.50
A92A:=24
A92B:=43
.endif
.if A92>5.49 & A92<-4.50
A92A:=31
A92B:=45
.endif
.if A92>4.49 & A92<-3.50
A92A:=39
A92B:=47
.endif
.if A92>3.49 & A92<-2.50
A92A:=47
A92B:=49
.endif
.if A92>2.49 & A92<-1.50
A92A:=55
A92B:=51
.endif
.if A92>1.49 & A92<-0.50
A92A:=62
A92B:=53
.endif
.if A92>0.49 & A92<-0.50
A92A:=69
A92B:=55
.endif
.if A92>0.49 & A92<1.50
A92A:=75
A92B:=57
.endif
.if A92>1.49 & A92<2.50
A92A:=80
A92B:=58
.endif
.if A92>2.49 & A92<3.50
A92A:=84
A92B:=60
.endif
.if A92>3.49 & A92<4.50
A92A:=87
A92B:=61
.endif
.if A92>4.49 & A92<5.50
A92A:=90
A92B:=63
.endif
.if A92>5.49 & A92<6.50
A92A:=92
A92B:=64
.endif
.if A92>6.49 & A92<7.50
A92A:=93
A92B:=65
.endif
.if A92>7.49 & A92<8.50
A92A:=94
A92B:=66
.endif
.if A92>8.49 & A92<9.50
A92A:=95
A92B:=67
.endif
.endif
.if A92>9.49 & A92<10.50
  A92A:=96
  A92B:=68
.endif
.if A92>10.49 & A92<12.50
  A92A:=97
  A92B:=69
.endif
.if A92>12.49 & A92<13.50
  A92A:=98
  A92B:=70
.endif
.if A92>13.49 & A92<14.50
  A92A:=98
  A92B:=71
.endif
.if A92>14.49 & A92<15.50
  A92A:=99
  A92B:=72
.endif
.if A92>15.49 & A92<16.50
  A92A:=99
  A92B:=73
.endif
.if A92>16.49 & A92<17.50
  A92A:=99
  A92B:=73
.endif
.if A92>17.49 & A92<18.50
  A92A:=99
  A92B:=79
.endif
.if A92>18.49
  A92A:=99
  A92B:=80
.endif
.(A93) Control Score 6, Percentiles & T Scores
.if A93<0.35
  A93A:=1
  A93B:=23
.endif
.if A93>0.34 & A93<0.95
  A93A:=1
  A93B:=26
.endif
.if A93>0.94 & A93<1.10
  A93A:=1
  A93B:=27
.endif
.if A93>1.09 & A93<1.30
  A93A:=1
  A93B:=28
.endif
.if A93>1.29 & A93<1.50
  A93A:=2
  A93B:=29
.endif
.if A93>1.49 & A93<1.70
  A93A:=2
  A93B:=30
.endif
.if A93>1.69 & A93<1.90
  A93A:=3
  A93B:=32
.endif
.if A93>1.89 & A93<2.10
  A93A:=4
  A93B:=33
.endif
.if A93>2.09 & A93<2.30
  A93A:=5
  A93B:=34
.endif
.if A93>2.29 & A93<2.50
A93A:=6
A93B:=35
.endif
.if A93>2.49 & A93<2.70
A93A:=8
A93B:=36
.endif
.if A93>2.69 & A93<2.90
A93A:=10
A93B:=37
.endif
.if A93>2.89 & A93<3.10
A93A:=12
A93B:=38
.endif
.if A93>3.09 & A93<3.30
A93A:=14
A93B:=39
.endif
.if A93>3.29 & A93<3.50
A93A:=16
A93B:=40
.endif
.if A93>3.49 & A93<3.70
A93A:=18
A93B:=41
.endif
.if A93>3.69 & A93<3.90
A93A:=21
A93B:=42
.endif
.if A93>3.89 & A93<4.10
A93A:=23
A93B:=43
.endif
.if A93>4.09 & A93<4.30
A93A:=26
A93B:=43
.endif
.if A93>4.29 & A93<4.50
A93A:=27
A93B:=44
.endif
.if A93>4.49 & A93<4.70
A93A:=32
A93B:=45
.endif
.if A93>4.69 & A93<4.90
A93A:=35
A93B:=46
.endif
.if A93>4.89 & A93<5.10
A93A:=38
A93B:=47
.endif
.if A93>5.09 & A93<5.30
A93A:=41
A93B:=48
.endif
.if A93>5.29 & A93<5.50
A93A:=44
A93B:=49
.endif
.if A93>5.49 & A93<5.70
A93A:=48
A93B:=49
.endif
.if A93>5.69 & A93<5.90
A93A:=51
A93B:=50
.endif
.if A93>5.89 & A93<6.10
A93A:=53
A93B:=51
.endif
  .if A93>6.09 & A93<6.30
      A93A:=56
      A93B:=52
  .endif
  .if A93>6.29 & A93<6.50
      A93A:=59
      A93B:=52
  .endif
  .if A93>6.49 & A93<6.70
      A93A:=61
      A93B:=53
  .endif
  .if A93>6.69 & A93<6.90
      A93A:=64
      A93B:=54
  .endif
  .if A93>6.89 & A93<7.10
      A93A:=67
      A93B:=54
  .endif
  .if A93>7.09 & A93<7.30
      A93A:=70
      A93B:=55
  .endif
  .if A93>7.29 & A93<7.50
      A93A:=72
      A93B:=56
  .endif
  .if A93>7.49 & A93<7.70
      A93A:=74
      A93B:=56
  .endif
  .if A93>7.69 & A93<7.90
      A93A:=76
      A93B:=57
  .endif
  .if A93>7.89 & A93<8.10
      A93A:=78
      A93B:=58
  .endif
  .if A93>8.09 & A93<8.30
      A93A:=80
      A93B:=59
  .endif
  .if A93>8.29 & A93<8.50
      A93A:=81
      A93B:=59
  .endif
  .if A93>8.49 & A93<8.70
      A93A:=83
      A93B:=60
  .endif
  .if A93>8.69 & A93<8.90
      A93A:=84
      A93B:=61
  .endif
  .if A93>8.89 & A93<9.10
      A93A:=86
      A93B:=62
  .endif
  .if A93>9.09 & A93<9.30
      A93A:=88
      A93B:=62
  .endif
  .if A93>9.29 & A93<9.50
      A93A:=89
      A93B:=63
  .endif
  .if A93>9.49 & A93<9.70
      A93A:=90
      A93B:=64
  .endif
  .if A93>9.69 & A93<9.90

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A93A:=91
A93B:=64
.endif
.if A93>9.89 & A93<10.10
A93A:=92
A93B:=65
.endif
.if A93>10.09 & A93<10.30
A93A:=93
A93B:=66
.endif
.if A93>10.29 & A93<10.50
A93A:=94
A93B:=67
.endif
.if A93>10.49 & A93<10.70
A93A:=95
A93B:=67
.endif
.if A93>10.69 & A93<10.90
A93A:=96
A93B:=68
.endif
.if A93>10.89 & A93<11.10
A93A:=96
A93B:=69
.endif
.if A93>11.09 & A93<11.30
A93A:=97
A93B:=69
.endif
.if A93>11.29 & A93<11.50
A93A:=97
A93B:=70
.endif
.if A93>11.49 & A93<11.70
A93A:=98
A93B:=71
.endif
.if A93>11.69 & A93<11.90
A93A:=98
A93B:=72
.endif
.if A93>11.89 & A93<12.10
A93A:=99
A93B:=73
.endif
.if A93>12.09 & A93<12.30
A93A:=99
A93B:=75
.endif
.if A93>12.29 & A93<13.10
A93A:=99
A93B:=79
.endif
.if A93>13.09
A93A:=99
A93B:=80
.endif
.end
A.12 STAIC A-state anxiety questionnaire

HOW-I-FEEL QUESTIONNAIRE
Developed by C. D. Spielberger, C. D. Edwards, J. Montuori and R. Lushene
STAIC FORM C-1

NAME __________________________ AGE _______ DATE __________

DIRECTIONS: A number of statements which boys and girls use to describe themselves are given below. Read each statement carefully and decide how you feel right now. Then put an X in the box in front of the word or phrase which best describes how you feel. There are no right or wrong answers. Do not spend too much time on any one statement. Remember, find the word or phrase which best describes how you feel right now, at this very moment.

1. I feel ........... □ very calm □ calm □ not calm
2. I feel ........... □ very upset □ upset □ not upset
3. I feel ........... □ very pleasant □ pleasant □ not pleasant
4. I feel ........... □ very nervous □ nervous □ not nervous
5. I feel ........... □ very jittery □ jittery □ not jittery
6. I feel ........... □ very rested □ rested □ not rested
7. I feel ........... □ very scared □ scared □ not scared
8. I feel ........... □ very relaxed □ relaxed □ not relaxed
9. I feel ........... □ very worried □ worried □ not worried
10. I feel ........... □ very satisfied □ satisfied □ not satisfied
11. I feel ........... □ very frightened □ frightened □ not frightened
12. I feel ........... □ very happy □ happy □ not happy
13. I feel ........... □ very sure □ sure □ not sure
14. I feel ........... □ very good □ good □ not good
15. I feel ........... □ very troubled □ troubled □ not troubled
16. I feel ........... □ very bothered □ bothered □ not bothered
17. I feel ........... □ very nice □ nice □ not nice
18. I feel ........... □ very terrified □ terrified □ not terrified
19. I feel ........... □ very mixed-up □ mixed-up □ not mixed-up
20. I feel ........... □ very cheerful □ cheerful □ not cheerful

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HOW-I-FEEL QUESTIONNAIRE
STAIC FORM C-2

NAME ___________________________ AGE _______ DATE __________

DIRECTIONS: A number of statements which boys and girls use to describe themselves are given below. Read each statement and decide if it is hardly-ever, or sometimes, or often true for you. Then for each statement, put an X in the box in front of the word that seems to describe you best. There are no right or wrong answers. Do not spend too much time on any one statement. Remember, choose the word which seems to describe how you usually feel.

1. I worry about making mistakes ___________________________ hardly-ever  sometimes  often
2. I feel like crying ___________________________________________ hardly-ever  sometimes  often
3. I feel unhappy ___________________________________________ hardly-ever  sometimes  often
4. I have trouble making up my mind ___________________________ hardly-ever  sometimes  often
5. It is difficult for me to face my problems _________________________ hardly-ever  sometimes  often
6. I worry too much ___________________________________________ hardly-ever  sometimes  often
7. I get upset at home _________________________________________ hardly-ever  sometimes  often
8. I am shy _________________________________________________ hardly-ever  sometimes  often
9. I feel troubled ______________________________________________ hardly-ever  sometimes  often
10. Unimportant thoughts run through my mind and bother me _______ hardly-ever  sometimes  often
11. I worry about school _________________________________________ hardly-ever  sometimes  often
12. I have trouble deciding what to do ___________________________ hardly-ever  sometimes  often
13. I notice my heart beats fast ___________________________________ hardly-ever  sometimes  often
14. I am secretly afraid __________________________________________ hardly-ever  sometimes  often
15. I worry about my parents _____________________________________ hardly-ever  sometimes  often
16. My hands get sweaty _________________________________________ hardly-ever  sometimes  often
17. I worry about things that may happen __________________________ hardly-ever  sometimes  often
18. It is hard for me to fall asleep at night _________________________ hardly-ever  sometimes  often
19. I get a funny feeling in my stomach ______________________________ hardly-ever  sometimes  often
20. I worry about what others think of me ___________________________ hardly-ever  sometimes  often

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A.14 Program file for the STAIC A-state and A-trait data bases

using Clinical Reporting System software

..Schema for STATE TRAIT Anxiety Inventory
..Set descriptions on

..key ID

..field names
ID; Identification number

GROUP; Group
/type label:13 is
Study
Comparison
/end

GRADE; Grade

STAIC1; I feel calm
STAIC2; I feel upset
STAIC2; I feel upset reversed
STAIC3; I feel pleasant
STAIC4; I feel nervous
STAIC4; I feel nervous reversed
STAIC5; I feel jittery
STAIC5; I feel jittery reversed
STAIC6; I feel rested
STAIC7; I feel scared
STAIC7; I feel scared reversed
STAIC8; I feel relaxed
STAIC9; I feel worried
STAIC9; I feel worried reversed
STAIC10; I feel satisfied
STAIC11; I feel frightened
STAIC11; I feel frightened reversed
STAIC12; I feel happy
STAIC13; I feel sure
STAIC14; I feel good
STAIC15; I feel troubled
STAIC15; I feel troubled reversed
STAIC16; I feel bothered
STAIC16; I feel bothered reversed
STAIC17; I feel nice
STAIC18; I feel terrified
STAIC18; I feel terrified reversed
STAIC19; I feel mixed up
STAIC19; I feel mixed up reversed
STAIC20; I feel cheerful
STAIC; A-State Raw Score
STTS; A-State T-Score
STP; A-State Percentile Rank

..free form A-State Scale
..window 1,1,80,23,0

ID -- Group ************** Grade --

1. I feel calm -- 2. I feel upset -- 2R. --
3. I feel pleasant -- 4. I feel nervous -- 4R. --
5. I feel jittery -- 5R. -- 6. I feel rested --
7. I feel scared -- 7R. -- 8. I feel relaxed --
9. I feel worried -- 9R. -- 10. I feel satisfied --
11. I feel frightened -- 11R. -- 12. I feel happy --
15. I feel troubled -- 15R. -- 16. I feel bothered -- 16R. --
17. I feel nice -- 18. I feel terrified -- 18R. --
19. I feel mixed up -- 19R. -- 20. I feel cheerful --

A State Raw Score ----

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.field names
TRAIT1;  I worry about making mistakes
TRAIT2;  I feel like crying
TRAIT3;  I feel unhappy
TRAIT4;  I have trouble making up my mind
TRAIT5;  It is difficult for me to face my problems
TRAIT6;  I worry too much
TRAIT7;  I get upset at home
TRAIT8;  I am shy
TRAIT9;  I feel troubled
TRAIT10; Unimportant thoughts run through my mind and bother me
TRAIT11; I worry about school
TRAIT12; I have trouble deciding what to do
TRAIT13; I notice my heart beats fast
TRAIT14; I am secretly afraid
TRAIT15; I worry about my parents
TRAIT16; My hands get sweaty
TRAIT17; I worry about things that may happen
TRAIT18; It is hard for me to fall asleep at night
TRAIT19; I get a funny feeling in my stomach
TRAIT20; I worry about what others think of me
TRAIT;  A-Trait Raw Score
TRTS;  A-Trait T-Score
TRP;  A-Trait Percentile Rank

.free form A-Trait Scale
.window 1,1,80,23,0

1. I worry about making mistakes
2. I feel like crying
3. I feel unhappy
4. I have trouble making up my mind
5. It is difficult for me to face my problems
6. I worry too much
7. I get upset at home
8. I am shy
9. I feel troubled
10. Unimportant thoughts run through my mind and bother me
11. I worry about school
12. I have trouble deciding what to do
13. I notice my heart beats fast
14. I am secretly afraid
15. I worry about my parents
16. My hands get sweaty
17. I worry about things that may happen
18. It is hard for me to fall asleep at night
19. I get a funny feeling in my stomach
20. I worry about what others think of me

A Trait Raw Score
A Trait Percentile Rank
A Trait T Score

.end

..Update entry
..if STAIC2=1
    STAIK2:=3
..endif
..if STAIC2=3
    STAIK2:=1
..endif
..if STAIC4=1
    STAICK4:=3
..endif
..if STAICA=3
    STAICK4:=1
..endif
..if STAIC5=1
    STAIK5:=3
..endif
..if STAIC5=3
    STAIK5:=1
..endif
.if STAIC7=1
    STAIK7=3
    .endif
.if STAIC7=3
    STAIK7=1
    .endif
.if STAIC9=1
    STAIK9=3
    .endif
.if STAIC9=3
    STAIK9=1
    .endif
.if STAIC11=1
    STAIK11=3
    .endif
.if STAIC11=3
    STAIK11=1
    .endif
.if STAIC15=1
    STAIK15=3
    .endif
.if STAIC15=3
    STAIK15=1
    .endif
.if STAIC16=1
    STAIK16=3
    .endif
.if STAIC16=3
    STAIK16=1
    .endif
.if STAIC18=1
    STAIK18=3
    .endif
.if STAIC18=3
    STAIK18=1
    .endif
.if STAIC19=1
    STAIK19=3
    .endif
.if STAIC19=3
    STAIK19=1
    .endif

... STAIC:=(STAIC1+STAIC2+STAIC3+STAIC4+STAIC5+STAIC6+STAIC7+STAIC8+STAIC9+STAIC10+STAIC11+STAIC12+STAIC13+STAIC14+STAIC15+STAIC16+STAIC17+STAIC18+STAIC19+STAIC20)

... TRAIT:=(TRAIT1+TRAIT2+TRAIT3+TRAIT4+TRAIT5+TRAIT6+TRAIT7+TRAIT8+TRAIT9+TRAIT10+TRAIT11+TRAIT12+TRAIT13+TRAIT14+TRAIT15+TRAIT16+TRAIT17+TRAIT18+TRAIT19+TRAIT20)

... Normalised T-Scores and Percentile Ranks for A-State Scales for Grade 4 Males
.if grade=4 & staic=20
    STTS:=30
    STP:=2
    .endif
.if grade=4 & staic=21
    STTS:=33
    STP:=5
    .endif
.if grade=4 & staic=22
    STTS:=35
    STP:=6
    .endif
.if grade=4 & staic=23
    STTS:=37
    STP:=9
    .endif
.if grade=4 & staic=24
    STTS:=38
    STP:=12
    .endif
.if grade=4 & staic=25
    STTS:=40
    STP:=15
    .endif
.if grade=4 & staic=26
  STTS:=42
  STP:=21
.endif
.if grade=4 & staic=27
  STTS:=44
  STP:=28
.endif
.if grade=4 & staic=28
  STTS:=47
  STP:=37
.endif
.if grade=4 & staic=29
  STTS:=49
  STP:=45
.endif
.if grade=4 & staic=30
  STTS:=51
  STP:=55
.endif
.if grade=4 & staic=31
  STTS:=54
  STP:=65
.endif
.if grade=4 & staic=32
  STTS:=56
  STP:=71
.endif
.if grade=4 & staic=33
  STTS:=57
  STP:=75
.endif
.if grade=4 & staic=36
  STTS:=58
  STP:=79
.endif
.if grade=4 & staic=35
  STTS:=59
  STP:=82
.endif
.if grade=4 & staic=36
  STTS:=61
  STP:=87
.endif
.if grade=4 & staic=37
  STTS:=62
  STP:=89
.endif
.if grade=4 & staic=38
  STTS:=63
  STP:=91
.endif
.if grade=4 & staic=39
  STTS:=64
  STP:=93
.endif
.if grade=4 & staic=40
  STTS:=65
  STP:=94
.endif
.if grade=4 & staic=41
  STTS:=66
  STP:=95
.endif
.if staic=42
  STTS:=67
  STP:=96
.endif
.if grade=4 & staic=43
  STTS:=68
  STP:=97
.endif
.if grade=4 & staic=44
  STTS:=70
STP:=98
endif
.if grade=4 & staic=45
   STTS:=72
   STP:=99
endif
.if grade=4 & staic=46
   STTS:=76
   STP:=100
endif
.if grade=4 & staic>46
   STTS:=78
   STP:=100
endif

.. Normalised T-Scores and Percentile Ranks for A-Trait Scales for Grade 4 Males
.if grade=4 & trait=20
   TRTS:=22
   TRP:=1
endif
.if grade=4 & trait=21
   TRTS:=25
   TRP:=1
endif
.if grade=4 & trait=22
   TRTS:=29
   TRP:=2
endif
.if grade=4 & trait=23
   TRTS:=31
   TRP:=3
endif
.if grade=4 & trait=24
   TRTS:=33
   TRP:=5
endif
.if grade=4 & trait=25
   TRTS:=34
   TRP:=5
endif
.if grade=4 & trait=26
   TRTS:=35
   TRP:=7
endif
.if grade=4 & trait=27
   TRTS:=37
   TRP:=9
endif
.if grade=4 & trait=28
   TRTS:=38
   TRP:=11
endif
.if grade=4 & trait=29
   TRTS:=39
   TRP:=14
endif
.if grade=4 & trait=30
   TRTS:=41
   TRP:=17
endif
.if grade=4 & trait=31
   TRTS:=42
   TRP:=21
endif
.if trait=32
   TRTS:=44
   TRP:=26
endif
.if grade=4 & trait=33
   TRTS:=45
   TRP:=32
endif
.if grade=4 & trait=34
   TRTS:=47
 endif

TRP:=38
.endif
.if grade=4 & trait=35
TRTS:=48
TRP:=43
.endif
.if grade=4 & trait=36
TRTS:=50
TRP:=49
.endif
.if grade=4 & trait=37
TRTS:=51
TRP:=53
.endif
.if grade=4 & trait=38
TRTS:=52
TRP:=58
.endif
.if grade=4 & trait=39
TRTS:=53
TRP:=64
.endif
.if grade=4 & trait=40
TRTS:=55
TRP:=70
.endif
.if trait=41
TRTS:=57
TRP:=76
.endif
.if grade=4 & trait=42
TRTS:=58
TRP:=80
.endif
.if grade=4 & trait=43
TRTS:=60
TRP:=83
.endif
.if grade=4 & trait=44
TRTS:=62
TRP:=88
.endif
.if grade=4 & trait=45
TRTS:=64
TRP:=92
.endif
.if grade=4 & trait=46
TRTS:=65
TRP:=93
.endif
.if grade=4 & trait=47
TRTS:=66
TRP:=95
.endif
.if grade=4 & trait=48
TRTS:=67
TRP:=95
.endif
.if grade=4 & trait=49
TRTS:=68
TRP:=96
.endif
.if grade=4 & trait=50
TRTS:=70
TRP:=98
.endif
.if grade=4 & trait=51
TRTS:=72
TRP:=99
.endif
.if grade=4 & trait=52
TRTS:=75
TRP:=99
.endif
.if grade=4 & trait=53
TRTS:=76
TRP:=100
.endif
.if grade=4 & trait=54
TRTS:=76
TRP:=100
.endif
.if grade=4 & trait=55
TRTS:=76
TRP:=100
.endif
.if grade=4 & trait=56
TRTS:=76
TRP:=100
.endif
.if grade=4 & trait=57
TRTS:=76
TRP:=100
.endif
.if grade=4 & trait=58
TRTS:=76
TRP:=100
.endif
.if grade=4 & trait=59
TRTS:=76
TRP:=100
.endif
.if grade=4 & trait=60
TRTS:=76
TRP:=100
.endif

.. Normalised T-Scores and Percentile Ranks for A-State for Grade 5 Males
.if grade=5 & staic=20
STTS:=27
STP:=1
.endif
.if grade=5 & staic=21
STTS:=31
STP:=3
.endif
.if grade=5 & staic=22
STTS:=35
STP:=4
.endif
.if grade=5 & staic=23
STTS:=39
STP:=7
.endif
.if grade=5 & staic=24
STTS:=43
STP:=10
.endif
.if grade=5 & staic=25
STTS:=47
STP:=13
.endif
.if grade=5 & staic=26
STTS:=50
STP:=17
.endif
.if grade=5 & staic=27
STTS:=54
STP:=22
.endif
.if grade=5 & staic=28
STTS:=58
STP:=26
.endif
.if grade=5 & staic=29
STTS:=62
STP:=31
.endif
if grade=5 & staic=30
    STTS:=49
    STP:=46
endif
if grade=5 & staic=31
    STTS:=52
    STP:=57
endif
if grade=5 & staic=32
    STTS:=53
    STP:=64
endif
if grade=5 & staic=33
    STTS:=55
    STP:=68
endif
if grade=5 & staic=34
    STTS:=56
    STP:=72
endif
if grade=5 & staic=35
    STTS:=57
    STP:=77
endif
if grade=5 & staic=36
    STTS:=59
    STP:=82
endif
if grade=5 & staic=37
    STTS:=61
    STP:=86
endif
if grade=5 & staic=38
    STTS:=63
    STP:=90
endif
if grade=5 & staic=39
    STTS:=65
    STP:=93
endif
if grade=5 & staic=40
    STTS:=66
    STP:=95
endif
if grade=5 & staic=41
    STTS:=67
    STP:=95
endif
if grade=5 & staic=42
    STTS:=68
    STP:=96
endif
if grade=5 & staic=43
    STTS:=69
    STP:=97
endif
if grade=5 & staic=44
    STTS:=70
    STP:=98
endif
if grade=5 & staic=45
    STTS:=72
    STP:=98
endif
if grade=5 & staic=46
    STTS:=72
    STP:=99
endif
if grade=5 & staic=47
    STTS:=73
    STP:=99
endif
if grade=5 & staic=48
    STTS:=75
    STP:=99
endif
if grade=5 & staic=49
    STTS:=75
    STP:=99
endif
STP:=99
.endif
.if grade=5 & staic=50
  STTS:=76
  STP:=99
.endif
.if grade=5 & staic>50
  STTS:=79
  STP:=100
.endif

.. Normalised T-Scores and Percentile Ranks for A-State for Grade 5 Males grade=5 & trait=20
.if grade=5 & trait=20
  TRTS:=21
  TRP:=1
.endif
.if grade=5 & trait=21
  TRTS:=21
  TRP:=1
.endif
.if grade=5 & trait=22
  TRTS:=25
  TRP:=1
.endif
.if grade=5 & trait=23
  TRTS:=28
  TRP:=1
.endif
.if grade=5 & trait=24
  TRTS:=30
  TRP:=2
.endif
.if grade=5 & trait=25
  TRTS:=32
  TRP:=2
.endif
.if grade=5 & trait=26
  TRTS:=34
  TRP:=4
.endif
.if grade=5 & trait=27
  TRTS:=36
  TRP:=4
.endif
.if grade=5 & trait=28
  TRTS:=37
  TRP:=4
.endif
.if grade=5 & trait=29
  TRTS:=39
  TRP:=13
.endif
.if grade=5 & trait=30
  TRTS:=40
  TRP:=17
.endif
.if grade=5 & trait=31
  TRTS:=42
  TRP:=22
.endif
.if grade=5 & trait=32
  TRTS:=45
  TRP:=31
.endif
.if grade=5 & trait=33
  TRTS:=46
  TRP:=35
.endif
.if grade=5 & trait=34
  TRTS:=47
  TRP:=39
.endif
.if grade=5 & trait=36
  TRTS:=49

362
TRP:=45
      .endif
      .if grade=5 & trait=37
       TRTS:=50
       TRP:=50
      .endif
      .if grade=5 & trait=38
       TRTS:=51
       TRP:=56
      .endif
      .if grade=5 & trait=39
       TRTS:=53
       TRP:=62
      .endif
      .if grade=5 & trait=40
       TRTS:=55
       TRP:=68
      .endif
      .if grade=5 & trait=42
       TRTS:=59
       TRP:=83
      .endif
      .if grade=5 & trait=43
       TRTS:=61
       TRP:=86
      .endif
      .if grade=5 & trait=44
       TRTS:=62
       TRP:=89
      .endif
      .if grade=5 & trait=45
       TRTS:=64
       TRP:=93
      .endif
      .if grade=5 & trait=46
       TRTS:=67
       TRP:=96
      .endif
      .if grade=5 & trait=47
       TRTS:=68
       TRP:=97
      .endif
      .if grade=5 & trait=48
       TRTS:=70
       TRP:=98
      .endif
      .if grade=5 & trait=49
       TRTS:=74
       TRP:=99
      .endif
      .if grade=5 & trait=50
       TRTS:=75
       TRP:=99
      .endif
      .if grade=5 & trait=51
       TRTS:=75
       TRP:=99
      .endif
      .if grade=5 & trait=52
       TRTS:=76
       TRP:=99
      .endif
      .if grade=5 & trait=53
       TRTS:=77
       TRP:=99
      .endif
      .if grade=5 & trait>53
       TRTS:=77
       TRP:=100
      .endif
      .end
**A.15 Background information sheet**

<table>
<thead>
<tr>
<th>Case Number:</th>
<th>Group: Study/Control</th>
<th>Grade: Year 4/Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME:</td>
<td>SCHOOL:</td>
<td>SCHOOL PHONE:</td>
</tr>
<tr>
<td>HOME ADDRESS:</td>
<td></td>
<td>HOME PHONE:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WORK PHONE:</td>
</tr>
<tr>
<td>DATE OF BIRTH:</td>
<td>DATE OF TESTING:</td>
<td>AGE AT TESTING:</td>
</tr>
<tr>
<td>ETHNICITY:</td>
<td>(mother or primary caregiver)</td>
<td></td>
</tr>
<tr>
<td>FAMILY STRUCTURE:</td>
<td>Intact/Disrupted (describe)</td>
<td></td>
</tr>
<tr>
<td>PARENTS/GUARDIANS OCCUPATION:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHILD'S PLACE IN FAMILY:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCHOOLS ATTENDED:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STANDARDISED TESTS:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDICAL INFORMATION:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMENTS:</td>
<td>(performance, behaviour, support services, interventions)</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix A

### Instruments

#### A.1 CBCL/4-18 parent questionnaire

**CHILD BEHAVIOR CHECKLIST FOR AGES 4-18**

For office use only.

**CHILD'S NAME**

SEX  
- Boy
- Girl

AGE

ETHNIC GROUP OR RACE

TODAY'S DATE

CHILD'S BIRTHDATE

WE ___________ (Date)

GRADE IN SCHOOL

NOT ATTENDING SCHOOL

Please fill out this form to reflect your view of the child's behavior even if other people might not agree. Feel free to write additional comments beside each label and in the spaces provided on page 2.

**PARENTS' USUAL TYPE OF WORK, even if not working now. (Please do specific - for example, auto mechanic, high school teacher, housewife, laborer, salesperson, etc.)**

FATHER'S TYPE OF WORK

MOTHER'S TYPE OF WORK

THIS FORM FILLED OUT BY

- [ ] Mother
- [ ] Father
- [ ] Other - name & relationship to child

---

**I. Please list the sports your child likes to take part in. For example, swimming, baseball, skating, skate boarding, bike riding, fishing, etc.**

- [ ] None
- a.
- b.
- c.

**Compared to others of the same age, about how much time does he/she spend in each?**

<table>
<thead>
<tr>
<th>Less Than</th>
<th>Average</th>
<th>More Than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Compared to others of the same age, how well does he/she do each one?**

<table>
<thead>
<tr>
<th>Less Than</th>
<th>Average</th>
<th>More Than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**II. Please list your child's favorite hobbies, activities, and games, other than sports. For example: stamps, dolls, books, piano, crafts, cara, singing, etc. (Do not include listening to radio or TV)**

- [ ] None
- a.
- b.
- c.

**Compared to others of the same age, about how much time does he/she spend in each?**

<table>
<thead>
<tr>
<th>Less Than</th>
<th>Average</th>
<th>More Than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Compared to others of the same age, how well does he/she do each one?**

<table>
<thead>
<tr>
<th>Less Than</th>
<th>Average</th>
<th>More Than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**III. Please list any organizations, clubs, teams, or groups your child belongs to.**

- [ ] None
- a.
- b.
- c.

**Compared to others of the same age, how active is he/she in each?**

<table>
<thead>
<tr>
<th>Less Than</th>
<th>Average</th>
<th>More Than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**IV. Please list any jobs or chores your child has. For example: paper route, babysitting, making bed, working in stores, etc. (Include both paid and unpaid jobs and chores.)**

- [ ] None
- a.
- b.
- c.

**Compared to others of the same age, how well does he/she carry them out?**

<table>
<thead>
<tr>
<th>Less Than</th>
<th>Average</th>
<th>More Than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't Know</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

(Complete page 1 and 2)

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PAGE 1

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V. 1. About how many close friends does your child have? □ None □ 1 □ 2 or 3 □ 4 or more
   (Do not include brothers & sisters)
2. About how many times a week does your child do things with any friends outside of regular school hours?
   □ Less than 1 □ 1 or 2 □ 3 or more

VI. Compared to others of his/her age, how well does your child:

   a. Get along with his/her brothers & sisters? □ ❌ □ □ □ Has no brothers or sisters
   b. Get along with other kids? □ ❌ □ □
   c. Behave with his/her parents? □ ❌ □ □
   d. Play and work by himself/herself? □ ❌ □ □

VII. 1. For ages 8 and older—performance in academic subjects: (If child is not being taught, please give reason)
   Not being taught because

   a. Reading, English, or Language Arts □ ❌ □ □
   b. History or Social Studies □ ❌ □ □
   c. Arithmetic or Math □ ❌ □ □
   d. Science □ ❌ □ □
   e. Other academic subjects—for example computer courses, foreign language, business. Do not include gym, shop, driver’s ed., etc. □ ❌ □ □ □

   2. Is your child in a special class or special school? □ No □ Yes—what kind of class or school?
   3. Has your child repeated a grade? □ No □ Yes—grade and reason
   4. Has your child had any academic or other problems in school? □ No □ Yes—please describe

   When did these problems start?
   Have these problems ended? □ No □ Yes—when?
   Does your child have any illness, physical disability, or mental handicap? □ No □ Yes—please describe

   What concerns you most about your child?

Please describe the best things about your child:
Below is a list of items that describe children and youth. For each item that describes your child now or within the past 6 months, please circle the 2 if the item is very true or often true of your child. Circle the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, circle the 0. Please answer all items as well as you can, even if some do not seem to apply to your child.

<table>
<thead>
<tr>
<th>Item</th>
<th>0 = Not True (as far as you know)</th>
<th>1 = Somewhat or Sometimes True</th>
<th>2 = Very True or Often True</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. 1. 2. 1. Acts too young for his/her age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 2. Allergy (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 3. Argues a lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 4. Asthma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 5. Behaves like opposite sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 6. Bowel movements outside toilet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 7. Bragging, boasting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 8. Can't concentrate, can't pay attention for long time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 9. Can't get his/her mind off certain thoughts; obsessions (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 10. Can't sit still, restless, or hyperactive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 11. Clings to adults or too dependent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 12. Complains of loneliness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 13. Confused or seems to be in a fog</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 14. Cries a lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 15. Cruel to animals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 16. Cruelty, bullying, or meanness to others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 17. Daydreams or gets lost in his/her thoughts</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>0. 1. 2. 18. Deliberately harms self or attempts suicide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 19. Demands a lot of attention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 20. Destroys his/her own things</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 21. Destroys things belonging to his/her family or others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 22. Disobedient at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 23. Disobedient at school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 24. Doesn't eat well</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 25. Doesn't get along with other kids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 26. Doesn't seem to feel guilty after misbehaving</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 27. Easily jealous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 28. Eats or drinks things that are not food — don't include sweets (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 29. Fears certain animals, situations, or places, other than school (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. 1. 2. 30. Fears going to school</td>
<td></td>
<td></td>
<td></td>
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</table>

Please see other side
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 57.</td>
<td>Physically attacks people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 58.</td>
<td>Picks nose, skin, or other parts of body (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 59.</td>
<td>Plays with own sex parts in public</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 60.</td>
<td>Plays with own sex parts too much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 61.</td>
<td>Poor school work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 62.</td>
<td>Poorly coordinated or clumsy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 63.</td>
<td>Prefers being with older kids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 64.</td>
<td>Prefers being with younger kids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 65.</td>
<td>Refuses to talk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 66.</td>
<td>Repeats certain acts over and over; compulsions (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 67.</td>
<td>Runs away from home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 68.</td>
<td>Screams a lot</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 69.</td>
<td>Secretive, keeps things to self</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 70.</td>
<td>Sees things that aren't there (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 71.</td>
<td>Self-conscious or easily embarrassed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 72.</td>
<td>Sets fires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 73.</td>
<td>Sexual problems (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 74.</td>
<td>Showing off or clowning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 75.</td>
<td>Shy or timid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 76.</td>
<td>Sleeps less than most kids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 77.</td>
<td>Sleeps more than most kids during day and/or night (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 78.</td>
<td>Smears or plays with bowel movements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 79.</td>
<td>Speech problem (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 80.</td>
<td>Stares blankly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 81.</td>
<td>Steals at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 82.</td>
<td>Steals outside the home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 83.</td>
<td>Stores up things he/she doesn't need (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 84.</td>
<td>Strange behavior (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 85.</td>
<td>Strange ideas (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 86.</td>
<td>Stubborn, sullen, or irritable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 87.</td>
<td>Sudden changes in mood or feelings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 88.</td>
<td>Sucks a lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 89.</td>
<td>Suspicious</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 90.</td>
<td>Swearing or obscene language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 91.</td>
<td>Talks about killing self</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 92.</td>
<td>Talks or walks in sleep (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 93.</td>
<td>Talks too much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 94.</td>
<td>Teases a lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 95.</td>
<td>Temper tantrums or hot temper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 96.</td>
<td>Thinks about sex too much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 97.</td>
<td>Threatens people</td>
<td></td>
<td></td>
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<tr>
<td>0 1 2 98.</td>
<td>Thumb-sucking</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0 1 2 99.</td>
<td>Too concerned with neatness or cleanliness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 100.</td>
<td>Trouble sleeping (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 101.</td>
<td>Truancy, skips school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 102.</td>
<td>Underactive, slow moving, or lacks energy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 103.</td>
<td>Unhappy, sad, or depressed</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0 1 2 104.</td>
<td>Unusually loud</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0 1 2 105.</td>
<td>Uses alcohol or drugs for nonmedical purpose (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 106.</td>
<td>Vandalism</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0 1 2 107.</td>
<td>Wets self during the day</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0 1 2 108.</td>
<td>Wets the bed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1 2 109.</td>
<td>Whining</td>
<td></td>
<td></td>
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<tr>
<td>0 1 2 110.</td>
<td>Wishes to be of opposite sex</td>
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<td></td>
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<tr>
<td>0 1 2 111.</td>
<td>Withdrawn, doesn't get involved with others</td>
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<tr>
<td>0 1 2 112.</td>
<td>Worries</td>
<td></td>
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<tr>
<td>0 1 2 113.</td>
<td>Please write in any problems your child has that were not listed above:</td>
<td></td>
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### A.2 1991 CBCL/4-18 profile: Parent reported competence for boys aged 6-11 years

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#### 1991 Child Behavior Checklists Profile

Parent-Reported Competence - Boys Aged 6-11

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<th>School</th>
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<td>0.0 I.A. # of organizations</td>
<td>0.0 VIII.1. # of companions</td>
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<tr>
<td>1.0 I.B. Mean of participation &amp; skill in sports</td>
<td>1.0 B. Mean of participation in organizations</td>
<td>1.0 VIII.2. Mean performance</td>
</tr>
<tr>
<td>1.0 VIII.1. # of friends</td>
<td>1.0 VIII.2. # of friends</td>
<td>1.0 VIII.3. # of associates</td>
</tr>
<tr>
<td>2.0 VIII.3. Frequency of contact with friends</td>
<td>2.0 VIII.4. Frequency of contact with friends</td>
<td>2.0 VIII.5. Frequency of contact with friends</td>
</tr>
<tr>
<td>1.0 IV.A. I of jobs</td>
<td>0.3 VI.A. Behavior with others</td>
<td>1.0 VIII.6. Behavior</td>
</tr>
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<td>5.5 Total</td>
<td>2.0 Total</td>
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<tr>
<td>51 T Score</td>
<td>43 T Score</td>
<td>27 T Score</td>
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---

### Notes

- Total Score for each scale is rounded to nearest 0.5.
- Score indicates the score was not computed due to missing data.
- On Activities and Social Stresses, if one item is missing, the mean of the other items is substituted.

---

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by T.R. Achenbach
Univ. Associates in Psychiatry
University of Vermont
1 South Prospect St.
Burlington, VT 05401-3456

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A.3 1991 CBCL/4-18 profile: Parent reported problems for boys aged 4-11 years

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<td>11 8</td>
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</tbody>
</table>

**Items Not on Cross-Informant Construct**

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Technical Services

Institute on Developmental Disabilities

Brigham Young University

Provo, Utah

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Institute on Developmental Disabilities

Brigham Young University

Provo, Utah

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A.4 TRF teacher questionnaire

TEACHER'S REPORT FORM

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The information from this form will also be used for comparison with other information about this pupil. Please answer as well as you can, even if you lack full information. Scores on individual items will be combined to identify general patterns of behavior. Feel free to write additional comments beside each item and in the spaces provided on page 2.

PUPIL'S NAME

FATHER'S

MOTHER'S

TYPE OF WORK:

TYPE OF WORK:

SEX: 

AGE:

ETHNIC

GROUP:

OR RACE:

TODAY'S DATE

PUPIL'S BIRTHDATE:

GRADE:

NAME:

OF SCHOOL:

1. How long have you known this pupil? ___________ months

2. How well do you know him/her? 1. __ Not Well 2. __ Moderately Well 3. __ Very Well

3. How much time does he/she spend in your class per week? ___________

4. What kind of class is it? (Please be specific, e.g., regular 5th grade, 7th grade math, etc.) _______

5. Has he/she ever been referred for special placement, social work, or tutoring? 1. __ No 2. __ Yes — what kind and when?___________

6. Has he/she ever repeated a grade? 1. __ No 2. __ Yes — grade and reason ______

7. Current school performance — list academic subjects and check column that indicates pupil's performance:

   Academic Subject | 1. Fair below grade | 2. Somewhat below grade | 3. At grade level | 4. Somewhat above grade | 5. Fair above grade

   __________ | __________ | __________ | __________ | __________ |
   __________ | __________ | __________ | __________ | __________ |
   __________ | __________ | __________ | __________ | __________ |
   __________ | __________ | __________ | __________ | __________ |
   __________ | __________ | __________ | __________ | __________ |

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Center for Children, Youth, & Families
University of Vermont
1 South Prospect St
Burlington, VT 05401

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1961 Edition
VIII. Compared to typical pupils of the same age:

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<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1. How hard at home working?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>2. How completely at home practicing?</td>
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<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>3. How much at home learning?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>4. How happy at home?</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
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</table>

IX. Most recent achievement test scores (if available):

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<th>Date</th>
<th>Percentage or grade level obtained</th>
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<tr>
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</table>

X. IQ, readiness, or aptitude tests (if available):

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<th>Date</th>
<th>IQ or equivalent scores</th>
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</tr>
</tbody>
</table>

Does this pupil have any illness, physical disability, or mental handicap? □ No □ Yes – please describe:

What concerns you most about this pupil?

Please describe the best things about this pupil:

Please list here any comments about the pupil’s work, behavior, or potential, using extra pages if necessary.
Below is a list of items that describe pupils. For each item that describes the pupil well or within the past 3 months, please circle the 3. If the item is not descriptive or is not descriptive to the pupil, please circle the 0. If the item is not descriptive or is not descriptive to the pupil, please circle the 0. Please answer all items as well as you can, even if some do not seem to apply to this pupil.

<table>
<thead>
<tr>
<th>Item</th>
<th>Number</th>
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<tbody>
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<td>1. Acts too young for his/her age</td>
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<tr>
<td>2. Home or makes other odd noises in class</td>
<td>0 1 2</td>
</tr>
<tr>
<td>3. Argues a lot</td>
<td>6 1 2</td>
</tr>
<tr>
<td>4. Fears to finish things when he starts</td>
<td>0 1 2</td>
</tr>
<tr>
<td>5. Behaves like opposite sex</td>
<td>0 1 2</td>
</tr>
<tr>
<td>6. Obstinate, talks back to teacher</td>
<td>0 1 2</td>
</tr>
<tr>
<td>7. Bragging, boasting</td>
<td>0 1 3</td>
</tr>
<tr>
<td>8. Can't concentrate, can't pay attention for long</td>
<td>0 1 2</td>
</tr>
<tr>
<td>9. Can't get teacher mind off certain thought</td>
<td>0 1 2</td>
</tr>
<tr>
<td>10. Can't sit still, restless, hyperactive</td>
<td>0 1 3</td>
</tr>
<tr>
<td>11. Chugs too fast or too dependent</td>
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</tr>
<tr>
<td>12. Compares to loneliness</td>
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<tr>
<td>13. Consuelo or seems to be in a fog</td>
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<tr>
<td>14. Cries a lot</td>
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<tr>
<td>15. Fidgets</td>
<td>0 1 3</td>
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<td>16. Unique, bullying, or mean to others</td>
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<tr>
<td>17. Daydreams or gets lost in his/her thoughts</td>
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<tr>
<td>18. Defensively harms self or attempts suicide</td>
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<td>19. Demands a lot of attention</td>
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<td>20. Destroys her/his own things</td>
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<tr>
<td>21. Destroys property belonging to others</td>
<td>0 1 3</td>
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<tr>
<td>22. Difficulty following directions</td>
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<tr>
<td>23. Disobedient at school</td>
<td>0 1 3</td>
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<tr>
<td>24. Disobeys other pupils</td>
<td>0 1 3</td>
</tr>
<tr>
<td>25. Doesn't get along with other pupils</td>
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<tr>
<td>26. Doesn't seem to feel guilty after misbehaving</td>
<td>0 1 2</td>
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<td>27. Early mark</td>
<td>0 1 3</td>
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<td>28. Eats or drinks things that are not food - don't include sweets described</td>
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<td>29. Fears certain animals, situations, or places other than school described</td>
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<td>30. Fears going to school</td>
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Please see other side
A.5 1991 TRF profile: Teacher reported adaptive functioning for boys aged 5-11 years

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VIII. Academic Performance
VIII-1. Working Hard
VIII-2. Behaving Appropriately
VIII-3. Learning
VIII-4. Happy
SUM of ITEMS 1, 2, 3, 4

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University of Vermont
University Associates in Psychiatry
F. 1 South Prospect Street
Burlington, Vermont 05401-3456

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### A.6 1991 TRF profile: Teacher reported problems for boys aged 5-11 years

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### THOUGHT PROBLEMS

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### ATTENTION PROBLEMS

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### DELINQUENCY PROBLEMS

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### AGGRESSIVE PROBLEMS

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### BEHAVIOR

| 0            | 20         | 20         | 20     | 20      | 1         | 1           | 0           | 1         |

---

*Note on Cross-Informant Construct*  
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## A.7 Cross informant comparison of scores for the 89 problem items assigned to the CBCL/4-18, TRF and YSR

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*"CBCL" is CBCL by Mother, Cards (2,02), Agency.
*"YSR" is YSR by Teacher, Cards (2,02), Agency.
*"TRF" is TRF by Teacher, Cards (2,02), Agency.

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### A.8 Cross informant comparison of Q correlations between the 89 problem items and eight syndrome scales assigned to the CBCL/4-18, TRF and YSR

#### Cross-Informant Comparison of Scores

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<td>Mother and Mother is above average.</td>
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<td>Mother and Teacher 1 is above average.</td>
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<td>Mother and Teacher 2 is above average.</td>
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<td>Mother and Teacher 1 is above average.</td>
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#### T Scores for 8 Syndrome Scales Common to CBCL, YSR and TRF

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*+ Borderline Clinical Range ++ Clinical Range * n = missing data

#### Q Correlations Between 8 Scales

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<td>.35 .58 .89</td>
<td>Mother and Mother is above average.</td>
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<td>.76</td>
<td>.14 .23 .60</td>
<td>Mother and Teacher 2 is above average.</td>
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A.9 SDQ-1 questionnaire

SELF-DESCRIPTION
QUESTIONNAIRE-1

Your Name: ___________________________  Circle one:  Boy  Girl

School: _______________________________  Grade: _______ Age: _______

Teacher: _______________________________  Date: __________

This is a chance to look at yourself. It is not a test. There are no right answers, and everyone will have different answers. Be sure that your answers show how YOU feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE. We will keep your answers private and not show them to anyone.

When you are ready to begin, please read each sentence and choose an answer. You may read quietly to yourself as you read aloud. There are five possible answers for each question: "True," "False," "Sometime True," "Sometime False," and three answers in between. There are five boxes next to each sentence, one for each of the answers. The answers are written at the top of the boxes. Choose your answer to a sentence and make a check mark in the box under the answer you choose. DO NOT say your answer out loud or talk about it with anyone else.

Before you start, there are three examples below. A student, Bob, has already answered two of these sentences to show you how to do it. In the third example you must choose your own answer and put in your own check mark.

EXAMPLES

1. I like to read comic books  ..................  FALSE  MOSTLY FALSE  SOME-TIMES FALSE/SOME-TIMES TRUE  MOSTLY TRUE  TRUE

Bob checked the box under the answer "True." This means that he really likes to read comic books. If Bob did not like to read comic books very much, he would have answered "False" or "Mostly False."

2. In general, I am neat and tidy  ..................  FALSE  MOSTLY FALSE  TRUE

Bob answered "Sometimes False, Sometimes True," because he is not very neat, but he is not very messy either.

3. I like to watch TV  .............................  FALSE  TRUE

For this sentence you have to choose the answer that is best for you. First you must decide if the sentence is "True," or "False," or somewhere in between. If you really like to watch TV, a lot, you would answer "True." If you hate watching TV, you would answer "False." By making a check mark in the first box. If your answer is somewhere in between, then you would choose one of the other three boxes.

If you want to change an answer you have marked, you should cross out the check mark and put a new check mark in another box on the same line.

For all the sentences be sure that your check mark is on the same line as the sentence you are answering. You should have one answer and only one answer for each sentence. Do not leave out any of the sentences. Once you have started, PLEASE DO NOT TALK. Turn over the page and begin.

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<td>10. I like to run and play hard</td>
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<td>12. My parents are usually unhappy or disappointed with what I do</td>
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<td>28. I get along with kids easily</td>
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<td>33. I am dumb at reading</td>
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<td>37. Overall, I am no good</td>
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<td>38. Other kids think I am good looking</td>
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<td>41. I enjoy doing work in <strong>READING</strong></td>
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<td>43. I learn things quickly in <strong>MATHEMATICS</strong></td>
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<td>44. Other kids want me to be their friend</td>
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<td>45. In general, I like being the way I am</td>
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<td>46. I have a good looking body</td>
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<td>48. I can run a long way without stopping</td>
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<td>49. Work in <strong>READING</strong> is easy for me</td>
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<td>50. My parents are easy to talk to</td>
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<td>51. I like <strong>MATHEMATICS</strong></td>
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<td>52. I have more friends than most other kids</td>
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<td>SOMETIMES FALSE</td>
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<td>53. Overall I have a lot to be proud of</td>
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<td>54. I'm better looking than most of my friends</td>
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<td>55. I look forward to all SCHOOL SUBJECTS</td>
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<td>56. I am a good athlete</td>
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<td>57. I look forward to READING</td>
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<td>58. I get along well with my parents</td>
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<td>59. I'm good at MATHEMATICS</td>
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<td>60. I am popular with kids of my own age</td>
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<td>61. I can't do anything right</td>
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<td>62. I have nice features like nose, and eyes, and hair</td>
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<td>63. Work in all SCHOOL SUBJECTS is easy for me</td>
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<td>64. I'm good at throwing a ball</td>
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<td>65. I hate READING</td>
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<td>66. My parents and I have a lot of fun together</td>
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<td>67. I can do things as well as most other people</td>
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<td>68. I enjoy doing work in MATHEMATICS</td>
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<td>69. Most other kids like me</td>
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<td>70. Other people think I am a good person</td>
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<td>71. I like all SCHOOL SUBJECTS</td>
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<td>72. A lot of things about me are good</td>
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<td>73. I learn things quickly in READING</td>
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<td>74. I'm as good as most other people</td>
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<td>75. I am dumb at MATHEMATICS</td>
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<td>76. When I do something, I do it well</td>
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</tbody>
</table>
SELF-DESCRIPTION QUESTIONNAIRE I

SDQ

SCORING AND PROFILE BOOKLET

HERBERT W. MARSH

CHILD'S NAME:

DATE:

SCHOOL:

TEACHER:

SEX: □ M □ F AGE: ______ GRADE: ______

THE PSYCHOLOGICAL CORPORATION
HARCOURT BRACE JOVANOVIĆ, INC.

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1 2 3 4 5 6 7 8 9 0 9 8 7 6 5 4 3 2 1
Score Calculation and Summary

INDIVIDUAL SCALE SCORES. For each scale, write the scores for the items listed in the blanks beside the item numbers. Sum the item scores within each scale and write the total raw score in the blank provided below the item scores.

<table>
<thead>
<tr>
<th>Physical Abilities</th>
<th>Physical Appearance</th>
<th>Peer Relations</th>
<th>Parent Relations</th>
<th>Reading</th>
<th>Mathematics</th>
<th>General-School</th>
<th>General-Sell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
<td>Item (Mean)*</td>
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<td>Item (Mean)*</td>
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<tr>
<td>3</td>
<td>(3.84)</td>
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<td></td>
<td>5</td>
<td>(4.38)</td>
<td>13</td>
<td>(3.52)</td>
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<tr>
<td>10</td>
<td>(4.14)</td>
<td>14</td>
<td>(4.01)</td>
<td>11</td>
<td>(3.96)</td>
<td>16</td>
<td>(3.43)</td>
</tr>
<tr>
<td>24</td>
<td>(4.66)</td>
<td>15</td>
<td>(4.10)</td>
<td>18</td>
<td>(3.95)</td>
<td>18</td>
<td>(3.53)</td>
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<tr>
<td>32</td>
<td>(3.71)</td>
<td>28</td>
<td>(4.10)</td>
<td>27</td>
<td>(3.75)</td>
<td>16</td>
<td>(3.43)</td>
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<tr>
<td>40</td>
<td>(4.28)</td>
<td>26</td>
<td>(4.79)</td>
<td>27</td>
<td>(3.95)</td>
<td>16</td>
<td>(3.43)</td>
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<tr>
<td>46</td>
<td>(3.85)</td>
<td>22</td>
<td>(4.01)</td>
<td>18</td>
<td>(3.95)</td>
<td>16</td>
<td>(3.43)</td>
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<tr>
<td>56</td>
<td>(3.89)</td>
<td>60</td>
<td>(3.98)</td>
<td>67</td>
<td>(3.82)</td>
<td>62</td>
<td>(3.40)</td>
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<tr>
<td>64</td>
<td>(4.38)</td>
<td>69</td>
<td>(4.53)</td>
<td>73</td>
<td>(4.04)</td>
<td>71</td>
<td>(3.63)</td>
</tr>
</tbody>
</table>

RAW SCALE TOTALS

TOTAL NONACADEMIC. Copy the Raw Scale Totals for Physical Abilities, Physical Appearance, Peer Relations, and Parent Relations into the blanks provided below. Sum these scores and divide by 4 to get the Total Nonacademic raw score.

\[
\text{Total Nonacademic} = \frac{(\text{Physical Abilities}) + (\text{Physical Appearance}) + (\text{Peer Relations}) + (\text{Parent Relations})}{4}
\]

TOTAL ACADEMIC. Copy the Raw Scale Totals for Reading, Mathematics, and General-School into the blanks provided below. Sum these scores and divide by 3 to get the Total Academic raw score.

\[
\text{Total Academic} = \frac{(\text{Reading}) + (\text{Mathematics}) + (\text{General-School})}{3}
\]

TOTAL SELF. Copy the Total Nonacademic and Total Academic raw scores into the blanks provided below. Sum these scores and divide by 2 to get the Total Self raw score.

\[
\text{Total Self} = \frac{(\text{Total Nonacademic}) + (\text{Total Academic})}{2}
\]

CONTROL SCORES (See Appendix A of the Manual for instructions on calculating Control raw scores.)

<table>
<thead>
<tr>
<th>Control Score 1</th>
<th>Control Score 2</th>
<th>Control Score 3</th>
<th>Control Score 4</th>
<th>Control Score 5</th>
<th>Control Score 6</th>
</tr>
</thead>
</table>

* Substitute the item mean for missing responses only if three or fewer responses are left blank.
Directions: Transfer the raw scores for the individual and total scales (and control scores) from page 2 to the spaces provided below the profile. Then, convert the raw scores to percentile ranks and T scores using the tables in Appendices A and B of the Manual. Record these values in the spaces provided and plot the T scores on the profile.

*General-Self norms are not available for grades 2-4.

Note: T scores falling in the shaded area (i.e., T scores of 50 or above) represent above average self-concept; however, because of the skewed distribution of the scores, T scores above 50 are not readily interpretable.
## Control Score Calculation

### Control Score 1: Inconsistency on Corrected Item Pair

| Item3 | Item41 | Item43 | Item46 | Item22 | Item19 | Item18 | Item9 | Item13 | Item66 | Item49 | Item71 | Item56 | Item14 | Item50 | Item27 | Item53 | Item55 | Item15 | Item60 | Item11 | Item35 | Item2 | Item15 | Item55 | Item58 |
|-------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Item10 | Item12 | Item15 | Item54 | Item47 | Item50 | Item58 | Item31 | Item32 | Item38 | Item45 | Item24 | Item35 | Item38 | Item52 | Item24 | Item2 | Item15 | Item28 | Item34 | Item1 | Item15 | Item52 | Item58 |

### Control Score 2: Consistency on Uncorrected Item Pair

| Item3 | Item41 | Item43 | Item46 | Item22 | Item19 | Item18 | Item9 | Item13 | Item66 | Item49 | Item71 | Item56 | Item14 | Item50 | Item27 | Item53 | Item55 | Item15 | Item60 | Item11 | Item35 | Item2 | Item15 | Item55 | Item58 |
|-------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Item10 | Item12 | Item15 | Item54 | Item47 | Item50 | Item58 | Item31 | Item32 | Item38 | Item45 | Item24 | Item35 | Item38 | Item52 | Item24 | Item2 | Item15 | Item28 | Item34 | Item1 | Item15 | Item52 | Item58 |

### Control Score 3: Noncontingent Summary

Write the values of Control Score 2 and Control Score 1 in the appropriate blanks below. Subtract Control Score 1 from Control Score 2. Write the result in the blank labeled Control Score 3.

<table>
<thead>
<tr>
<th>Item17</th>
<th>Item21</th>
<th>Item30</th>
<th>Item6</th>
<th>Item23</th>
<th>Item30</th>
<th>Item12</th>
<th>Item55</th>
<th>Item79</th>
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<tbody>
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</table>

### Control Score 4: Negativity Bias

Calculate the standard deviation of the original seven scales (Physical Abilities, Physical Appearance, Peer Relations, Parent Relations, Reading, Math, and General School).

### Control Score 5: Positivity Bias

A.11 Program file for the SDQ-1 data base using Clinical Reporting System software

..Schema for SDQ table
..set descriptions on

key ID

field names

ID; Identification number

Group; Group of child
/type Labelled:15 is
  Study
  Comparison
/end

Grade; Grade at testing

Age; Age (in months) at testing

Perf; Teacher rated school performance
/type Labelled:15 is
  Below grade
  Grade level
  Above grade
@end

Family; Family structure
/type Labelled:12 is
  Intact
  Disrupted
@end

Ethnic; Cultural origin of mother or custodial guardian
/type Labelled:20 is
  Aboriginal
  Oceanian
  Western European
  Eastern European
  Mediterranean
  Middle Eastern
  Asian
  Latin American
@end

A1; I am good looking
A1M; Mean of A1
A2; I'm good at all SCHOOL SUBJECTS
A2M; Mean of A2
A3; I can run fast
A3M; Mean of A3
A4; I get good marks in READING
A4M; Mean of A4
A5; My parents understand me
A5M; Mean of A5
A6; I hate MATHEMATICS
A6M; Mean of A6
A6R; I hate MATHEMATICS
A7; I have lots of friends
A7M; Mean of A7
A8; I like the way I look
A8M; Mean of A8
A9; I enjoy doing work in all SCHOOL SUBJECTS
A9M; Mean of A9
A10; I like to run and play hard
A10M; Mean of A10
A11; I like READING
A11M; Mean of A11
A12; My parents are usually unhappy or disappointed with what I do
A12M; Mean of A12
A12R; My parents are usually unhappy or disappointed with what I do

.free form Self-Description Questionnaire
.window 1,1,80,23,0

<table>
<thead>
<tr>
<th>ID</th>
<th>Group</th>
<th>Age at testing</th>
<th>Grade when tested</th>
<th>School Performance</th>
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.field names
A13; Work in mathematics is easy for me
A13M; Mean of A13
A14; I make friends easily
A14M; Mean of A14
A15; I have a pleasant looking face
A15M; Mean of A15
A16; I get good marks in all SCHOOL SUBJECTS
A16M; Mean of A16
A17; I hate sports and games
A17M; Mean of A17
A17R; I hate sports and games
A18; I'm good at READING
A18M; Mean of A18
A19; I like my parents
A19M; Mean of A19
A20; I look forward to MATHEMATICS
A20M; Mean of A20
A21; Most kids have more friends than I do
A21M; Mean of A21
A21R; Most kids have more friends than I do
A22; I am a nice looking person
A22M; Mean of A22
A23; I hate all SCHOOL SUBJECTS
A23M; Mean of A23
A23R; I hate all SCHOOL SUBJECTS
A24; I enjoy sports and games
A24M; Mean of A24
A25; I am interested in READING
A25M; Mean of A25
A26; My parents like me
A26M; Mean of A26
A27; I get good marks in MATHEMATICS
A27M; Mean of A27
A28; I get along with kids easily
A28M; Mean of A28

.free form Self-Description Questionnaire
.window 1,1,80,23,0

<table>
<thead>
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<td>13</td>
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</tr>
</tbody>
</table>

292
17r I hate sports and games
18 I'm good at READING
19 I like my parents
20 I look forward to MATHEMATICS
21 Most kids have more friends than I do
21r Most kids have more friends than I do
22 I am a nice looking person
23 I hate all SCHOOL SUBJECTS
23r I hate all SCHOOL SUBJECTS
24 I enjoy sports and games
25 I am interested in READING
26 My parents like me
27 I get good marks in MATHEMATICS
28 I get along with kids easily

.field names
A29; I do lots of important things
A29M; Mean of A29
A30; I am ugly
A30M; Mean of A30
A30R; I am ugly
A31; I learn things quickly in all SCHOOL SUBJECTS
A31M; Mean of A31
A32; I have good muscles
A32M; Mean of A32
A33; I am dumb at reading
A33M; Mean of A33
A33R; I am dumb at reading
A34; If I have children of my own, I want to bring them up like my parents raised me
A34M; Mean of A34
A35; I am interested in MATHEMATICS
A35M; Mean of A35
A36; I am easy to like
A36M; Mean of A36
A37; Overall, I am no good
A37M; Mean of A37
A38; Other kids think I am good looking
A38M; Mean of A38
A39; I am interested in all SCHOOL SUBJECTS
A39M; Mean of A39
A40; I am good at sports
A40M; Mean of A40
A41; I enjoy doing work in READING
A41M; Mean of A41
A42; My parents and I spend a lot of time together
A42M; Mean of A42
A43; I learn things quickly in MATHEMATICS
A43M; Mean of A43
A44; Other kids want me to be their friend
A44M; Mean of A44

.free form Self-Description Questionnaire
.window 1,1,80,23,0

29 I do lots of important things
30 I am ugly
30R I am ugly
31 I learn things quickly in all SCHOOL SUBJECTS
32 I have good muscles
33 I am dumb at reading
33R I am dumb at reading
34 If I have children of my own, I want to bring them up like my parents raised me
35 I am interested in MATHEMATICS
36 I am easy to like
37 Overall, I am no good
38 Other kids think I am good looking
39 I am interested in all SCHOOL SUBJECTS
40 I am good at sports
41 I enjoy doing work in READING
42 My parents and I spend a lot of time together
43 I learn things quickly in MATHEMATICS
44 Other kids want me to be their friend
In general, I like being the way I am 45
I have a good looking body 46
I am dumb in all SCHOOL SUBJECTS 47
I can run a long way without stopping 48
Work in READING is easy for me 49
My parents are easy to talk to 50
I like MATHEMATICS 51
I have more friends than most other kids 52
Overall I have a lot to be proud of 53
I'm better looking than most of my friends 54
I look forward to all SCHOOL SUBJECTS 55
I'm good at throwing a ball 56
I do not do anything right 57
I have nice features like nose, and eyes, and hair 58
Work in READING is easy for me 59
My parents are easy to talk to 60
I like MATHEMATICS 61
I have more friends than most other kids 62
Overall I have a lot to be proud of 63
I'm better looking than most of my friends 64
I look forward to all SCHOOL SUBJECTS 65
I hate READING 66
My parents and I have a lot of fun together 67
A66M; Mean of A66
A67; I can do things as well as most other people
A67M; Mean of A67
A68; I enjoy work in MATHEMATICS
A68M; Mean of A68
A69; Most other kids like me
A69M; Mean of A69
A70; Other people think I am a good person
A70M; Mean of A70
A71; I like all SCHOOL SUBJECTS
A71M; Mean of A71
A72; A lot of things about me are good
A72M; Mean of A72
A73; I learn things quickly in READING
A73M; Mean of A73
A74; I'm as good as most other people
A74M; Mean of A74
A75; I am dumb at MATHEMATICS
A75M; Mean of A75
A76; When I do something, I do it well
A76M; Mean of A76

*.free form Self-Description Questionnaire
*.window 1,1,80,23,0

63 Work in all SCHOOL SUBJECTS is easy for me 63 -- M --.---
64 I'm good at throwing a ball 64 -- M --.---
65 I hate READING 65 -- M --.---
65R I hate READING 65 -- M --.---
66 My parents and I have a lot of fun together 66 -- M --.---
67 I can do things as well as most other people 67 -- M --.---
68 I enjoy work in MATHEMATICS 68 -- M --.---
69 Most other kids like me 69 -- M --.---
70 Other people think I am a good person 70 -- M --.---
71 I like all SCHOOL SUBJECTS 71 -- M --.---
72 A lot of things about me are good 72 -- M --.---
73 I learn things quickly in READING 73 -- M --.---
74 I'm as good as most other people 74 -- M --.---
75 I am dumb at MATHEMATICS 75 -- M --.---
75R I am dumb at MATHEMATICS 75 -- M --.---
76 When I do something, I do it well 76 -- M --.---

*.field names
A77; Physical abilities, Raw score
A77A; Physical abilities, Percentile
A77B; Physical abilities, T score
A78; Physical appearance, Raw score
A78A; Physical appearance, Percentile
A78B; Physical appearance, T score
A79; Peer relations, Raw score
A79A; Peer relations, Percentile
A79B; Peer relations, T score
A80; Parent relations, Raw score
A80A; Parent relations, Percentile
A80B; Parent relations, T score
A81; Reading, Raw score
A81A; Reading, Percentile
A81B; Reading, T score
A82; Mathematics, Raw score
A82A; Mathematics, Percentile
A82B; Mathematics, T score
A83; General school, Raw score
A83A; General school, Percentile
A83B; General school, T score
A84; General self, Raw score
A84A; General self, Percentile
A84B; General self, T score
A85; Total nonacademic, Raw score
A85A; Total nonacademic, Percentile
A85B; Total nonacademic, T score
A86; Total academic, Raw score
A86A; Total academic, Percentile

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A86B; Total academic, T score
A87; Total self, Raw score
A87A; Total self, Percentile
A87B; Total self, T score

.free form Score Calculation and Summary
.window 1,1,80,23,0

Individual Scale Total for Physical Abilities
----.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Physical Appearance
----.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Peer Relations
----.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Parent Relations
----.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Reading
----.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for Mathematics
----.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for General School
----.(Raw Score) --- (Percentile) --- (T Score)
Individual Scale Total for General Self
----.(Raw Score) --- (Percentile) --- (T Score)

Total Scales for Nonacademic
----.(Raw Score) --- (Percentile) --- (T Score)
Total Scales for Academic
----.(Raw Score) --- (Percentile) --- (T Score)
Total Scales for Self
----.(Raw Score) --- (Percentile) --- (T Score)

.field names
C1A; Control subscore 1A
C1B; Control subscore 1B
C1C; Control subscore 1C
C1D; Control subscore 1D
C1E; Control subscore 1E
C1F; Control subscore 1F
C1G; Control subscore 1G
C1H; Control subscore 1H
C1I; Control subscore 1I
C1J; Control subscore 1J
C1K; Control subscore 1K
C1L; Control subscore 1L
C1M; Control subscore 1M
C1N; Control subscore 1N
C1O; Control subscore 1O
C1P; Control subscore 1P
C1Q; Control subscore 1Q
C1R; Control subscore 1R
C1S; Control subscore 1S
C1T; Control subscore 1T
A88; Control score 1 Inconsistency on correlated item pairs, Raw score
A88A; Control score 1 Inconsistency on correlated item pairs, Percentile
A88B; Control score 1 Inconsistency on correlated item pairs, T score

C2A; Control subscore 2A
C2B; Control subscore 2B
C2C; Control subscore 2C
C2D; Control subscore 2D
C2E; Control subscore 2E
C2F; Control subscore 2F
C2G; Control subscore 2G
C2H; Control subscore 2H
C2I; Control subscore 2I
C2J; Control subscore 2J
C2K; Control subscore 2K
C2L; Control subscore 2L
C2M; Control subscore 2M
C2N; Control subscore 2N
C2O; Control subscore 2O
C2P; Control subscore 2P
C2Q; Control subscore 2Q
C2R; Control subscore 2R
C2S; Control subscore 2S
C2T: Control subscore 2T
A89; Control score 2 Consistency on uncorrelated item pairs, Raw score
A89A; Control score 2 Consistency on uncorrelated item pairs, Percentile
A89B; Control score 2 Consistency on uncorrelated item pairs, T score

.data form Control Score Calculation for Control Scores 1 & 2 & 3
.window 1,1,80,23,0

Control Score 1A ---- Control Score 1B ---- Control Score 1C ----
Control Score 1D ---- Control Score 1E ---- Control Score 1F ----
Control Score 1G ---- Control Score 1H ---- Control Score 1I ----
Control Score 1J ---- Control Score 1K ---- Control Score 1L ----
Control Score 1M ---- Control Score 1N ---- Control Score 1O ----
Control Score 1P ---- Control Score 1Q ---- Control Score 1R ----
Control Score 1S ---- Control Score 1T ----

Control Score 1: Inconsistency on Correlated Item Pairs
---- (Raw Score) ---- (Percentile) ---- (T Score)

Control Score 2A ---- Control Score 2B ---- Control Score 2C ----
Control Score 2D ---- Control Score 2E ---- Control Score 2F ----
Control Score 2G ---- Control Score 2H ---- Control Score 2I ----
Control Score 2J ---- Control Score 2K ---- Control Score 2L ----
Control Score 2M ---- Control Score 2N ---- Control Score 2O ----
Control Score 2P ---- Control Score 2Q ---- Control Score 2R ----
Control Score 2S ---- Control Score 2T ----

Control Score 2: Consistency on Uncorrelated Item Pairs
---- (Raw Score) ---- (Percentile) ---- (T Score)

.end

.field names
A90; Control score 3 Noncontingent summary, Raw score
A90A; Control score 3 Noncontingent summary, Percentile
A90B; Control score 3 Noncontingent summary, T Score
C4A; Control subscore 4A
C4B; Control subscore 4B
C4C; Control subscore 4C
C4D; Control subscore 4D
C4E; Control subscore 4E
C4F; Control subscore 4F
C4G; Control subscore 4G
C4H; Control subscore 4H
C4I; Control subscore 4I
C4J; Control subscore 4J
A91; Control score 4 Negativity bias, Raw score
A91A; Control score 4 Negativity bias, Percentile
A91B; Control score 4 Negativity bias, T score
C5A; Control subscore 5A
C5B; Control subscore 5B
C5C; Control subscore 5C
C5D; Control subscore 5D
C5E; Control subscore 5E
C5F; Control subscore 5F
C5G; Control subscore 5G
C5H; Control subscore 5H
C5I; Control subscore 5I
C5J; Control subscore 5J
A92; Control score 5 Positivity bias, Raw score
A92A; Control score 5 Positivity bias, Percentile
A92B; Control score 5 Positivity bias, T score
A93; Control score 6 Individual profile variation, Raw score
A93A; Control score 6 Individual profile variation, Percentile
A93B; Control score 6 Individual profile variation, T score

.data form Control Score Calculation for Control Scores 4 & 5 & 6
.window 1,1,80,23,0

Control Score 3: Noncontingent Summary
---- (Raw Score) ---- (Percentile) ---- (T Score)

Control Score 4A ---- Control Score 4B ---- Control Score 4C ----
Control Score 4D ---- Control Score 4E ---- Control Score 4F ----
Control Score 4G ---- Control Score 4H ---- Control Score 4I ----
Control Score 4J

Control Score 4: Negativity Bias
-----.-- (Raw Score) ----- (Percentile) ----- (T Score)

Control Score 5A -----.-- Control Score 5B -----.-- Control Score 5C -----.--
Control Score 5B -----.-- Control Score 5E -----.-- Control Score 5F -----.--
Control Score 5G -----.-- Control Score 5H -----.-- Control Score 5I -----.--
Control Score 5J -----.--

Control Score 5: Positivity Bias
-----.-- (Raw Score) ----- (Percentile) ----- (T Score)

Control Score 6: Individual Profile Variation
-----.-- (Raw Score) ----- (Percentile) ----- (T Score)

.end

.field names
C6M; Child's mean scale
C6D77; Deviation score for physical abilities
C6D78; Deviation score for physical appearance
C6D79; Deviation score for peer relations
C6D80; Deviation score for parent relations
C6D81; Deviation score for reading
C6D82; Deviation score for mathematics
C6D83; Deviation score for general school
C6D77S; Squared deviation score for physical abilities
C6D78S; Squared deviation score for physical appearance
C6D79S; Squared deviation score for peer relations
C6D80S; Squared deviation score for parent relations
C6D81S; Squared deviation score for reading
C6D82S; Squared deviation score for mathematics
C6D83S; Squared deviation score for general school
C6V; Child's Scale Variance

.free form Control Score Calculation for Control Score 6

.window 1,1,10,23,0

 Child's Scale Mean

 Deviation Score for Physical Abilities
 Deviation Score for Physical Appearance
 Deviation Score for Peer Relations
 Deviation Score for Parent Relations
 Deviation Score for Reading
 Deviation Score for Mathematics
 Deviation Score for General School

 Squared Deviation Score for Physical Abilities
 Squared Deviation Score for Physical Appearance
 Squared Deviation Score for Peer Relations
 Squared Deviation Score for Parent Relations
 Squared Deviation Score for Reading
 Squared Deviation Score for Mathematics
 Squared Deviation Score for General School

 Child's Scale Variance

.end

.Update
A77:=((A3+A10+A24+A32+A40+A48+A56+A64)
A78:=(A1+A8+A15+A22+A38+A46+A54+A62)
A79:=(A7+A14+A28+A36+A44+A52+A60+A69)
A80:=(A5+A19+A26+A34+A42+A50+A58+A66)
A81:=(A4+A11+A18+A25+A34+A42+A50+A58)
A82:=(A13+A20+A27+A35+A43+A51+A59+A68)
A83:=(A29+A46+A53+A60+A67+A74)
A84:=(A29+A46+A53+A60+A67+A74)
A85:=(A77+A78+A79+A80/4)
A86:=(A81+A82+A83)/3
A87:=(A85+A86)/2

C1A:=ABS(A3-A48)
C1B:=ABS(A38-A54)
C6D77 := (C6M-A77)
C6D78 := (C6M-A78)
C6D79 := (C6M-A79)
C6D80 := (C6M-A80)
C6D81 := (C6M-A81)
C6D82 := (C6M-A82)
C6D83 := (C6M-A83)

C6S77 := (C6S77+C6S78+C6S79+C6S80+C6S81+C6S82+C6S83)/6
A93 := sqrt(C6V)

update entry

(A77) Physical Abilities, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A77<10
  A77A := 1
  A77B := 1
.endif
.if grade=4 & A77=10
  A77A := 1
  A77B := 3
.endif
.if grade=4 & A77=11
  A77A := 1
  A77B := 5
.endif
.if grade=4 & A77=12
  A77A := 1
  A77B := 7
.endif
.if grade=4 & A77=13
  A77A := 1
  A77B := 9
.endif
.if grade=4 & A77=14
  A77A := 1
  A77B := 11
.endif
.if grade=4 & A77=15
  A77A := 1
  A77B := 13
.endif
.if grade=4 & A77=16
  A77A := 1
  A77B := 14
.endif
.if grade=4 & A77=17
  A77A := 1
  A77B := 16
.endif
.if grade=4 & A77=18
  A77A := 1
  A77B := 18
.endif
.if grade=4 & A77=19
  A77A := 1
  A77B := 20
.endif
.if grade=4 & A77=20
  A77A := 1
  A77B := 22
.endif
.if grade=4 & A77=21
  A77A := 2
  A77B := 24

300
.endif
.if grade=4 & A77=22
   A77A:=2
   A77B:=26
.endif
.if grade=4 & A77=23
   A77A:=3
   A77B:=27
.endif
.if grade=4 & A77=24
   A77A:=4
   A77B:=29
.endif
.if grade=4 & A77=25
   A77A:=5
   A77B:=31
.endif
.if grade=4 & A77=26
   A77A:=7
   A77B:=33
.endif
.if grade=4 & A77=27
   A77A:=10
   A77B:=35
.endif
.if grade=4 & A77=28
   A77A:=12
   A77B:=37
.endif
.if grade=4 & A77=29
   A77A:=14
   A77B:=39
.endif
.if grade=4 & A77=30
   A77A:=17
   A77B:=40
.endif
.if grade=4 & A77=31
   A77A:=21
   A77B:=42
.endif
.if grade=4 & A77=32
   A77A:=24
   A77B:=44
.endif
.if grade=4 & A77=33
   A77A:=28
   A77B:=46
.endif
.if grade=4 & A77=34
   A77A:=33
   A77B:=48
.endif
.if grade=4 & A77=35
   A77A:=39
   A77B:=50
.endif
.if grade=4 & A77=36
   A77A:=45
   A77B:=52
.endif
.if grade=4 & A77=37
   A77A:=51
   A77B:=53
.endif
.if grade=4 & A77=38
   A77A:=57
   A77B:=55
.endif
.if grade=4 & A77=39
   A77A:=69
   A77B:=57
.endif
.if grade=4 & A77=40
A77A:=67
A77B:=59
.endif

...(A77) Physical Abilities, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A77=8
   A77A:=1
   A77B:=3
.endif
.if grade=5 & A77=9
   A77A:=1
   A77B:=5
.endif
.if grade=5 & A77=10
   A77A:=1
   A77B:=6
.endif
.if grade=5 & A77=11
   A77A:=1
   A77B:=8
.endif
.if grade=5 & A77=12
   A77A:=1
   A77B:=10
.endif
.if grade=5 & A77=13
   A77A:=1
   A77B:=12
.endif
.if grade=5 & A77=14
   A77A:=1
   A77B:=14
.endif
.if grade=5 & A77=15
   A77A:=1
   A77B:=16
.endif
.if grade=5 & A77=16
   A77A:=1
   A77B:=17
.endif
.if grade=5 & A77=17
   A77A:=1
   A77B:=19
.endif
.if grade=5 & A77=18
   A77A:=1
   A77B:=21
.endif
.if grade=5 & A77=19
   A77A:=2
   A77B:=23
.endif
.if grade=5 & A77=20
   A77A:=2
   A77B:=25
.endif
.if grade=5 & A77=21
   A77A:=4
   A77B:=26
.if grade=5 & A77=22
   A77A:=4
   A77B:=28
.if grade=5 & A77=23
   A77A:=5
   A77B:=30
.if grade=5 & A77=24
   A77A:=6
   A77B:=32
.if grade=5 & A77=25
   A77A:=8
..(A78) Physical Appearance, Percentiles & T Scores for Grade 4 Males
..if grade=4 & A78=8
  A78A:=1
  A78B:=24
..endif
..if grade=4 & A78=9
  A78A:=1
  A78B:=23
..endif
..if grade=4 & A78=10
  A78A:=2
  A78B:=27
.endif
.if grade=4 & A78=11
A78A=3
A78B=28
.endif
.if grade=4 & A78=12
A78A=3
A78B=29
.endif
.if grade=4 & A78=13
A78A=4
A78B=30
.endif
.if grade=4 & A78=14
A78A=5
A78B=32
.endif
.if grade=4 & A78=15
A78A=6
A78B=33
.endif
.if grade=4 & A78=16
A78A=8
A78B=34
.endif
.if grade=4 & A78=17
A78A=11
A78B=35
.endif
.if grade=4 & A78=18
A78A=13
A78B=36
.endif
.if grade=4 & A78=19
A78A=14
A78B=38
.endif
.if grade=4 & A78=20
A78A=16
A78B=39
.endif
.if grade=4 & A78=21
A78A=18
A78B=40
.endif
.if grade=4 & A78=22
A78A=20
A78B=41
.endif
.if grade=4 & A78=23
A78A=23
A78B=42
.endif
.if grade=4 & A78=24
A78A=27
A78B=44
.endif
.if grade=4 & A78=25
A78A=31
A78B=45
.endif
.if grade=4 & A78=26
A78A=34
A78B=46
.endif
.if grade=4 & A78=27
A78A=38
A78B=47
.endif
.if grade=4 & A78=28
A78A=42
A78B=49
.endif
.if grade=4 & A78=29

304
A7BA:=46
A7BB:=50
.endif
.if grade=4 & A78=30
 A78A:=50
 A78B:=51
.endif
.if grade=4 & A78=31
 A78A:=54
 A78B:=52
.endif
.if grade=4 & A78=32
 A78A:=59
 A78B:=53
.endif
.if grade=4 & A78=33
 A78A:=64
 A78B:=55
.endif
.if grade=4 & A78=34
 A78A:=66
 A78B:=56
.endif
.if grade=4 & A78=35
 A78A:=69
 A78B:=57
.endif
.if grade=4 & A78=36
 A78A:=73
 A78B:=58
.endif
.if grade=4 & A78=37
 A78A:=78
 A78B:=59
.endif
.if grade=4 & A78=38
 A78A:=81
 A78B:=61
.endif
.if grade=4 & A78=39
 A78A:=86
 A78B:=62
.endif
.if grade=4 & A78=40
 A78A:=95
 A78B:=63
.endif
...(A78) Physical Appearance, Percentiles & T Scores for grade 5 Males
.if grade=5 & A78=1
 A78A:=1
 A78B:=25
.endif
.if grade=5 & A78=2
 A78A:=2
 A78B:=26
.endif
.if grade=5 & A78=10
 A78A:=2
 A78B:=28
.endif
.if grade=5 & A78=11
 A78A:=3
 A78B:=29
.endif
.if grade=5 & A78=12
 A78A:=3
 A78B:=30
.endif
.if grade=5 & A78=13
 A78A:=4
 A78B:=31
.endif
.if grade=5 & A78=14
 A78A:=6
.endif
.if grade=5 & A78=15
A78A:=7
A78B:=34
.endif
.if grade=5 & A78=16
A78A:=9
A78B:=35
.endif
.if grade=5 & A78=17
A78A:=11
A78B:=36
.endif
.if grade=5 & A78=18
A78A:=13
A78B:=37
.endif
.if grade=5 & A78=19
A78A:=15
A78B:=39
.endif
.if grade=5 & A78=20
A78A:=17
A78B:=40
.endif
.if grade=5 & A78=21
A78A:=19
A78B:=41
.endif
.if grade=5 & A78=22
A78A:=22
A78B:=42
.endif
.if grade=5 & A78=23
A78A:=25
A78B:=44
.endif
.if grade=5 & A78=24
A78A:=29
A78B:=45
.endif
.if grade=5 & A78=25
A78A:=33
A78B:=46
.endif
.if grade=5 & A78=26
A78A:=37
A78B:=47
.endif
.if grade=5 & A78=27
A78A:=42
A78B:=49
.endif
.if grade=5 & A78=28
A78A:=46
A78B:=50
.endif
.if grade=5 & A78=29
A78A:=50
A78B:=51
.endif
.if grade=5 & A78=30
A78A:=54
A78B:=52
.endif
.if grade=5 & A78=31
A78A:=58
A78B:=53
.endif
.if grade=5 & A78=32
A78A:=62
A78B:=55
.endif
.if grade=5 & A78=33
A78A:=67
A78B:=56
.endif
.if grade=5 & A78=34
A78A:=71
A78B:=57
.endif
.if grade=5 & A78=35
A78A:=76
A78B:=58
.endif
.if grade=5 & A78=36
A78A:=80
A78B:=60
.endif
.if grade=5 & A78=37
A78A:=84
A78B:=61
.endif
.if grade=5 & A78=38
A78A:=88
A78B:=62
.endif
.if grade=5 & A78=39
A78A:=91
A78B:=63
.endif
.if grade=5 & A78=40
A78A:=96
A78B:=65
.endif
.(A79) Peer Relations, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A79=8
A79A:=1
A79B:=14
.endif
.if grade=4 & A79=9
A79A:=1
A79B:=15
.endif
.if grade=4 & A79=10
A79A:=1
A79B:=17
.endif
.if grade=4 & A79=11
A79A:=1
A79B:=18
.endif
.if grade=4 & A79=12
A79A:=1
A79B:=20
.endif
.if grade=4 & A79=13
A79A:=1
A79B:=21
.endif
.if grade=4 & A79=14
A79A:=2
A79B:=23
.endif
.if grade=4 & A79=15
A79A:=2
A79B:=24
.endif
.if grade=4 & A79=16
A79A:=3
A79B:=26
.endif
.if grade=4 & A79=17
A79A:=3
A79B:=27
.endif
.if grade=4 & A79=18
A79A:=3
A79B:=28
.endif
A79A:=4
A79B:=29
.endif
.if grade=4 & A79=19
A79A:=5
A79B:=30
.endif
.if grade=4 & A79=20
A79A:=6
A79B:=32
.endif
.if grade=4 & A79=21
A79A:=8
A79B:=33
.endif
.if grade=4 & A79=22
A79A:=9
A79B:=35
.endif
.if grade=4 & A79=23
A79A:=11
A79B:=36
.endif
.if grade=4 & A79=24
A79A:=13
A79B:=38
.endif
.if grade=4 & A79=25
A79A:=15
A79B:=39
.endif
.if grade=4 & A79=26
A79A:=18
A79B:=41
.endif
.if grade=4 & A79=27
A79A:=21
A79B:=42
.endif
.if grade=4 & A79=28
A79A:=25
A79B:=44
.endif
.if grade=4 & A79=29
A79A:=29
A79B:=45
.endif
.if grade=4 & A79=30
A79A:=33
A79B:=47
.endif
.if grade=4 & A79=31
A79A:=38
A79B:=49
.endif
.if grade=4 & A79=32
A79A:=43
A79B:=50
.endif
.if grade=4 & A79=33
A79A:=49
A79B:=52
.endif
.if grade=4 & A79=34
A79A:=55
A79B:=53
.endif
.if grade=4 & A79=35
A79A:=62
A79B:=55
.endif
.if grade=4 & A79=36
A79A:=68
A79B:=56
.endif
.if grade=4 & A79=37
  A79A:=74
  A79B:=58
.endif
.if grade=4 & A79=38
  A79A:=79
  A79B:=59
.endif
.if grade=4 & A79=39
  A79A:=86
  A79B:=61
.endif
.if grade=4 & A79=40
  A79A:=94
  A79B:=62
.endif
..(A79) Peer Relations, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A79=8
  A79A:=1
  A79B:=12
endif
.if grade=5 & A79=9
  A79A:=1
  A79B:=14
.endif
.if grade=5 & A79=10
  A79A:=1
  A79B:=16
.endif
.if grade=5 & A79=11
  A79A:=1
  A79B:=17
.endif
.if grade=5 & A79=12
  A79A:=1
  A79B:=19
.endif
.if grade=5 & A79=13
  A79A:=1
  A79B:=20
.endif
.if grade=5 & A79=14
  A79A:=1
  A79B:=22
.endif
.if grade=5 & A79=15
  A79A:=2
  A79B:=24
.endif
.if grade=5 & A79=16
  A79A:=3
  A79B:=25
.endif
.if grade=5 & A79=17
  A79A:=3
  A79B:=27
.endif
.if grade=5 & A79=18
  A79A:=4
  A79B:=28
.endif
.if grade=5 & A79=19
  A79A:=4
  A79B:=30
.endif
.if grade=5 & A79=20
  A79A:=6
  A79B:=32
.endif
.if grade=5 & A79=21
  A79A:=7
  A79B:=33
.endif
.if grade=5 & A79=22
   A79A:=8
   A79B:=35
.endif
.if grade=5 & A79=23
   A79A:=10
   A79B:=37
.endif
.if grade=5 & A79=24
   A79A:=12
   A79B:=38
.endif
.if grade=5 & A79=25
   A79A:=16
   A79B:=40
.endif
.if grade=5 & A79=26
   A79A:=19
   A79B:=41
.endif
.if grade=5 & A79=27
   A79A:=23
   A79B:=43
.endif
.if grade=5 & A79=28
   A79A:=27
   A79B:=45
.endif
.if grade=5 & A79=29
   A79A:=31
   A79B:=46
.endif
.if grade=5 & A79=30
   A79A:=36
   A79B:=48
.endif
.if grade=5 & A79=31
   A79A:=42
   A79B:=49
.endif
.if grade=5 & A79=32
   A79A:=47
   A79B:=51
.endif
.if grade=5 & A79=33
   A79A:=53
   A79B:=53
.endif
.if grade=5 & A79=34
   A79A:=60
   A79B:=54
.endif
.if grade=5 & A79=35
   A79A:=67
   A79B:=56
.endif
.if grade=5 & A79=36
   A79A:=74
   A79B:=57
.endif
.if grade=5 & A79=37
   A79A:=79
   A79B:=59
.endif
.if grade=5 & A79=38
   A79A:=85
   A79B:=61
.endif
.if grade=5 & A79=39
   A79A:=91
   A79B:=62
.endif
.if grade=5 & A79=40
   A79A:=97
.endif
.endif
    .if grade=4 & ABO=29
    ABOA=9
    ABOB=36
    .endif
    .if grade=4 & ABO=30
    ABOA=11
    ABOB=38
    .endif
    .if grade=4 & ABO=31
    ABOA=13
    ABOB=40
    .endif
    .if grade=4 & ABO=32
    ABOA=17
    ABOB=42
    .endif
    .if grade=4 & ABO=33
    ABOA=22
    ABOB=44
    .endif
    .if grade=4 & ABO=34
    ABOA=27
    ABOB=46
    .endif
    .if grade=4 & ABO=35
    ABOA=33
    ABOB=48
    .endif
    .if grade=4 & ABO=36
    ABOA=41
    ABOB=50
    .endif
    .if grade=4 & ABO=37
    ABOA=49
    ABOB=52
    .endif
    .if grade=4 & ABO=38
    ABOA=56
    ABOB=54
    .endif
    .if grade=4 & ABO=39
    ABOA=67
    ABOB=57
    .endif
    .if grade=4 & ABO=40
    ABOA=86
    ABOB=59
    .endif
    .if grade=5 & ABO=12
    ABOA=1
    ABOB=3
    .endif
    .if grade=5 & ABO=13
    ABOA=1
    ABOB=5
    .endif
    .if grade=5 & ABO=14
    ABOA=1
    ABOB=7
    .endif
    .if grade=5 & ABO=15
    ABOA=1
    ABOB=9
    .endif
    .if grade=5 & ABO=16
    ABOA=1
    ABOB=11
    .endif
    .if grade=5 & ABO=17
    ABOA=1
    ABOB=13
    .endif

..(ABO) Parent Relations, Percentiles & T Scores for Grade 5 Males
    .if grade=5 & ABO=12
    ABOA=1
    ABOB=3
    .endif
    .if grade=5 & ABO=13
    ABOA=1
    ABOB=5
    .endif
    .if grade=5 & ABO=14
    ABOA=1
    ABOB=7
    .endif
    .if grade=5 & ABO=15
    ABOA=1
    ABOB=9
    .endif
    .if grade=5 & ABO=16
    ABOA=1
    ABOB=11
    .endif
    .if grade=5 & ABO=17
    ABOA=1
    ABOB=13
    .endif

312
ABOB:=51
.endif
.if grade=5 & ABO=37
ABOA:=51
ABOB:=53
.endif
.if grade=5 & ABO=38
ABOA:=59
ABOB:=55
.endif
.if grade=5 & ABO=39
ABOA:=71
ABOB:=57
.endif
.if grade=5 & ABO=40
ABOA:=88
ABOB:=59
.endif
...(A81) Reading, Percentiles & T Scores for Grade 4 Males
.if grade=4 & A81=8
A81A:=1
A81B:=19
.endif
.if grade=4 & A81=9
A81A:=1
A81B:=21
.endif
.if grade=4 & A81=10
A81A:=1
A81B:=22
.endif
.if grade=4 & A81=11
A81A:=2
A81B:=23
.endif
.if grade=4 & A81=12
A81A:=2
A81B:=24
.endif
.if grade=4 & A81=13
A81A:=3
A81B:=26
.endif
.if grade=4 & A81=14
A81A:=3
A81B:=27
.endif
.if grade=4 & A81=15
A81A:=4
A81B:=28
.endif
.if grade=4 & A81=16
A81A:=5
A81B:=30
.endif
.if grade=4 & A81=17
A81A:=6
A81B:=31
.endif
.if grade=4 & A81=18
A81A:=7
A81B:=32
.endif
.if grade=4 & A81=19
A81A:=8
A81B:=34
.endif
.if grade=4 & A81=20
A81A:=9
A81B:=35
.endif
.if grade=4 & A81=21
A81A:=11
A81B:=36

314
.endif
.if grade=4 & A81=22
  A81A:=12
  A81B:=38
.endif
.if grade=4 & A81=23
  A81A:=14
  A81B:=39
.endif
.if grade=4 & A81=24
  A81A:=17
  A81B:=40
.endif
.if grade=4 & A81=25
  A81A:=20
  A81B:=41
.endif
.if grade=4 & A81=26
  A81A:=22
  A81B:=43
.endif
.if grade=4 & A81=27
  A81A:=25
  A81B:=44
.endif
.if grade=4 & A81=28
  A81A:=28
  A81B:=45
.endif
.if grade=4 & A81=29
  A81A:=31
  A81B:=47
.endif
.if grade=4 & A81=30
  A81A:=35
  A81B:=48
.endif
.if grade=4 & A81=31
  A81A:=39
  A81B:=49
.endif
.if grade=4 & A81=32
  A81A:=43
  A81B:=51
.endif
.if grade=4 & A81=33
  A81A:=47
  A81B:=52
.endif
.if grade=4 & A81=34
  A81A:=51
  A81B:=53
.endif
.if grade=4 & A81=35
  A81A:=57
  A81B:=54
.endif
.if grade=4 & A81=36
  A81A:=63
  A81B:=56
.endif
.if grade=4 & A81=37
  A81A:=70
  A81B:=57
.endif
.if grade=4 & A81=38
  A81A:=76
  A81B:=58
.endif
.if grade=4 & A81=39
  A81A:=82
  A81B:=60
.endif
.if grade=4 & A81=40
  A81A:=88
  A81B:=62
endif
A81A:=93
A81B:=61
.endif
...(A81) Reading, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A81=8
   A81A:=1
   A81B:=22
.endif
.if grade=5 & A81=9
   A81A:=1
   A81B:=23
.endif
.if grade=5 & A81=10
   A81A:=1
   A81B:=25
.endif
.if grade=5 & A81=11
   A81A:=2
   A81B:=26
.endif
.if grade=5 & A81=12
   A81A:=2
   A81B:=27
.endif
.if grade=5 & A81=13
   A81A:=3
   A81B:=28
.endif
.if grade=5 & A81=14
   A81A:=4
   A81B:=30
.endif
.if grade=5 & A81=15
   A81A:=5
   A81B:=31
.endif
.if grade=5 & A81=16
   A81A:=6
   A81B:=32
.endif
.if grade=5 & A81=17
   A81A:=7
   A81B:=33
.endif
.if grade=5 & A81=18
   A81A:=8
   A81B:=35
.endif
.if grade=5 & A81=19
   A81A:=10
   A81B:=36
.endif
.if grade=5 & A81=20
   A81A:=13
   A81B:=37
.endif
.if grade=5 & A81=21
   A81A:=15
   A81B:=39
.endif
.if grade=5 & A81=22
   A81A:=17
   A81B:=40
.endif
.if grade=5 & A81=23
   A81A:=20
..(A81) ...
.endif
.if grade=5 & A81=24
   A81A:=24
   A81B:=42
.endif
.if grade=5 & A81=25
   A81A:=27

316
.AB1B:=44
.endif
.if grade=5 & AB1=26
AB1A:=29
AB1B:=45
.endif
.if grade=5 & AB1=27
AB1A:=32
AB1B:=46
.endif
.if grade=5 & AB1=28
AB1A:=36
AB1B:=47
.endif
.if grade=5 & AB1=29
AB1A:=40
AB1B:=49
.endif
.if grade=5 & AB1=30
AB1A:=44
AB1B:=50
.endif
.if grade=5 & AB1=31
AB1A:=49
AB1B:=51
.endif
.if grade=5 & AB1=32
AB1A:=54
AB1B:=53
.endif
.if grade=5 & AB1=33
AB1A:=59
AB1B:=54
.endif
.if grade=5 & AB1=34
AB1A:=63
AB1B:=55
.endif
.if grade=5 & AB1=35
AB1A:=68
AB1B:=56
.endif
.if grade=5 & AB1=36
AB1A:=72
AB1B:=58
.endif
.if grade=5 & AB1=37
AB1A:=77
AB1B:=59
.endif
.if grade=5 & AB1=38
AB1A:=83
AB1B:=60
.endif
.if grade=5 & AB1=39
AB1A:=88
AB1B:=62
.endif
.if grade=5 & AB1=40
AB1A:=95
AB1B:=63
.endif
.(AB2) Mathematics, Percentiles & T Scores for Grade 4 Males
.if grade=4 & AB2=8
AB2A:=1
AB2B:=23
.endif
.if grade=4 & AB2=9
AB2A:=2
AB2B:=24
.endif
.if grade=4 & AB2=10
AB2A:=2
AB2B:=25

317
.endif
   .if grade=4 & A82=11
      A82A:=3
      A82B:=27
   .endif
   .if grade=4 & A82=12
      A82A:=4
      A82B:=28
   .endif
   .if grade=4 & A82=13
      A82A:=4
      A82B:=29
   .endif
   .if grade=4 & A82=14
      A82A:=5
      A82B:=30
   .endif
   .if grade=4 & A82=15
      A82A:=6
      A82B:=31
   .endif
   .if grade=4 & A82=16
      A82A:=7
      A82B:=32
   .endif
   .if grade=4 & A82=17
      A82A:=8
      A82B:=34
   .endif
   .if grade=4 & A82=18
      A82A:=9
      A82B:=35
   .endif
   .if grade=4 & A82=19
      A82A:=10
      A82B:=36
   .endif
   .if grade=4 & A82=20
      A82A:=12
      A82B:=37
   .endif
   .if grade=4 & A82=21
      A82A:=14
      A82B:=38
   .endif
   .if grade=4 & A82=22
      A82A:=16
      A82B:=40
   .endif
   .if grade=4 & A82=23
      A82A:=18
      A82B:=41
   .endif
   .if grade=4 & A82=24
      A82A:=21
      A82B:=42
   .endif
   .if grade=4 & A82=25
      A82A:=24
      A82B:=43
   .endif
   .if grade=4 & A82=26
      A82A:=27
      A82B:=44
   .endif
   .if grade=4 & A82=27
      A82A:=29
      A82B:=45
   .endif
   .if grade=4 & A82=28
      A82A:=32
      A82B:=47
   .endif
   .if grade=4 & A82=29

318
A82B:=33
.endif
.if grade=5 & A82=15
  A82A:=7
  A82B:=34
.endif
.if grade=5 & A82=16
  A82A:=9
  A82B:=35
.endif
.if grade=5 & A82=17
  A82A:=11
  A82B:=36
.endif
.if grade=5 & A82=18
  A82A:=13
  A82B:=37
.endif
.if grade=5 & A82=19
  A82A:=15
  A82B:=39
.endif
.if grade=5 & A82=20
  A82A:=17
  A82B:=39
.endif
.if grade=5 & A82=21
  A82A:=20
  A82B:=41
.endif
.if grade=5 & A82=22
  A82A:=22
  A82B:=42
.endif
.if grade=5 & A82=23
  A82A:=24
  A82B:=43
.endif
.if grade=5 & A82=24
  A82A:=27
  A82B:=44
.endif
.if grade=5 & A82=25
  A82A:=30
  A82B:=45
.endif
.if grade=5 & A82=26
  A82A:=33
  A82B:=46
.endif
.if grade=5 & A82=27
  A82A:=36
  A82B:=47
.endif
.if grade=5 & A82=28
  A82A:=40
  A82B:=48
.endif
.if grade=5 & A82=29
  A82A:=43
  A82B:=50
.endif
.if grade=5 & A82=30
  A82A:=46
  A82B:=51
.endif
.if grade=5 & A82=31
  A82A:=49
  A82B:=52
.endif
.if grade=5 & A82=32
  A82A:=53
  A82B:=53
.endif
... (A83) General School, Percentiles & T Scores for Grade 4 Males

if grade=4 & A83=8
   A83A:=1
   A83B:=19
endif

if grade=4 & A83=9
   A83A:=1
   A83B:=20
endif

if grade=4 & A83=10
   A83A:=1
   A83B:=22
endif

if grade=4 & A83=11
   A83A:=1
   A83B:=23
endif

if grade=4 & A83=12
   A83A:=2
   A83B:=24
endif

if grade=4 & A83=13
   A83A:=2
   A83B:=26
endif

if grade=4 & A83=14
   A83A:=3
   A83B:=27
endif

if grade=4 & A83=15
   A83A:=3
   A83B:=29
endif

if grade=4 & A83=16
   A83A:=3
   A83B:=30
endif

if grade=4 & A83=17
   A83A:=4
   A83B:=31
endif

if grade=4 & A83=18
A83A:=5
A83B:=33
.endif
.if grade=4 & A83=19
A83A:=6
A83B:=34
.endif
.if grade=4 & A83=20
A83A:=8
A83B:=36
.endif
.if grade=4 & A83=21
A83A:=11
A83B:=37
.endif
.if grade=4 & A83=22
A83A:=13
A83B:=38
.endif
.if grade=4 & A83=23
A83A:=16
A83B:=40
.endif
.if grade=4 & A83=24
A83A:=19
A83B:=41
.endif
.if grade=4 & A83=25
A83A:=22
A83B:=43
.endif
.if grade=4 & A83=26
A83A:=26
A83B:=44
.endif
.if grade=4 & A83=27
A83A:=29
A83B:=45
.endif
.if grade=4 & A83=28
A83A:=34
A83B:=47
.endif
.if grade=4 & A83=29
A83A:=39
A83B:=48
.endif
.if grade=4 & A83=30
A83A:=45
A83B:=50
.endif
.if grade=4 & A83=31
A83A:=50
A83B:=51
.endif
.if grade=4 & A83=32
A83A:=55
A83B:=52
.endif
.if grade=4 & A83=33
A83A:=60
A83B:=54
.endif
.if grade=4 & A83=34
if A83A:=65
A83B:=55
.endif
.if grade=4 & A83=35
A83A:=71
A83B:=57
.endif
.if grade=4 & A83=36
A83A:=76
A83B:=58
... (A83) General School, Percentiles & T Scores for Grade 5 Males

.if grade=5 & A83=8
   A83A:=1
   A83B:=23
endif
.if grade=5 & A83=9
   A83A:=1
   A83B:=24
endif
.if grade=5 & A83=10
   A83A:=1
   A83B:=25
endif
.if grade=5 & A83=11
   A83A:=1
   A83B:=27
endif
.if grade=5 & A83=12
   A83A:=2
   A83B:=28
endif
.if grade=5 & A83=13
   A83A:=3
   A83B:=30
endif
.if grade=5 & A83=14
   A83A:=4
   A83B:=31
endif
.if grade=5 & A83=15
   A83A:=5
   A83B:=32
endif
.if grade=5 & A83=16
   A83A:=7
   A83B:=34
endif
.if grade=5 & A83=17
   A83A:=8
   A83B:=35
endif
.if grade=5 & A83=18
   A83A:=10
   A83B:=36
endif
.if grade=5 & A83=19
   A83A:=13
   A83B:=38
endif
.if grade=5 & A83=20
   A83A:=15
   A83B:=39
endif
.if grade=5 & A83=21
   A83A:=18
   A83B:=41
endif
if grade=5 & A83=22
A83A:=20
A83B:=42
.endif
.if grade=5 & A83=23
A83A:=24
A83B:=43
.endif
.if grade=5 & A83=24
A83A:=28
A83B:=45
.endif
.if grade=5 & A83=25
A83A:=33
A83B:=46
.endif
.if grade=5 & A83=26
A83A:=38
A83B:=47
.endif
.if grade=5 & A83=27
A83A:=43
A83B:=49
.endif
.if grade=5 & A83=28
A83A:=48
A83B:=50
.endif
.if grade=5 & A83=29
A83A:=53
A83B:=52
.endif
.if grade=5 & A83=30
A83A:=57
A83B:=53
.endif
.if grade=5 & A83=31
A83A:=62
A83B:=54
.endif
.if grade=5 & A83=32
A83A:=67
A83B:=56
.endif
.if grade=5 & A83=33
A83A:=72
A83B:=57
.endif
.if grade=5 & A83=34
A83A:=77
A83B:=58
.endif
.if grade=5 & A83=35
A83A:=82
A83B:=60
.endif
.if grade=5 & A83=36
A83A:=86
A83B:=61
.endif
.if grade=5 & A83=37
A83A:=89
A83B:=63
.endif
.if grade=5 & A83=38
A83A:=93
A83B:=64
.endif
.if grade=5 & A83=39
A83A:=96
A83B:=65
.endif
.if grade=5 & A83=40
A83A:=98
A83B:=66
.endif
.if grade=5 & AB4=26
AB4A:=7
AB4B:=36
.endif
.if grade=5 & AB4=27
AB4A:=10
AB4B:=38
.endif
.if grade=5 & AB4=28
AB4A:=12
AB4B:=40
.endif
.if grade=5 & AB4=29
AB4A:=16
AB4B:=42
.endif
.if grade=5 & AB4=30
AB4A:=21
AB4B:=44
.endif
.if grade=5 & AB4=31
AB4A:=27
AB4B:=45
.endif
.if grade=5 & AB4=32
AB4A:=33
AB4B:=47
.endif
.if grade=5 & AB4=33
AB4A:=40
AB4B:=49
.endif
.if grade=5 & AB4=34
AB4A:=48
AB4B:=51
.endif
.if grade=5 & AB4=35
AB4A:=56
AB4B:=53
.endif
.if grade=5 & AB4=36
AB4A:=63
AB4B:=55
.endif
.if grade=5 & AB4=37
AB4A:=71
AB4B:=57
.endif
.if grade=5 & AB4=38
AB4A:=79
AB4B:=58
.endif
.if grade=5 & AB4=39
AB4A:=87
AB4B:=60
.endif
.if grade=5 & AB4=40
AB4A:=96
AB4B:=62
.endif
.(AB5) Total Nonacademic Scores, Percentiles & T Scores for Grade 4 Males
.if AB5>7.49 & AB5<9.50
AB5A:=1
AB5B:=1
.endif
.if AB5>9.49 & AB5<10.50
AB5A:=1
AB5B:=2
.endif
.if AB5>10.49 & AB5<11.50
AB5A:=1
AB5B:=4
.endif
.if grade=4 & A85>11.49 & A85<12.50
 A85A:=1
 A85B:=6
.endif
.if grade=4 & A85>12.49 & A85<13.50
 A85A:=1
 A85B:=8
.endif
.if grade=4 & A85>13.49 & A85<14.50
 A85A:=1
 A85B:=10
.endif
.if A85>14.49 & A85<15.50
 A85A:=1
 A85B:=13
.endif
.if A85>15.49 & A85<16.50
 A85A:=1
 A85B:=15
.endif
.if A85>16.49 & A85<17.50
 A85A:=1
 A85B:=17
.endif
.if A85>17.49 & A85<18.50
 A85A:=1
 A85B:=19
.endif
.if grade=4 & A85>18.49 & A85<19.50
 A85A:=1
 A85B:=21
.endif
.if grade=4 & A85>19.49 & A85<20.50
 A85A:=1
 A85B:=23
.endif
.if grade=4 & A85>20.49 & A85<21.50
 A85A:=1
 A85B:=25
.endif
.if grade=4 & A85>21.49 & A85<22.50
 A85A:=2
 A85B:=27
.endif
.if grade=4 & A85>22.49 & A85<23.50
 A85A:=3
 A85B:=29
.endif
.if grade=4 & A85>23.49 & A85<24.50
 A85A:=4
 A85B:=31
.endif
.if grade=4 & A85>24.49 & A85<25.50
 A85A:=6
 A85B:=33
.endif
.if grade=4 & A85>25.49 & A85<26.50
 A85A:=9
 A85B:=35
.endif
.if grade=4 & A85>26.49 & A85<27.50
 A85A:=12
 A85B:=37
.endif
.if grade=4 & A85>27.49 & A85<28.50
 A85A:=17
 A85B:=39
.endif
.if grade=4 & A85>28.49 & A85<29.50
 A85A:=21
 A85B:=41
.endif
.if grade=4 & A85>29.49 & A85<30.50
 A85A:=26

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A85B:=43
.endif
.if grade=4 & A85>30.49 & A85<31.50
A85A:=31
A85B:=46
.endif
.if grade=4 & A85>31.49 & A85<32.50
A85A:=36
A85B:=48
.endif
.if grade=4 & A85>32.49 & A85<33.50
A85A:=43
A85B:=50
.endif
.if grade=4 & A85>33.49 & A85<34.50
A85A:=51
A85B:=52
.endif
.if grade=4 & A85>34.49 & A85<35.50
A85A:=59
A85B:=54
.endif
.if grade=4 & A85>35.49 & A85<36.50
A85A:=67
A85B:=56
.endif
.if grade=4 & A85>36.49 & A85<37.50
A85A:=75
A85B:=58
.endif
.if grade=4 & A85>37.49 & A85<38.50
A85A:=82
A85B:=60
.endif
.if grade=4 & A85>38.49 & A85<39.50
A85A:=89
A85B:=62
.endif
.if grade=4 & A85>39.49 & A85<40.50
A85A:=96
A85B:=64
.endif
.(A85) Total Nonacademic Scores, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A85>11.49 & A85<12.50
A85A:=1
A85B:=7
.endif
.if grade=5 & A85>12.49 & A85<13.50
A85A:=1
A85B:=9
.endif
.if grade=5 & A85>13.49 & A85<14.50
A85A:=1
A85B:=11
.endif
.if grade=5 & A85>14.49 & A85<15.50
A85A:=1
A85B:=22
.endif
.if grade=5 & A85>15.49 & A85<16.50
A85A:=1
A85B:=24
.endif
.if grade=5 & A85>16.49 & A85<17.50
A85A:=2
A85B:=26
.endif
.if grade=5 & A85>17.49 & A85<18.50
A85A:=3
A85B:=28
.endif
.if grade=5 & A85>18.49 & A85<19.50
A85A:=3
A85B:=30
.endif
.endif
.if grade=5 & ABS>23.49 & ABS<24.50
   A85A:=5
   A85B:=32
.endif
.if grade=5 & ABS>24.49 & ABS<25.50
   A85A:=7
   A85B:=34
.endif
.if grade=5 & ABS>25.49 & ABS<26.50
   A85A:=10
   A85B:=36
.endif
.if grade=5 & ABS>26.49 & ABS<27.50
   A85A:=13
   A85B:=39
.endif
.if grade=5 & ABS>27.49 & ABS<28.50
   A85A:=18
   A85B:=41
.endif
.if grade=5 & ABS>28.49 & ABS<29.50
   A85A:=23
   A85B:=43
.endif
.if grade=5 & ABS>29.49 & ABS<30.50
   A85A:=30
   A85B:=46
.endif
.if grade=5 & ABS>30.49 & ABS<31.50
   A85A:=36
   A85B:=47
.endif
.if grade=5 & ABS>31.49 & ABS<32.50
   A85A:=43
   A85B:=49
.endif
.if grade=5 & ABS>32.49 & ABS<33.50
   A85A:=50
   A85B:=51
.endif
.if grade=5 & ABS>33.49 & ABS<34.50
   A85A:=58
   A85B:=53
.endif
.if grade=5 & ABS>34.49 & ABS<35.50
   A85A:=66
   A85B:=56
.endif
.if grade=5 & ABS>35.49 & ABS<36.50
   A85A:=74
   A85B:=58
.endif
.if grade=5 & ABS>36.49 & ABS<37.50
   A85A:=82
   A85B:=60
.endif
.if grade=5 & ABS>37.49 & ABS<38.50
   A85A:=89
   A85B:=62
.endif
.if grade=5 & ABS>38.49 & ABS<39.50
   A85A:=95
   A85B:=64
.endif
.if grade=5 & ABS>39.49 & ABS<40.50
   A85A:=99
   A85B:=66
.endif
...(AB6) Total Academic Scores, Percentiles & T Scores for Grade 4 Males
.if grade=6 & AB6>7.49 & AB6<8.50
   A86A:=1
   A86B:=15
.endif
.if grade=4 & A6>8.49 & A6<9.50
   A6A:=1
   A6B:=17
.endif
.if grade=4 & A6>9.49 & A6<10.50
   A6A:=1
   A6B:=18
.endif
.if grade=4 & A6>10.49 & A6<11.50
   A6A:=1
   A6B:=20
.endif
.if grade=4 & A6>11.49 & A6<12.50
   A6A:=1
   A6B:=21
.endif
.if grade=4 & A6>12.49 & A6<13.50
   A6A:=2
   A6B:=23
.endif
.if grade=4 & A6>13.49 & A6<14.50
   A6A:=2
   A6B:=24
.endif
.if grade=4 & A6>14.49 & A6<15.50
   A6A:=2
   A6B:=26
.endif
.if grade=4 & A6>15.49 & A6<16.50
   A6A:=3
   A6B:=27
.endif
.if grade=4 & A6>16.49 & A6<17.50
   A6A:=4
   A6B:=29
.endif
.if grade=4 & A6>17.49 & A6<18.50
   A6A:=4
   A6B:=30
.endif
.if grade=4 & A6>18.49 & A6<19.50
   A6A:=5
   A6B:=32
.endif
.if grade=4 & A6>19.49 & A6<20.50
   A6A:=6
   A6B:=33
.endif
.if grade=4 & A6>20.49 & A6<21.50
   A6A:=8
   A6B:=35
.endif
.if grade=4 & A6>21.49 & A6<22.50
   A6A:=10
   A6B:=36
.endif
.if grade=4 & A6>22.49 & A6<23.50
   A6A:=12
   A6B:=38
.endif
.if grade=4 & A6>23.49 & A6<24.50
   A6A:=15
   A6B:=39
.endif
.if grade=4 & A6>24.49 & A6<25.50
   A6A:=18
   A6B:=41
.endif
.if grade=4 & A6>25.49 & A6<26.50
   A6A:=22
   A6B:=42
.endif
.if grade=4 & A6>26.49 & A6<27.50
   A6A:=26

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A68B:=44
.endif
.if grade=4 & A68>27.49 & A68<28.50
A68A:=31
A68B:=46
.endif
.if grade=4 & A68>28.49 & A68<29.50
A68A:=37
A68B:=47
.endif
.if grade=4 & A68>29.49 & A68<30.50
A68A:=42
A68B:=49
.endif
.if grade=4 & A68>30.49 & A68<31.50
A68A:=47
A68B:=50
.endif
.if grade=4 & A68>31.49 & A68<32.50
A68A:=52
A68B:=52
.endif
.if grade=4 & A68>32.49 & A68<33.50
A68A:=57
A68B:=53
.endif
.if grade=4 & A68>33.49 & A68<34.50
A68A:=62
A68B:=55
.endif
.if grade=4 & A68>34.49 & A68<35.50
A68A:=68
A68B:=56
.endif
.if grade=4 & A68>35.49 & A68<36.50
A68A:=73
A68B:=58
.endif
.if grade=4 & A68>36.49 & A68<37.50
A68A:=79
A68B:=59
.endif
.if grade=4 & A68>37.49 & A68<38.50
A68A:=85
A68B:=61
.endif
.if grade=4 & A68>38.49 & A68<39.50
A68A:=91
A68B:=62
.endif
.if grade=4 & A68>39.49 & A68<40.50
A68A:=97
A68B:=64
.endif
...(A68 Total Academic Scores, Percentiles & T Scores for Grade 5 Males
.if grade=5 & A68>7.49 & A68<8.50
A68A:=1
A68B:=17
.endif
.if grade=5 & A68>8.49 & A68<9.50
A68A:=1
A68B:=18
.endif
.if grade=5 & A68>9.49 & A68<10.50
A68A:=1
A68B:=20
.endif
.if grade=5 & A68>10.49 & A68<11.50
A68A:=1
A68B:=21
.endif
.if grade=5 & A68>11.49 & A68<12.50
A68A:=1
A68B:=23

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.endif
.if grade=5 & A86>12.49 & A86<13.50
A86A:=2
A86B:=25
.endif
.if grade=5 & A86>13.49 & A86<14.50
A86A:=2
A86B:=26
.endif
.if grade=5 & A86>14.49 & A86<15.50
A86A:=3
A86B:=28
.endif
.if grade=5 & A86>15.49 & A86<16.50
A86A:=3
A86B:=29
.endif
.if grade=5 & A86>16.49 & A86<17.50
A86A:=4
A86B:=31
.endif
.if grade=5 & A86>17.49 & A86<18.50
A86A:=5
A86B:=32
.endif
.if grade=5 & A86>18.49 & A86<19.50
A86A:=7
A86B:=34
.endif
.if grade=5 & A86>19.49 & A86<20.50
A86A:=9
A86B:=36
.endif
.if grade=5 & A86>20.49 & A86<21.50
A86A:=12
A86B:=37
.endif
.if grade=5 & A86>21.49 & A86<22.50
A86A:=15
A86B:=39
.endif
.if grade=5 & A86>22.49 & A86<23.50
A86A:=18
A86B:=40
.endif
.if grade=5 & A86>23.49 & A86<24.50
A86A:=21
A86B:=42
.endif
.if grade=5 & A86>24.49 & A86<25.50
A86A:=26
A86B:=44
.endif
.if grade=5 & A86>25.49 & A86<26.50
A86A:=31
A86B:=45
.endif
.if grade=5 & A86>26.49 & A86<27.50
A86A:=36
A86B:=47
.endif
.if grade=5 & A86>27.49 & A86<28.50
A86A:=41
A86B:=48
.endif
.if grade=5 & A86>28.49 & A86<29.50
A86A:=47
A86B:=50
.endif
.if grade=5 & A86>29.49 & A86<30.50
A86A:=53
A86B:=51
.endif
.if grade=5 & A86>30.49 & A86<31.50
AB6A:=59
AB6B:=53
.if grade=5 & AB6>31.49 & AB6<32.50
AB6A:=64
AB6B:=55
.endif
.if grade=5 & AB6>32.49 & AB6<33.50
AB6A:=70
AB6B:=56
.endif
.if grade=5 & AB6>33.49 & AB6<34.50
AB6A:=75
AB6B:=58
.endif
.if grade=5 & AB6>34.49 & AB6<35.50
AB6A:=81
AB6B:=59
.endif
.if grade=5 & AB6>35.49 & AB6<36.50
AB6A:=86
AB6B:=61
.endif
.if grade=5 & AB6>36.49 & AB6<37.50
AB6A:=90
AB6B:=63
.endif
.if grade=5 & AB6>37.49 & AB6<38.50
AB6A:=94
AB6B:=64
.endif
.if grade=5 & AB6>38.49 & AB6<39.50
AB6A:=97
AB6B:=66
.endif
.if grade=5 & AB6>39.49 & AB6<40.50
AB6A:=99
AB6B:=67
.endif
.(AB7) Total Self Scores, Percentiles & T Scores for Grade 4 Males
.if AB7>7.49 & AB7<8.50
AB7A:=1
AB7B:=1
.endif
.if grade=4 & AB7>8.49 & AB7<9.50
AB7A:=1
AB7B:=2
.endif
.if grade=4 & AB7>9.49 & AB7<10.50
AB7A:=1
AB7B:=4
.endif
.if grade=4 & AB7>10.49 & AB7<11.50
AB7A:=1
AB7B:=6
.endif
.if grade=4 & AB7>11.49 & AB7<12.50
AB7A:=1
AB7B:=8
.endif
.if grade=4 & AB7>12.49 & AB7<13.50
AB7A:=1
AB7B:=10
.endif
.if grade=4 & AB7>13.49 & AB7<14.50
AB7A:=1
AB7B:=12
.endif
.if grade=4 & AB7>14.49 & AB7<15.50
AB7A:=1
AB7B:=14
.endif
.if grade=4 & AB7>15.49 & AB7<16.50
AB7A:=1
A87B = 17
.
if grade = 4 & A87 > 16.49 & A87 < 17.50
A87A = 1
A87B = 19
.
endif
.
if grade = 4 & A87 > 17.49 & A87 < 18.50
A87A = 1
A87B = 21
.
endif
.
if grade = 4 & A87 > 18.49 & A87 < 19.50
A87A = 1
A87B = 23
.
endif
.
if grade = 4 & A87 > 19.49 & A87 < 20.50
A87A = 1
A87B = 25
.
endif
.
if grade = 4 & A87 > 20.49 & A87 < 21.50
A87A = 1
A87B = 27
.
endif
.
if grade = 4 & A87 > 21.49 & A87 < 22.50
A87A = 3
A87B = 29
.
endif
.
if grade = 4 & A87 > 22.49 & A87 < 23.50
A87A = 4
A87B = 31
.
endif
.
if grade = 4 & A87 > 23.49 & A87 < 24.50
A87A = 5
A87B = 33
.
endif
.
if grade = 4 & A87 > 24.49 & A87 < 25.50
A87A = 8
A87B = 35
.
endif
.
if grade = 4 & A87 > 25.49 & A87 < 26.50
A87A = 10
A87B = 37
.
endif
.
if grade = 4 & A87 > 26.49 & A87 < 27.50
A87A = 14
A87B = 39
.
endif
.
if grade = 4 & A87 > 27.49 & A87 < 28.50
A87A = 18
A87B = 41
.
endif
.
if grade = 4 & A87 > 28.49 & A87 < 29.50
A87A = 24
A87B = 43
.
endif
.
if grade = 4 & A87 > 29.49 & A87 < 30.50
A87A = 30
A87B = 45
.
endif
.
if grade = 4 & A87 > 30.49 & A87 < 31.50
A87A = 37
A87B = 47
.
endif
.
if grade = 4 & A87 > 31.49 & A87 < 32.50
A87A = 45
A87B = 49
.
endif
.
if grade = 4 & A87 > 32.49 & A87 < 33.50
A87A = 54
A87B = 51
.
endif
.
if grade = 4 & A87 > 33.49 & A87 < 34.50
A87A = 62
A87B = 54
.
endif

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.if grade=4 & A87>34.49 & A87<35.50  
   A87A:=69  
   A87B:=56  
.endif  
.if grade=4 & A87>35.49 & A87<36.50  
   A87A:=75  
   A87B:=58  
.endif  
.if grade=4 & A87>36.49 & A87<37.50  
   A87A:=81  
   A87B:=60  
.endif  
.if grade=4 & A87>37.49 & A87<38.50  
   A87A:=86  
   A87B:=62  
.endif  
.if grade=4 & A87>38.49 & A87<39.50  
   A87A:=91  
   A87B:=64  
.endif  
.if grade=4 & A87>39.49 & A87<40.50  
   A87A:=97  
   A87B:=66  
.endif  
.(A87) Total Self Scores, Percentiles & T Scores for Grade 5 Males  
.if grade=5 & A87>8.49 & A87<9.50  
   A87A:=1  
   A87B:=3  
.endif  
.if grade=5 & A87>9.49 & A87<10.50  
   A87A:=1  
   A87B:=5  
.endif  
.if grade=5 & A87>10.49 & A87<11.50  
   A87A:=1  
   A87B:=7  
.endif  
.if grade=5 & A87>11.49 & A87<12.50  
   A87A:=1  
   A87B:=9  
.endif  
.if grade=5 & A87>12.49 & A87<13.50  
   A87A:=1  
   A87B:=11  
.endif  
.if grade=5 & A87>13.49 & A87<14.50  
   A87A:=1  
   A87B:=13  
.endif  
.if grade=5 & A87>14.49 & A87<15.50  
   A87A:=1  
   A87B:=16  
.endif  
.if grade=5 & A87>15.49 & A87<16.50  
   A87A:=1  
   A87B:=18  
.endif  
.if grade=5 & A87>16.49 & A87<17.50  
   A87A:=1  
   A87B:=20  
.endif  
.if grade=5 & A87>17.49 & A87<18.50  
   A87A:=1  
   A87B:=22  
.endif  
.if grade=5 & A87>18.49 & A87<19.50  
   A87A:=1  
   A87B:=24  
.endif  
.if grade=5 & A87>19.49 & A87<20.50  
   A87A:=2  
   A87B:=26  
.endif  
.if grade=5 & A87>20.49 & A87<21.50
A87A:=2
A87B:=2B
.endif
.if grade=5 & A87>21.49 & A87<22.50
A87A:=3
A87B:=31
.endif
.if grade=5 & A87>22.49 & A87<23.50
A87A:=5
A87B:=33
.endif
.if grade=5 & A87>23.49 & A87<24.50
A87A:=8
A87B:=35
.endif
.if grade=5 & A87>24.49 & A87<25.50
A87A:=11
A87B:=37
.endif
.if grade=5 & A87>25.49 & A87<26.50
A87A:=15
A87B:=39
.endif
.if grade=5 & A87>26.49 & A87<27.50
A87A:=20
A87B:=41
.endif
.if grade=5 & A87>27.49 & A87<28.50
A87A:=26
A87B:=44
.endif
.if grade=5 & A87>28.49 & A87<29.50
A87A:=32
A87B:=46
.endif
.if grade=5 & A87>29.49 & A87<30.50
A87A:=39
A87B:=48
.endif
.if grade=5 & A87>30.49 & A87<31.50
A87A:=47
A87B:=50
.endif
.if grade=5 & A87>31.49 & A87<32.50
A87A:=55
A87B:=52
.endif
.if grade=5 & A87>32.49 & A87<33.50
A87A:=64
A87B:=54
.endif
.if grade=5 & A87>33.49 & A87<34.50
A87A:=72
A87B:=57
.endif
.if grade=5 & A87>34.49 & A87<35.50
A87A:=79
A87B:=59
.endif
.if grade=5 & A87>35.49 & A87<36.50
A87A:=86
A87B:=61
.endif
.if grade=5 & A87>36.49 & A87<37.50
A87A:=91
A87B:=63
.endif
.if grade=5 & A87>37.49 & A87<38.50
A87A:=95
A87B:=65
.endif
.if grade=5 & A87>38.49 & A87<39.50
A87A:=98
A87B:=67
.endif
.if grade=5 & A87>39.49 & A87<40.50
  A87A:=99
  A87B:=70
.endif

...(A88) Control Score 1, Percentiles & T Scores
.if A88=0
  A88A:=98
  A88B:=71
.endif
.if A88=1
  A88A:=97
  A88B:=69
.endif
.if A88=2
  A88A:=95
  A88B:=67
.endif
.if A88=3
  A88A:=94
  A88B:=66
.endif
.if A88=4
  A88A:=92
  A88B:=64
.endif
.if A88=5
  A88A:=89
  A88B:=62
.endif
.if A88=6
  A88A:=84
  A88B:=60
.endif
.if A88=7
  A88A:=78
  A88B:=58
.endif
.if A88=8
  A88A:=73
  A88B:=56
.endif
.if A88=9
  A88A:=67
  A88B:=54
.endif
.if A88=10
  A88A:=61
  A88B:=51
.endif
.if A88=11
  A88A:=50
  A88B:=50
.endif
.if A88=12
  A88A:=44
  A88B:=49
.endif
.if A88=13
  A88A:=40
  A88B:=47
.endif
.if A88=14
  A88A:=34
  A88B:=46
.endif
.if A88=15
  A88A:=27
  A88B:=44
.endif
.if A88=16
  A88A:=21
  A88B:=42
.endif
.if A88=17
  A88A:=18
  A88B:=41
.endif
.if A88=18
  A88A:=16
  A88B:=40
.endif
.if A88=19
  A88A:=14
  A88B:=39
.endif
.if A88=20
  A88A:=11
  A88B:=38
.endif
.if A88=21
  A88A:=9
  A88B:=36
.endif
.if A88=22
  A88A:=7
  A88B:=35
.endif
.if A88=23
  A88A:=5
  A88B:=34
.endif
.if A88=24
  A88A:=4
  A88B:=33
.endif
.if A88=25
  A88A:=3
  A88B:=32
.endif
.if A88=26
  A88A:=3
  A88B:=31
.endif
.if A88=27
  A88A:=2
  A88B:=29
.endif
.if A88=28
  A88A:=1
  A88B:=28
.endif
.if A88=29
  A88A:=1
  A88B:=27
.endif
.if A88=30
  A88A:=1
  A88B:=26
.endif
.if A88=31
  A88A:=1
  A88B:=24
.endif
.if A88=32
  A88A:=1
  A88B:=19
.endif
.if A88>32
  A88A:=1
  A88B:=13
.endif
...(A89) Control Score 2, Percentiles & T Scores
.if A89=0
  A89A:=1
  A89B:=22
.endif
.if A89=1

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A89A:=1
A89B:=26
.endif
.if A89=2
A89A:=1
A89B:=28
.endif
.if A89=3
A89A:=2
A89B:=29
.endif
.if A89=4
A89A:=2
A89B:=30
.endif
.if A89=5
A89A:=3
A89B:=31
.endif
.if A89=6
A89A:=4
A89B:=32
.endif
.if A89=7
A89A:=4
A89B:=33
.endif
.if A89=8
A89A:=5
A89B:=34
.endif
.if A89=9
A89A:=6
A89B:=35
.endif
.if A89=10
A89A:=8
A89B:=36
.endif
.if A89=11
A89A:=9
A89B:=37
.endif
.if A89=12
A89A:=11
A89B:=37
.endif
.if A89=13
A89A:=12
A89B:=38
.endif
.if A89=14
A89A:=14
A89B:=39
.endif
.if A89=15
A89A:=17
A89B:=41
.endif
.if A89=16
A89A:=20
A89B:=42
.endif
.if A89=17
A89A:=23
A89B:=42
.endif
.if A89=18
A89A:=25
A89B:=43
.endif
.if A89=19
A89A:=27
A89B:=44
.endif
.if A89=20
  A89A:=30
  A89B:=45
.endif
.if A89=21
  A89A:=33
  A89B:=46
.endif
.if A89=22
  A89A:=36
  A89B:=46
.endif
.if A89=23
  A89A:=39
  A89B:=47
.endif
.if A89=24
  A89A:=42
  A89B:=48
.endif
.if A89=25
  A89A:=46
  A89B:=49
.endif
.if A89=26
  A89A:=50
  A89B:=50
.endif
.if A89=27
  A89A:=53
  A89B:=51
.endif
.if A89=28
  A89A:=57
  A89B:=52
.endif
.if A89=29
  A89A:=60
  A89B:=52
.endif
.if A89=30
  A89A:=62
  A89B:=53
.endif
.if A89=31
  A89A:=65
  A89B:=54
.endif
.if A89=32
  A89A:=69
  A89B:=55
.endif
.if A89=33
  A89A:=71
  A89B:=56
.endif
.if A89=34
  A89A:=74
  A89B:=56
.endif
.if A89=35
  A89A:=76
  A89B:=57
.endif
.if A89=36
  A89A:=79
  A89B:=58
.endif
.if A89=37
  A89A:=81
  A89B:=59
.endif
.if A89=38
A89A:=83
A89B:=60
.endif
.if A89=39
A89A:=84
A89B:=60
.endif
.if A89=40
A89A:=85
A89B:=60
.endif
.if A89=41
A89A:=86
A89B:=61
.endif
.if A89=42
A89A:=88
A89B:=62
.endif
.if A89=43
A89A:=90
A89B:=63
.endif
.if A89=44
A89A:=91
A89B:=63
.endif
.if A89=45
A89A:=91
A89B:=64
.endif
.if A89=46
A89A:=92
A89B:=64
.endif
.if A89=47
A89A:=94
A89B:=65
.endif
.if A89=48
A89A:=95
A89B:=66
.endif
.if A89=49
A89A:=95
A89B:=67
.endif
.if A89=50
A89A:=96
A89B:=67
.endif
.if A89=51
A89A:=96
A89B:=68
.endif
.if A89=52
A89A:=97
A89B:=69
.endif
.if A89>52 & A89<55
A89A:=98
A89B:=70
.endif
.if A89=55
A89A:=98
A89B:=71
.endif
.if A89=56
A89A:=99
A89B:=72
.endif
.if A89=57
A89A:=99
A89B:=73
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.endif
.if A89<58
A89A:=99
A89B:=75
.endif
.if A89=59
A89A:=99
A89B:=78
.endif
.if A89>59
A89A:=99
A89B:=79
.endif
..(A90) Control Score 3, Percentiles & T Scores
.if A90c<=-10
A90A:=1
A90B:=83
.endif
.if A90>-10 & A90<5
A90A:=1
A90B:=76
.endif
.if A90=-5
A90A:=1
A90B:=28
.endif
.if A90=-4
A90A:=2
A90B:=30
.endif
.if A90=-3
A90A:=3
A90B:=32
.endif
.if A90=-2
A90A:=4
A90B:=33
.endif
.if A90=-1
A90A:=6
A90B:=34
.endif
.if A90=0
A90A:=7
A90B:=36
.endif
.if A90=1
A90A:=9
A90B:=37
.endif
.if A90=2
A90A:=12
A90B:=38
.endif
.if A90=3
A90A:=14
A90B:=39
.endif
.if A90=4
A90A:=17
A90B:=40
.endif
.if A90=5
A90A:=20
A90B:=42
.endif
.if A90=6
A90A:=24
A90B:=43
.endif
.if A90=7
A90A:=27
A90B:=44
.endif
.if A90=8
A90A:=30
A90B:=45
.endif
.if A90=9
A90A:=34
A90B:=46
.endif
.if A90=10
A90A:=38
A90B:=47
.endif
.if A90=11
A90A:=42
A90B:=48
.endif
.if A90=12
A90A:=45
A90B:=49
.endif
.if A90=13
A90A:=48
A90B:=50
.endif
.if A90=14
A90A:=52
A90B:=51
.endif
.if A90=15
A90A:=56
A90B:=52
.endif
.if A90=16
A90A:=60
A90B:=52
.endif
.if A90=17
A90A:=63
A90B:=53
.endif
.if A90=18
A90A:=66
A90B:=54
.endif
.if A90=19
A90A:=70
A90B:=55
.endif
.if A90=20
A90A:=72
A90B:=56
.endif
.if A90=21
A90A:=75
A90B:=57
.endif
.if A90=22
A90A:=78
A90B:=58
.endif
.if A90=23
A90A:=80
A90B:=58
.endif
.if A90=24
A90A:=82
A90B:=59
.endif
.if A90=25
A90A:=84
A90B:=60
.endif
.if A90=26
A90A:=86
A90B:=61
A90B:=61
.endif
.if A90=27
 A90A:=87
 A90B:=61
.endif
.if A90=28
 A90A:=89
 A90B:=62
.endif
.if A90=29
 A90A:=90
 A90B:=63
.endif
.if A90=30
 A90A:=91
 A90B:=64
.endif
.if A90=31
 A90A:=92
 A90B:=64
.endif
.if A90=32
 A90A:=93
 A90B:=65
.endif
.if A90=33
 A90A:=94
 A90B:=65
.endif
.if A90=34
 A90A:=94
 A90B:=66
.endif
.if A90=35
 A90A:=95
 A90B:=67
.endif
.if A90=36
 A90A:=96
 A90B:=67
.endif
.if A90=37
 A90A:=96
 A90B:=68
.endif
.if A90=37 & A90<40
 A90A:=97
 A90B:=69
.endif
.if A90=40
 A90A:=98
 A90B:=70
.endif
.if A90=41
 A90A:=98
 A90B:=71
.endif
.if A90=41 & A90<46
 A90A:=99
 A90B:=73
.endif
.if A90=46
 A90A:=99
 A90B:=75
.endif
.if A90=47
 A90A:=99
 A90B:=77
.endif
.if A90=47
 A90A:=99
 A90B:=80
.endif
..(A91) Control Score 4, Percentiles & T Scores
.if A91<0.50
   A91A:=99
   A91B:=73
.endif
.if A91>0.49 & A91<1.50
   A91A:=98
   A91B:=70
.endif
.if A91>1.49 & A91<2.50
   A91A:=96
   A91B:=68
.endif
.if A91>2.49 & A91<3.50
   A91A:=94
   A91B:=67
.endif
.if A91>3.49 & A91<4.50
   A91A:=91
   A91B:=64
.endif
.if A91>4.49 & A91<5.50
   A91A:=87
   A91B:=61
.endif
.if A91>5.49 & A91<6.50
   A91A:=80
   A91B:=58
.endif
.if A91>6.49 & A91<7.50
   A91A:=72
   A91B:=56
.endif
.if A91>7.49 & A91<8.50
   A91A:=63
   A91B:=53
.endif
.if A91>8.49 & A91<9.50
   A91A:=53
   A91B:=51
.endif
.if A91>9.49 & A91<10.50
   A91A:=43
   A91B:=48
.endif
.if A91>10.49 & A91<11.50
   A91A:=34
   A91B:=46
.endif
.if A91>11.49 & A91<12.50
   A91A:=27
   A91B:=44
.endif
.if A91>12.49 & A91<13.50
   A91A:=21
   A91B:=42
.endif
.if A91>13.49 & A91<14.50
   A91A:=16
   A91B:=40
.endif
.if A91>14.49 & A91<15.50
   A91A:=12
   A91B:=38
.endif
.if A91>15.49 & A91<16.50
   A91A:=8
   A91B:=37
.endif
.if A91>16.49 & A91<17.50
   A91A:=6
   A91B:=35
.endif
.if A91>17.49 & A91<18.50
A91A:=5
A91B:=33
.endif
.if A91>18.49 & A91<19.50
A91A:=4
A91B:=32
.endif
.if A91>19.49 & A91<20.50
A91A:=2
A91B:=30
.endif
.if A91>20.49 & A91<21.50
A91A:=2
A91B:=29
.endif
.if A91>21.49 & A91<22.50
A91A:=1
A91B:=27
.endif
.if A91>22.49 & A91<23.50
A91A:=1
A91B:=24
.endif
.if A91>23.49 & A91<24.50
A91A:=1
A91B:=18
.endif
.if A91>24.49 & A91<25.50
A91A:=1
A91B:=17
.endif
.if A91>=25.49
A91A:=1
A91B:=13
.endif
...(A92) Control Score 5, Percentiles & T Scores
.if A92<=-18.50
A92A:=1
A92B:=23
.endif
.if A92>-18.49 & A92<-16.50
A92A:=1
A92B:=26
.endif
.if A92>-16.49 & A92<-15.50
A92A:=1
A92B:=27
.endif
.if A92>-15.49 & A92<-14.50
A92A:=1
A92B:=28
.endif
.if A92>-14.49 & A92<-13.50
A92A:=2
A92B:=29
.endif
.if A92>-13.49 & A92<-12.50
A92A:=2
A92B:=30
.endif
.if A92>-12.49 & A92<-11.50
A92A:=3
A92B:=32
.endif
.if A92>-11.49 & A92<-10.50
A92A:=5
A92B:=34
.endif
.if A92>-10.49 & A92<-9.50
A92A:=7
A92B:=36
.endif
.if A92>-9.49 & A92<-8.50
A92A:=10

A92B:=37
.endif
.if A92>-8.49 & A92<-7.50
A92A:=14
A92B:=39
.endif
.if A92>-7.49 & A92<-6.50
A92A:=19
A92B:=41
.endif
.if A92>-6.49 & A92<-5.50
A92A:=24
A92B:=43
.endif
.if A92>-5.49 & A92<-4.50
A92A:=31
A92B:=45
.endif
.if A92>-4.49 & A92<-3.50
A92A:=39
A92B:=47
.endif
.if A92>-3.49 & A92<-2.50
A92A:=47
A92B:=49
.endif
.if A92>-2.49 & A92<-1.50
A92A:=55
A92B:=51
.endif
.if A92>-1.49 & A92<-0.50
A92A:=62
A92B:=53
.endif
.if A92>-0.49 & A92<-0.50
A92A:=69
A92B:=55
.endif
.if A92>0.49 & A92<1.50
A92A:=75
A92B:=57
.endif
.if A92>1.49 & A92<2.50
A92A:=80
A92B:=58
.endif
.if A92>2.49 & A92<3.50
A92A:=84
A92B:=60
.endif
.if A92>3.49 & A92<4.50
A92A:=87
A92B:=61
.endif
.if A92>4.49 & A92<5.50
A92A:=90
A92B:=63
.endif
.if A92>5.49 & A92<6.50
A92A:=92
A92B:=64
.endif
.if A92>6.49 & A92<7.50
A92A:=93
A92B:=65
.endif
.if A92>7.49 & A92<8.50
A92A:=94
A92B:=66
.endif
.if A92>8.49 & A92<9.50
A92A:=95
A92B:=67
.endif
.if A92>9.49 & A92<10.50
  A92A:=96
  A92B:=68
.endif
.if A92>10.49 & A92<12.50
  A92A:=97
  A92B:=69
.endif
.if A92>12.49 & A92<13.50
  A92A:=98
  A92B:=70
.endif
.if A92>13.49 & A92<14.50
  A92A:=98
  A92B:=71
.endif
.if A92>14.49 & A92<15.50
  A92A:=99
  A92B:=72
.endif
.if A92>15.49 & A92<16.50
  A92A:=99
  A92B:=73
.endif
.if A92>16.49 & A92<17.50
  A92A:=99
  A92B:=73
.endif
.if A92>17.49 & A92<18.50
  A92A:=99
  A92B:=79
.endif
.if A92>18.49
  A92A:=99
  A92B:=80
.endif
.endif
..(A93) Control Score 6, Percentiles & T Scores
.if A93<0.35
  A93A:=1
  A93B:=23
.endif
.if A93>0.34 & A93<0.95
  A93A:=1
  A93B:=26
.endif
.if A93>0.94 & A93<1.10
  A93A:=1
  A93B:=27
.endif
.if A93>1.09 & A93<1.30
  A93A:=1
  A93B:=28
.endif
.if A93>1.29 & A93<1.50
  A93A:=2
  A93B:=29
.endif
.if A93>1.49 & A93<1.70
  A93A:=2
  A93B:=30
.endif
.if A93>1.69 & A93<1.90
  A93A:=3
  A93B:=32
.endif
.if A93>1.89 & A93<2.10
  A93A:=4
  A93B:=33
.endif
.if A93>2.09 & A93<2.30
  A93A:=5
  A93B:=34
.endif
.if A93>2.29 & A93<2.50

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.endif
  .if A93>6.09 & A93<6.30
    A93A:=56
    A93B:=52
  .endif
  .if A93>6.29 & A93<6.50
    A93A:=59
    A93B:=52
  .endif
  .if A93>6.49 & A93<6.70
    A93A:=61
    A93B:=53
  .endif
  .if A93>6.69 & A93<6.90
    A93A:=64
    A93B:=54
  .endif
  .if A93>6.89 & A93<7.10
    A93A:=67
    A93B:=54
  .endif
  .if A93>7.09 & A93<7.30
    A93A:=70
    A93B:=55
  .endif
  .if A93>7.29 & A93<7.50
    A93A:=72
    A93B:=56
  .endif
  .if A93>7.49 & A93<7.70
    A93A:=74
    A93B:=56
  .endif
  .if A93>7.69 & A93<7.90
    A93A:=76
    A93B:=57
  .endif
  .if A93>7.89 & A93<8.10
    A93A:=78
    A93B:=58
  .endif
  .if A93>8.09 & A93<8.30
    A93A:=80
    A93B:=59
  .endif
  .if A93>8.29 & A93<8.50
    A93A:=81
    A93B:=59
  .endif
  .if A93>8.49 & A93<8.70
    A93A:=83
    A93B:=60
  .endif
  .if A93>8.69 & A93<8.90
    A93A:=84
    A93B:=61
  .endif
  .if A93>8.89 & A93<9.10
    A93A:=86
    A93B:=62
  .endif
  .if A93>9.09 & A93<9.30
    A93A:=88
    A93B:=62
  .endif
  .if A93>9.29 & A93<9.50
    A93A:=89
    A93B:=63
  .endif
  .if A93>9.49 & A93<9.70
    A93A:=90
    A93B:=64
  .endif
  .if A93>9.69 & A93<9.90

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A93A:=91
A93B:=64
.endif
.if A93>9.89 & A93<10.10
A93A:=92
A93B:=65
.endif
.if A93>10.09 & A93<10.30
A93A:=93
A93B:=66
.endif
.if A93>10.29 & A93<10.50
A93A:=94
A93B:=67
.endif
.if A93>10.49 & A93<10.70
A93A:=95
A93B:=67
.endif
.if A93>10.69 & A93<10.90
A93A:=96
A93B:=68
.endif
.if A93>10.89 & A93<11.10
A93A:=96
A93B:=69
.endif
.if A93>11.09 & A93<11.30
A93A:=97
A93B:=69
.endif
.if A93>11.29 & A93<11.50
A93A:=97
A93B:=70
.endif
.if A93>11.49 & A93<11.70
A93A:=98
A93B:=71
.endif
.if A93>11.69 & A93<11.90
A93A:=98
A93B:=72
.endif
.if A93>11.89 & A93<12.10
A93A:=99
A93B:=73
.endif
.if A93>12.09 & A93<12.30
A93A:=99
A93B:=75
.endif
.if A93>12.29 & A93<13.10
A93A:=99
A93B:=79
.endif
.if A93>13.09
A93A:=99
A93B:=80
.endif
.end
A.12 STAIC A-state anxiety questionnaire

HOW-I-FEEL QUESTIONNAIRE
Developed by C. D. Spielberger, C. D. Edwards, J. Montuori and R. Lushene
STAIC FORM C-1

NAME __________________________ AGE _______ DATE __________

DIRECTIONS: A number of statements which boys and girls use to describe
themselves are given below. Read each statement carefully and decide how
you feel right now. Then put an X in the box in front of the word or phrase
which best describes how you feel. There are no right or wrong answers. Do
not spend too much time on any one statement. Remember, find the word
or phrase which best describes how you feel right now, at this very moment.

1. I feel .............. ☐ very calm       ☐ calm       ☐ not calm
2. I feel .............. ☐ very upset      ☐ upset      ☐ not upset
3. I feel .............. ☐ very pleasant   ☐ pleasant   ☐ not pleasant
4. I feel .............. ☐ very nervous    ☐ nervous    ☐ not nervous
5. I feel .............. ☐ very jittery    ☐ jittery    ☐ not jittery
6. I feel .............. ☐ very rested     ☐ rested     ☐ not rested
7. I feel .............. ☐ very scared     ☐ scared     ☐ not scared
8. I feel .............. ☐ very relaxed    ☐ relaxed    ☐ not relaxed
9. I feel .............. ☐ very worried    ☐ worried    ☐ not worried
10. I feel .............. ☐ very satisfied  ☐ satisfied   ☐ not satisfied
11. I feel .............. ☐ very frightened ☐ frightened  ☐ not frightened
12. I feel .............. ☐ very happy     ☐ happy      ☐ not happy
13. I feel .............. ☐ very sure      ☐ sure       ☐ not sure
14. I feel .............. ☐ very good      ☐ good       ☐ not good
15. I feel .............. ☐ very troubled   ☐ troubled    ☐ not troubled
16. I feel .............. ☐ very bothered  ☐ bothered   ☐ not bothered
17. I feel .............. ☐ very nice      ☐ nice       ☐ not nice
18. I feel .............. ☐ very terrified ☐ terrified   ☐ not terrified
19. I feel .............. ☐ very mixed-up  ☐ mixed-up   ☐ not mixed-up
20. I feel .............. ☐ very cheerful  ☐ cheerful   ☐ not cheerful

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A.13 STAIC A-trait anxiety questionnaire

HOW-I-FEEL QUESTIONNAIRE
STAIC FORM C-2

NAME ________________________ AGE _______ DATE _______

DIRECTIONS: A number of statements which boys and girls use to describe themselves are given below. Read each statement and decide if it is hardly-ever, or sometimes, or often true for you. Then for each statement, put an X in the box in front of the word that seems to describe you best. There are no right or wrong answers. Do not spend too much time on any one statement. Remember, choose the word which seems to describe how you usually feel.

1. I worry about making mistakes .......... □ hardly-ever □ sometimes □ often
2. I feel like crying .......................... □ hardly-ever □ sometimes □ often
3. I feel unhappy .............................. □ hardly-ever □ sometimes □ often
4. I have trouble making up my mind ..... □ hardly-ever □ sometimes □ often
5. It is difficult for me to face my problems □ hardly-ever □ sometimes □ often
6. I worry too much ........................... □ hardly-ever □ sometimes □ often
7. I get upset at home ....................... □ hardly-ever □ sometimes □ often
8. I am shy ................................... □ hardly-ever □ sometimes □ often
9. I feel troubled .............................. □ hardly-ever □ sometimes □ often
10. Unimportant thoughts run through my mind and bother me .......... □ hardly-ever □ sometimes □ often
11. I worry about school ...................... □ hardly-ever □ sometimes □ often
12. I have trouble deciding what to do .......... □ hardly-ever □ sometimes □ often
13. I notice my heart beats fast ............. □ hardly-ever □ sometimes □ often
14. I am secretly afraid ........................ □ hardly-ever □ sometimes □ often
15. I worry about my parents ............... □ hardly-ever □ sometimes □ often
16. My hands get sweaty ..................... □ hardly-ever □ sometimes □ often
17. I worry about things that may happen .. □ hardly-ever □ sometimes □ often
18. It is hard for me to fall asleep at night □ hardly-ever □ sometimes □ often
19. I get a funny feeling in my stomach .... □ hardly-ever □ sometimes □ often
20. I worry about what others think of me . □ hardly-ever □ sometimes □ often

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A.14 Program file for the STAIC A-state and A-trait data bases

using Clinical Reporting System software

..Schema for STATE TRAIT Anxiety Inventory
.Set descriptions on

.key ID

.field names
ID; Identification number

GROUP; Group
/type label:13 is
    Study
    Comparison
/end

GRADE; Grade

STAIC1; I feel calm
STAIC2; I feel upset
STAIC3; I feel upset reversed
STAIC4; I feel pleasant
STAIC5; I feel nervous
STAIC6; I feel nervous reversed
STAIC7; I feel jittery
STAIC8; I feel jittery reversed
STAIC9; I feel rested
STAIC10; I feel scared
STAIC11; I feel scared reversed
STAIC12; I feel relaxed
STAIC13; I feel worried
STAIC14; I feel worried reversed
STAIC15; I feel satisfied
STAIC16; I feel frightened
STAIC17; I feel frightened reversed
STAIC18; I feel happy
STAIC19; I feel nervous reversed
STAIC20; I feel good

.STATS; A-State Raw Score
.STTP; A-State T-Score
.STPS; A-State Percentile Rank

..free form A-State Scale
..window 1,1,80,23,0

ID --- Group *********** Grade ---
1. I feel calm --- 2. I feel upset --- 2R. ---
3. I feel pleasant --- 4. I feel nervous --- 4R. ---
5. I feel jittery --- 5R. --- 6. I feel rested ---
7. I feel scared --- 7R. --- 8. I feel relaxed ---
9. I feel worried --- 9R. --- 10. I feel satisfied ---
11. I feel frightened --- 11R. --- 12. I feel happy ---
17. I feel nicé --- 18. I feel terrified --- 18R. ---
19. I feel mixed up --- 19R. --- 20. I feel cheerful ---

A State Raw Score ---

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A State T Score
A State Percentile Rank
.end
.field names
TRAIT1; I worry about making mistakes
TRAIT2; I feel like crying
TRAIT3; I feel unhappy
TRAIT4; I have trouble making up my mind
TRAIT5; It is difficult for me to face my problems
TRAIT6; I worry too much
TRAIT7; I get upset at home
TRAIT8; I am shy
TRAIT9; I feel troubled
TRAIT10; Unimportant thoughts run through my mind and bother me
TRAIT11; I worry about school
TRAIT12; I have trouble deciding what to do
TRAIT13; I notice my heart beats fast
TRAIT14; I am secretly afraid
TRAIT15; I worry about my parents
TRAIT16; My hands get sweaty
TRAIT17; I worry about things that may happen
TRAIT18; It is hard for me to fall asleep at night
TRAIT19; I get a funny feeling in my stomach
TRAIT20; I worry about what others think of me
TRTS; A-Trait Raw Score
TRPC; A-Trait Percentile Rank
TRP;

.free form A-Trait Scale
.window 1,1,80,23,0

1. I worry about making mistakes
2. I feel like crying
3. I feel unhappy
4. I have trouble making up my mind
5. It is difficult for me to face my problems
6. I worry too much
7. I get upset at home
8. I am shy
9. I feel troubled
10. Unimportant thoughts run through my mind and bother me
11. I worry about school
12. I have trouble deciding what to do
13. I notice my heart beats fast
14. I am secretly afraid
15. I worry about my parents
16. My hands get sweaty
17. I worry about things that may happen
18. It is hard for me to fall asleep at night
19. I get a funny feeling in my stomach
20. I worry about what others think of me

A Trait Raw Score
A Trait Percentile Rank
.end

.update entry
.if STAIC2≠1
   STAIK2:=3
.endif
.if STAIC2≠3
   STAIK2:=1
.endif
.if STAIC4≠1
   STAIK4:=3
.endif
.if STAICA≠3
   STAIK4:=1
.endif
.if STAICS≠1
   STAIK5:=3
.endif
.if STAICS≠3
   STAIK5:=1
.endif

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.if STAIC7=1
  STAIC7:=3
.endif
.if STAIC7=3
  STAIC7:=1
endif
.if STAIC9=1
  STAIC9:=3
endif
.if STAIC9=3
  STAIC9:=1
endif
.if STAIC11=1
  STAIC11:=3
endif
.if STAIC11=3
  STAIC11:=1
endif
.if STAIC15=1
  STAIC15:=3
endif
.if STAIC15=3
  STAIC15:=1
endif
.if STAIC16=1
  STAIC16:=3
endif
.if STAIC16=3
  STAIC16:=1
endif
.if STAIC18=1
  STAIC18:=3
endif
.if STAIC18=3
  STAIC18:=1
endif
.if STAIC19=1
  STAIC19:=3
endif
.if STAIC19=3
  STAIC19:=1
endif

:: STAIC(:,=:(STAIC1+STAIC2+STAIC3+STAIC4+STAIC5+STAIC6+STAIC7+STAIC8+STAIC9+STAIC10+STAIC11+STAIC12+STAIC13+STAIC14+STAIC15+STAIC16+STAIC17+STAIC18+STAIC19+STAIC20)
:: TRAIT(:,=:(TRAIT1+TRAIT2+TRAIT3+TRAIT4+TRAIT5+TRAIT6+TRAIT7+TRAIT8+TRAIT9+TRAIT10+TRAIT11+TRAIT12+TRAIT13+TRAIT14+TRAIT15+TRAIT16+TRAIT17+TRAIT18+TRAIT19+TRAIT20)
:: Normalised T-Scores and Percentile Ranks for A-State Scales for Grade 4 Males
.if grade=4 & staic=20
  STTS:=30
  STP:=2
.endif
.if grade=4 & staic=21
  STTS:=33
  STP:=5
.endif
.if grade=4 & staic=22
  STTS:=35
  STP:=6
.endif
.if grade=4 & staic=23
  STTS:=37
  STP:=9
.endif
.if grade=4 & staic=24
  STTS:=38
  STP:=12
.endif
.if grade=4 & staic=25
  STTS:=40
  STP:=15
.endif
if grade=4 & staic=26
  STTS:=42
  STP:=21
endif
if grade=4 & staic=27
  STTS:=44
  STP:=28
endif
if grade=4 & staic=28
  STTS:=47
  STP:=37
endif
if grade=4 & staic=29
  STTS:=49
  STP:=45
endif
if grade=4 & staic=30
  STTS:=51
  STP:=55
endif
if grade=4 & staic=31
  STTS:=54
  STP:=65
endif
if grade=4 & staic=32
  STTS:=56
  STP:=71
endif
if grade=4 & staic=33
  STTS:=57
  STP:=75
endif
if grade=4 & staic=34
  STTS:=58
  STP:=79
endif
if grade=4 & staic=35
  STTS:=59
  STP:=82
endif
if grade=4 & staic=36
  STTS:=61
  STP:=87
endif
if grade=4 & staic=37
  STTS:=62
  STP:=89
endif
if grade=4 & staic=38
  STTS:=63
  STP:=91
endif
if grade=4 & staic=39
  STTS:=64
  STP:=93
endif
if grade=4 & staic=40
  STTS:=65
  STP:=94
endif
if grade=4 & staic=41
  STTS:=66
  STP:=95
endif
if staic=42
  STTS:=67
  STP:=96
endif
if grade=4 & staic=43
  STTS:=68
  STP:=97
endif
if grade=4 & staic=44
  STTS:=70

STP:=98
endif
if grade=4 & staic=45
  STTS:=72
  STP:=99
endif
if grade=4 & staic=46
  STTS:=76
  STP:=100
endif
if grade=4 & staic>46
  STTS:=78
  STP:=100
endif

.. Normalised T-Scores and Percentile Ranks for A-Trait Scales for Grade 4 Males
if grade=4 & trait=20
  TRTS:=22
  TRP:=1
endif
if grade=4 & trait=21
  TRTS:=25
  TRP:=1
endif
if grade=4 & trait=22
  TRTS:=29
  TRP:=2
endif
if grade=4 & trait=23
  TRTS:=31
  TRP:=3
endif
if grade=4 & trait=24
  TRTS:=33
  TRP:=5
endif
if grade=4 & trait=25
  TRTS:=34
  TRP:=5
endif
if grade=4 & trait=26
  TRTS:=35
  TRP:=7
endif
if grade=4 & trait=27
  TRTS:=37
  TRP:=9
endif
if grade=4 & trait=28
  TRTS:=38
  TRP:=11
endif
if grade=4 & trait=29
  TRTS:=39
  TRP:=14
endif
if grade=4 & trait=30
  TRTS:=41
  TRP:=17
endif
if grade=4 & trait=31
  TRTS:=42
  TRP:=21
endif
if trait=32
  TRTS:=44
  TRP:=26
endif
if grade=4 & trait=33
  TRTS:=45
  TRP:=32
endif
if grade=4 & trait=34
  TRTS:=47
endif
.TRP:=38
.endif
.if grade=4 & trait=35
.TRTS:=48
.TRP:=43
.endif
.if grade=4 & trait=36
.TRTS:=50
.TRP:=49
.endif
.if grade=4 & trait=37
.TRTS:=51
.TRP:=53
.endif
.if grade=4 & trait=38
.TRTS:=52
.TRP:=58
.endif
.if grade=4 & trait=39
.TRTS:=53
.TRP:=64
.endif
.if grade=4 & trait=40
.TRTS:=55
.TRP:=70
.endif
.if trait=41
.TRTS:=57
.TRP:=76
.endif
.if grade=4 & trait=42
.TRTS:=58
.TRP:=80
.endif
.if grade=4 & trait=43
.TRTS:=60
.TRP:=83
.endif
.if grade=4 & trait=44
.TRTS:=62
.TRP:=88
.endif
.if grade=4 & trait=45
.TRTS:=64
.TRP:=92
.endif
.if grade=4 & trait=46
.TRTS:=65
.TRP:=93
.endif
.if grade=4 & trait=47
.TRTS:=66
.TRP:=95
.endif
.if grade=4 & trait=48
.TRTS:=67
.TRP:=95
.endif
.if grade=4 & trait=49
.TRTS:=68
.TRP:=96
.endif
.if grade=4 & trait=50
.TRTS:=70
.TRP:=98
.endif
.if grade=4 & trait=51
.TRTS:=72
.TRP:=99
.endif
.if grade=4 & trait=52
.TRTS:=75
.TRP:=99
.endif
.if grade=4 & trait=53
  TRTS:=76
  TRP:=100
.endif
.if grade=4 & trait=54
  TRTS:=76
  TRP:=100
.endif
.if grade=4 & trait=55
  TRTS:=76
  TRP:=100
.endif
.if grade=4 & trait=56
  TRTS:=76
  TRP:=100
.endif
.if grade=4 & trait=57
  TRTS:=76
  TRP:=100
.endif
.if grade=4 & trait=58
  TRTS:=76
  TRP:=100
.endif
.if grade=4 & trait=59
  TRTS:=76
  TRP:=100
.endif
.if grade=4 & trait=60
  TRTS:=76
  TRP:=100
.endif

..Normalised T-Scores and Percentile Ranks for A-State for Grade 5 Males
.if grade=5 & staic=20
  STTS:=27
  STP:=1
.endif
.if grade=5 & staic=21
  STTS:=31
  STP:=3
.endif
.if grade=5 & staic=22
  STTS:=33
  STP:=4
.endif
.if grade=5 & staic=23
  STTS:=35
  STP:=7
.endif
.if grade=5 & staic=24
  STTS:=37
  STP:=10
.endif
.if grade=5 & staic=25
  STTS:=39
  STP:=13
.endif
.if grade=5 & staic=26
  STTS:=40
  STP:=17
.endif
.if grade=5 & staic=27
  STTS:=42
  STP:=22
.endif
.if grade=5 & staic=28
  STTS:=45
  STP:=29
.endif
.if grade=5 & staic=29
  STTS:=47
  STP:=37
.endif
.if grade=5 & staic=30
STTS:=49
STP:=66
.endif
.if grade=5 & staic=31
STTS:=52
STP:=57
.endif
.if grade=5 & staic=32
STTS:=53
STP:=64
.endif
.if grade=5 & staic=33
STTS:=55
STP:=68
.endif
.if grade=5 & staic=34
STTS:=56
STP:=72
.endif
.if grade=5 & staic=35
STTS:=57
STP:=77
.endif
.if grade=5 & staic=36
STTS:=59
STP:=82
.endif
.if grade=5 & staic=37
STTS:=61
STP:=86
.endif
.if grade=5 & staic=38
STTS:=63
STP:=90
.endif
.if grade=5 & staic=39
STTS:=65
STP:=93
.endif
.if grade=5 & staic=40
STTS:=66
STP:=95
.endif
.if grade=5 & staic=41
STTS:=67
STP:=95
.endif
.if grade=5 & staic=43
STTS:=68
STP:=96
.endif
.if grade=5 & staic=44
STTS:=69
STP:=97
.endif
.if grade=5 & staic=45
STTS:=70
STP:=98
.endif
.if grade=5 & staic=46
STTS:=72
STP:=98
.endif
.if grade=5 & staic=47
STTS:=72
STP:=99
.endif
.if grade=5 & staic=48
STTS:=73
STP:=99
.endif
.if grade=5 & staic=49
STTS:=75

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.. Normalised T-Scores and Percentile Ranks for A-State for Grade 5 Males grade=5 & trait=20

..

.. Normalised T-Scores and Percentile Ranks for A-State for Grade 5 Males grade=5 & trait=20

..
TRP:=45
.endif
.if grade=5 & trait=37
 TRTS:=50
 TRP:=50
.endif
.if grade=5 & trait=38
 TRTS:=51
 TRP:=56
.endif
.if grade=5 & trait=39
 TRTS:=53
 TRP:=62
.endif
.if grade=5 & trait=40
 TRTS:=55
 TRP:=68
.endif
.if grade=5 & trait=42
 TRTS:=59
 TRP:=83
.endif
.if grade=5 & trait=43
 TRTS:=61
 TRP:=86
.endif
.if grade=5 & trait=44
 TRTS:=62
 TRP:=89
.endif
.if grade=5 & trait=45
 TRTS:=64
 TRP:=93
.endif
.if grade=5 & trait=46
 TRTS:=67
 TRP:=96
.endif
.if grade=5 & trait=47
 TRTS:=68
 TRP:=97
.endif
.if grade=5 & trait=48
 TRTS:=70
 TRP:=98
.endif
.if grade=5 & trait=49
 TRTS:=74
 TRP:=99
.endif
.if grade=5 & trait=50
 TRTS:=75
 TRP:=99
.endif
.if grade=5 & trait=51
 TRTS:=75
 TRP:=99
.endif
.if grade=5 & trait=52
 TRTS:=76
 TRP:=99
.endif
.if grade=5 & trait=53
 TRTS:=77
 TRP:=99
.endif
.if grade=5 & trait>53
 TRTS:=77
 TRP:=100
.endif
.end
# A.15 Background information sheet

<table>
<thead>
<tr>
<th>Case Number:</th>
<th>Group: Study/Control</th>
<th>Grade: Year 4/Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME:</td>
<td>SCHOOL:</td>
<td>SCHOOL PHONE:</td>
</tr>
<tr>
<td>HOME ADDRESS:</td>
<td>HOME PHONE:</td>
<td>WORK PHONE:</td>
</tr>
<tr>
<td>DATE OF BIRTH:</td>
<td>DATE OF TESTING:</td>
<td>AGE AT TESTING:</td>
</tr>
<tr>
<td>ETHNICITY: (mother or primary caregiver)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAMILY STRUCTURE:</td>
<td>Intact/Disrupted (describe)</td>
<td></td>
</tr>
<tr>
<td>PARENTS/GUARDIANS OCCUPATION:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHILD'S PLACE IN FAMILY:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCHOOLS ATTENDED:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STANDARDISED TESTS:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDICAL INFORMATION:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMENTS: (performance, behaviour, support services, interventions)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B
Statistical Procedures

B.1 The t-test testing the difference between a sample mean and the population mean

This form of the t-test assumes that the mean for some population or theoretical value is able to be determined. Knowing this population or theoretical value enables the researcher to determine whether or not the mean of the sample selected differs significantly from the population mean.

The basic formula for testing the significance of a difference between a sample mean and population mean is:

\[ t = \frac{\bar{X} - \mu}{\text{standard error of the mean}} \]

or, in simplified form

\[ t = \frac{\bar{X} - \mu}{\sqrt{\frac{\sum X^2 - (\sum X)^2}{N(N-1)}}} \]

where
- \( \bar{X} \) = the mean of the sample
- \( \mu \) = the mean of the population
- \( \sum X^2 \) = the sum of the squared score values
- \((\sum X)^2 \) = the square of the sum of all the scores
- \( N \) = the number of scores used in the analysis
B.2 Multiple logistic regression:

The rationale for logistic modelling

The goal of any regression analysis is to postulate a mathematical model describing the mean of the dependent variable as a function of the independent variables on the basis of prior knowledge (Kleinbaum et al., 1988). The model is fitted to the data and after the adequacy of fit is verified, appropriate statistical inferences are made. Logistic regression, a generalised linear model, is thus conceptually similar to classical linear regression. In the case of classical linear regression, where the dependent variable is continuous, the associated error term for an observed value of the dependent variable is assumed to be independently and normally distributed with a mean of zero and a constant variance. This is not the case where the dependent variable is dichotomous (Armitage & Berry, 1987). Where the dichotomous dependent variable represents a binary outcome i.e., presence/absence of a predetermined attribute, the number of individuals from a homogenous group possessing this attribute would be distributed according to the binomial distribution with a constant probability indicating presence.

Individuals however are not always members of a homogenous group and may differ on a number of variables associated with the probability of presence of the attribute. A relationship between the probability of the presence of an attribute and a set of independent variables may exist. A binary dependent variable is constrained to be 0 or 1, whilst the independent variables have no such restriction. A linear relationship could give rise to fitted probabilities outside the legitimate range of 0 to 1 for some values of the independent variables. In order to fit this relationship into the framework of a generalised linear model, a logit
transformation is used in the case of logistic regression. Through this logit transformation the probability associated with a binary dependent variable, distributed according to a simple discrete probability distribution and taking on values of 1 and 0, is transformed to take on an unlimited range from minus infinity to plus infinity as shown below.

Thus:

\[ P = 0 \quad \ln \left( \frac{P}{1 - P} \right) = \ln \left( \frac{0}{1} \right) = \ln (-\infty) = -\infty \]

\[ P = 0.5 \quad \ln \left( \frac{P}{1 - P} \right) = \ln \left( \frac{0.5}{0.5} \right) = \ln (1) = 0 \]

\[ P = 1 \quad \ln \left( \frac{P}{1 - P} \right) = \ln \left( \frac{1}{0} \right) = \ln (+\infty) = +\infty \]

where:

\( \text{logit}(P) \)
The logit is termed the link function as it provides the link between the linear independent variables and the dichotomous dependent variable. Therefore, the logistic regression model may be expressed in terms of the logit transformation (Kleinbaum et al., 1982) as:

\[
\ln \left( \frac{p}{1-p} \right) = a + bx
\]

where:

- \(\ln\) denotes \(\log_e\) (natural logarithm)
- \(P\) denotes the probability of presence of the attribute
- \(x\) denotes the independent variable
- \(a\) denotes a constant.
  - It is analogous to the intercept parameter in classical regression.
- \(b\) denotes the log odds ratio corresponding to two values of \(x\) one unit apart.
  - It is analogous to the slope parameter in classical regression.

This function increases from 0 to 1 as \(x\) ranges from minus infinity to plus infinity (provided \(b\) is positive) so the probability increases as \(x\) increases (Lunn & McNeil, 1991, 234-235). Multiple logistic regression may be used to examine the effects of several independent variables, jointly or through interaction, on the dependent variable. For example, if there are three independent variables the equation generalises to:

\[
\ln \left( \frac{p}{1-p} \right) = a + bx_1 + bx_2 + bx_3
\]
The logit transformation in logistic regression has important theoretical properties. The logit is the logarithm of the odds for an event occurring and logit differences are logarithms of odds ratios for different values of predictor variables. The unknown parameters, \( b \), in the model are thus expressed in terms of the logarithm of the corresponding odds ratios. Usually the unconditional maximum likelihood (ML) method is used to provide estimates of unknown population parameters. This likelihood refers to the unconditional probability of obtaining the particular set of data under consideration. The unconditional likelihood function represents the joint probability distribution of the data or likelihood of observing the data that have been collected and also depends on the population parameters. However, if the data are derived from matched pairs of subjects, the unconditional likelihood is not appropriate and the alternate conditional ML method is used. This situation will be discussed in the next section.

Once the set of unknown parameters in the model to be estimated (likelihood function) has been determined for a given data set, the method of ML chooses that estimator of the set of unknown parameters which maximises the likelihood function. Maximising the likelihood function is equivalent to maximising the natural log of the likelihood, which is computationally easier. The procedure for fitting a model using maximum likelihood method involves iteration. Iteration is the repetition of a sequence of approximations until a stable solution is reached. These approximate parameter estimates change from cycle to cycle of the iterative process until they converge to the solution. The ML procedure is applied to a logistic model to obtain the best estimates of population

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parameters in the model. It is akin to the least squares estimation approach used in estimating the parameters in a multiple linear regression model.

Once the ML estimates have been obtained statistical inference is possible. Of initial interest are the estimated coefficients of unknown population parameters, \( b \). These are generally reported along with their associated standard errors and significance levels. This is the primary information required for calculating the estimated odds ratios for the fitted model and associated confidence intervals. Each of the estimated odds ratios describes the association between that particular independent variable and the dependent variable, adjusted for the contributions of other independent variables included in the model. Inferences regarding the significance of observed associations are made using interval estimates for the odds ratios obtained at the 95 percent confidence limit.

Once the contribution of various independent variables has been ascertained the fit of the model may be tested. The test statistic used to test the fit of the model is the "deviance" or "residual deviance". It is defined as "twice the difference between the log-likelihood" of the perfectly fitting model and the achieved model of best fit. The associated degrees of freedom equals the difference in the numbers of parameters between these two models. The deviance approximates the \( \chi^2 \) distribution and is the preferred test statistic used for hypothesis testing. Thus, observed reductions in the deviance due to the addition of terms to the model can be tested to assess whether these extra terms result in a significantly improved model. The smaller this residual deviance, the smaller the error, the better the fit. The deviance is analogous to the "residual sum of squares" in classical regression and is a measure of the error after fitting

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the model.

There is however a more objective measure of the goodness-of-fit, the $R$-squared value. This value is interpreted as the percentage of the total residual deviance explained by that model. The $R$-squared value derived in logistic regression analysis is generally lower than that obtained through classical linear regression as the dependent variable is dichotomous and it is thus difficult to obtain a perfect fit. This value is not calculated when analysing matched data using conditional ML techniques.

In the past the use of the logistic regression was hampered because of the complex and tedious calculations associated with maximum likelihood estimation. The advent of high speed computers and sophisticated software have now eliminated this obstacle making logistic regression the multivariate analysis of choice for data involving a binary dependent variable. Its popularity may also be attributed to the flexibility of the model.

A large number of situations can be modelled using the logistic equation (Kleinbaum et al., 1982). Independent variables can represent attributes, treatments, confounders or effect modifiers. They may appear in the equation as nominal indicator or dummy variables, continuous variables, or in various forms such as cross products, squares or logarithms. This modelling flexibility makes logistic regression particularly useful in the analysis of pair-wise matched data.
B.3 Multiple Logistic regression:

The analysis of matched data

This study, although conducted within the discipline of Education, is an example of an epidemiological case-control study utilising a pair-wise matching subject selection procedure. In such a study, an index group of cases are selected because of some attribute they share. This index group is then compared to a referent group of control subjects. The most popular method of selecting the referent group is through a process called category matching. This process involves first categorising each of the matching factors and then finding for each case a control from the same combined set of matching categories.

When modelling matched data it is necessary to follow certain conventions in both formulation and analysis stages (Kleinbaum, 1991h). An important difference in the formulation of a logistic model for matched data is that matched subject pairs are considered in strata and are defined as dummy or indicator variables in the model. Kleinbaum et al. (1982, p.387) suggest that a stratified analysis is required for both precision and validity reasons when subjects have been matched. Given this principle, the strata incorporated into the logistic model for matched data include the following:

- dummy variables indicating the matched strata
- predictor variables of interest
- potential confounders not controlled through matching
- product terms denoting potential interaction variables
Potential confounding variables outside the matching categories and effect modifying or interaction variables are optional inclusions and are included on an *a priori* theoretical basis.

There are certain conventions to be followed in deriving the model which best fits the data. Kleinbaum (1991f) suggests that a hierarchical backward elimination procedure for removing variables be implemented. This procedure begins with a full model including all potential explanatory independent variables. For a matched analysis this includes essentially the matched strata, predictor variables and any confounding and/or interaction variables to be included. By convention a hierarchical principle must be applied to interaction terms found significant. That is, all lower order components of significant interaction terms must be retained in all further models. Confounding, on the other hand, is assessed by ascertaining whether the odds ratio for the effect of predictor variables meaningfully changes when confounding variables are deleted from the model (Kleinbaum, 1991g). Thus, through analysis the most precise model to describe the data is derived.

The analysis of a logistic model for matched data involves a conditional ML estimation of parameters. Unlike unconditional ML estimation, conditional ML estimates are derived from a likelihood function that gives the conditional probability of obtaining a data configuration actually observed conditional on all possible configurations of the data values given all these data are necessarily matched (Kleinbaum et al., 1982). This method should be employed in cases where the data is cast into small strata. Consequently the number of parameters in the model, which includes the parameters defining the strata, is large relative
to the sample size. In such cases the unconditional ML method can give biased estimates of odds ratios. In addition, the conditional ML formula can only estimate the $b$ parameters and necessarily ignores the constant or intercept parameter, which does not arise in the conditional model. Thus, this method of analysis is ideally suited to the present data set.

Statistical inferences made on the basis of a multiple logistic regression using the conditional ML method vary slightly from those based on the unconditional ML method. As the parameters derived from a conditional ML analysis are constrained by the observed data set testing their significance with reference to population parameters is not appropriate. The parameter estimates for the best fitting model produced to explain the dependent variable may however be used to predict whether or not a random individual should be allocated as a case or a control.

The residual deviance and the associated $R$-square statistics are also not applicable to output generated by the conditional likelihood method. These are not able to be calculated as the perfectly fitting saturated model to which the derived model is compared is not able to be determined because of the constraints imposed by the matching process. The $-2\log(L)$ value however can be used to test the significance of the derived model of best fit as compared to the full model. This is achieved using the Likelihood Ratio (LR) test which is analogous to the $F$ statistic produced in multiple linear regression (Kleinbaum, 1991e). This test is to be used to determine the best fitting model for this data.
B.4 Multiple logistic regression:

Fitting the best model for the data

SPIDA's (Gebski et al., 1992) procedure for fitting the logistic regression model to data is \texttt{breg}. As this data was derived from a pair-wise matching procedure the logistic regression analysis omitting the constant term is appropriate. In defining a model for a matched analysis variables of interest, together with the matched data included as strata and defined as dummy variables, are included. The analysis proceeded as follows including the listed variables:

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1. The full model was defined.

The matched pairs were defined as dummy variables and the variables of interest were the SDQ-1 Individual scales: Physical Abilities (Physab), Physical Appearance (Physap), Peer Relations (Peer), Parent Relations (Parent), Reading (read), Mathematics (Maths), General School (Gensch), General Self (Genself). The STAIC A-state and A-trait scales were added to the model as potential confounders. The constant term was omitted.

\[
\begin{align*}
\$b & := \text{barmult[1,,35]-barmult[36,,70]} \\
\%&\text{label } \$b \text{ barmult.name} \\
\%&\text{dec 2} \\
\text{lreg}(\$b,y=1,\text{noc}=1,x=(73,,80,84,85))
\end{align*}
\]

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<td>1.02 0.94</td>
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df:25 -2LogL:39.62 % (0):0 # iter:9 RSp:
The logistic regression analysis print out includes the following information:

* **Coeff** - the fitted regression coefficients corresponding to the logarithm of the odds ratio and known as \( b \) parameters

* **StErr** - the standard error associated with the estimation of the fitted regression coefficients (\( b \) parameters)

* **p-value** - probability (\( p < .05 \)) that the fitted regression coefficient contributes significantly to the model

* **Odds and .95 CI** - these are the estimated odds ratios - \( \exp(\text{coeff}) \) - and the associated confidence intervals for each predictor in the model (if the null value 1 is included in the confidence interval the result is equivocal or there is no difference - should be either under or over)

* **df** - the degrees of freedom remaining after fitting the logistic model calculated as the number of observations minus the number of parameters

* **-2LogL** - (minus twice the log likelihood) these statistics can be used to test hypotheses about parameters in the model using what is called a likelihood ratio test

* **%0** - the percentage of zeros among the responses

* **#iter** - the number of steps or iterations in the model fitting procedure
2. *The best subsets of explanatory variables chosen from those included in the full model are obtained using the bireg procedure.*

The best and second best subsets of eight explanatory variables, using the default backward elimination selection method, were obtained. The output includes:

- #vars - the number of variables included in the model.
- RSS - the residual sum of squares for the fitted regression.

A reduction in the RSS is sought when selecting the best fitting model.

- $C_p$ - Mallow's $C_p$ defined as: $C_p = \frac{RSS_p}{s^2} - (n-2p)$

where $RSS_p/s^2$ is the residual sum of squares from a model containing $p$ parameters, $p$ is the number of parameters in the model and $s^2$ is the residual sum of squares from the model including all the variables under consideration. Adequate models are those for which $C_p$ approximates $p$ and/or $C_p$ is a minimum. Subsets with a small $C_p$ reflect precision (small variance) in estimating the true regression coefficients and little is to be gained with the addition of more variables. Values of $C_p$ close to $p$ indicate more bias. Models with $C_p$ larger than $p$ exhibit more bias.

- Prob - The probability given tests the null hypothesis that there is no difference between parameter vectors for the correct model and the current model. Thus, when $p > .05$ we conclude that the current model provides an acceptable fit.
Backward Elimination and 35 observations

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* selected as the best fitting models

3. The best fitting reduced models selected according to the above criteria are detailed.

lreg($b,y=1,noc=1,x=(73,74,77,79))

Logistic Regression Analysis
Response: GROUP
Column Name     Coeff  StErr p-value Odds 0.95 CI
----------------- ---------- --------- ---------- ---------- ---------- ----------
73 Physab       0.17  0.08      0.04  1.19  1.01  1.40
74 Physap       -0.06  0.05     0.22  0.94  0.86  1.03
77 Read         0.09  0.06     0.10  1.10  0.98  1.23
79 Gensch       -0.11  0.07    0.09  0.90  0.79  1.02

df:31          -2LogL:41.12 %0:0 #iter:9 RSq:

lreg($b,y=1,noc=1,x=(73,74,77,79,80))

Logistic Regression Analysis
Response: GROUP
Column Name     Coeff  StErr p-value Odds 0.95 CI
----------------- ---------- --------- ---------- ---------- ---------- ----------
73 Physab       0.19  0.09      0.03  1.21  1.02  1.44
74 Physap       -0.04  0.05     0.45  0.96  0.87  1.06
77 Read         0.10  0.06     0.10  1.10  0.98  1.23
79 Gensch       -0.08  0.07    0.28  0.93  0.81  1.06
80 Genseif      -0.07  0.07    0.30  0.93  0.81  1.07

df:30           -2LogL:39.99 %0:0 #iter:9 RSq:
4. **The Likelihood Ratio Test**

The Likelihood Ratio Test (LR) determines the most appropriate subset of predictors, in this particular instance, for the Gold Standard model. The LR statistic requires the identification of two models for comparison, one of which is a special case of the other. The set of parameters in the *full model* that are set equal to zero specify the null hypothesis being tested. Correspondingly, the degrees of freedom for the LR test are equal to the number of parameters in the larger model, represented as the *full model*, that must be set equal to zero to obtain the smaller model, represented as the *reduced model*. The -$2\text{LogL}$ for the full model is subtracted from the -$2\text{LogL}$ for the reduced model producing the LR statistic. This LR statistic approximates the chi-square distribution. The degrees of freedom for this chi-square test is equal to the difference between the numbers of parameters in the two models.
Appendix C

Research Related Forms

C.1 Permission to conduct research in N.S.W. Department of School Education Schools

Dear Ms Bajuk,

I refer to your request to conduct research in departmental schools involving self concept and anxiety in conduct disordered "middle school" children: discrepancy between self report and observer rating.

Approval has been given by the Director-General of School Education, Dr F G Sharpe, for you to approach Principals of the nominated schools.

In conducting research, you should be aware of the following requirements:

- the Principal must approve how the study is to be carried out, and approve each phase before it is undertaken;
- the Principal must approve the methods of gathering information in the school;
- the Principal has the right to withdraw the school from the study at any time;
- teachers have the right to withdraw from the study at any time;
- the privacy of the school and the students is to be protected.

You are reminded that the participation of teachers and students must be voluntary and must be at the school's convenience.

When your study is completed, you are asked to provide this Department with a report of your findings. Please forward your report to the Department marked "Attention: Director, Policy, Planning and Educational Audit".

Yours sincerely,

[Signature]

Director

Policy, Planning and Educational Audit
C.2 Letter to the school principal

Dear Principal,

Departmental permission to approach your school has been granted by the Research Applications Committee. I therefore request that you give your permission for students to participate in this study looking into the differences in self-concept and anxiety levels between children with behaviour problems and those who accept school discipline.

The study will look at two groups of students. Students who have been referred for, or are considered for, specialist support services because of behaviour disturbance will comprise the study group. The class teacher who refers such a student will be asked to select another student without significant behaviour problems from the same class for the comparison group.

Once parental permission for participation has been gained students selected will be asked to complete:

1. The Self Description Questionnaire.
2. The State-Trait Anxiety Inventory for Children.

Testing will take approximately 45 minutes for each student and will take place during school time and on the school premises. In addition, the class teacher will be asked to complete a Teacher Report Form for both students. In all, this should take approximately 45 minutes of the teacher's time.

I will arrange an interview with the primary caregiver of each child in order to complete an Achenbach Child Behaviour Checklist and to discuss the nature of the study.

With parental permission the information collected will be added to your counsellor's guidance records. The parent has the right to withhold permission in which case the test record forms will be destroyed.

As the Specialist Counsellor (ED/BD) I consider this to be a practical and therefore a valuable investigation. I hope you agree and choose to be involved in the investigation.

If you wish to have more details regarding this study please contact me at my base school, Fairfield High School, on ph. 727 2111.

Thanking you for your co-operation (in anticipation).
CRITERIA FOR MATCHING SUBJECTS

A sample of sixty primary school boys drawn from grades 4 and 5 will be selected to participate in the study. The subjects will be drawn from N.S.W. Department of School Education schools in the Metropolitan South West Region.

The sixty subjects will form two groups of thirty subjects each. Pairs of subjects will be drawn from established classes and strictly matched on all the following criteria:

1. **SCHOOL PERFORMANCE**: Teacher's ratings will form part of the adaptive functioning scale of the Teacher Report Form (Achenbach, 1988):
   - below average
   - at grade level
   - above average

2. **FAMILY TYPE**: General indication will only be requested as regards:
   - intact family - living with both natural parents
   - disrupted family - not living with both natural parents

3. **ETHNICITY**: The following broad geographical/cultural regions will be considered:
   - Australian Aboriginal or Torres Strait Islander
   - Oceania - Pacific Islander
   - Western European - English speaking and/or Western European
   - Eastern European - Former Communist Block
   - Southern European - Mediterranean Region
   - Middle Eastern - Arabic descent
   - Asian
   - Latin American - Central and South American

The treatment group will comprise subjects who are referred for behaviour disorder. Each teacher who refers a child will also be asked to nominate a child from his/her class for the comparison group.

The comparison group subject chosen will be a child perceived by the class teacher to display adaptive, age appropriate behaviour patterns in the school setting.

The comparison group subject must be matched with the referred child using all the matching criteria.
C.3 Parent permission letter and form

Dear Parent,

Your child has been selected to take part in a study looking at children's self confidence during the middle school years. As you know self confidence plays an important part in how children interact with others and how they learn. By studying children's self confidence at this age we may learn more about how children see themselves. This, of course, will help us to find more effective ways of helping children who do lack self confidence to become more confident and successful individuals.

I ask for your consent so that I can:

1. administer a questionnaire to your child at his/her school during school hours.
2. contact you to arrange a time, at your convenience, for a 45 min. interview to administer a questionnaire.

You may choose to have all questionnaires destroyed once the information has been collected. If you wish they can be given to the school counsellor for his/her confidential guidance files. The information I retain will be stored on computer disk with only numbers to identify the person.

You are welcome to contact me at my base school, Fairfield High School, on ph. 727 2111 if you would like to further discuss any particulars about the study.

I hope you will choose to take part and permit your child to take part in this valuable study.

Thanking you for your interest (in anticipation).

PLEASE RETURN TO SCHOOL

CHILD'S NAME: 
CHILD'S SCHOOL: 
PARENT AND/OR GUARDIAN'S NAME: 
HOME ADDRESS: 
PHONE: (home) 
(business)

I choose to take part and permit my child..........................to take part in Ms. Bajuk's self confidence study. I understand we have the right to withdraw from the study at any time and my decision will be accepted without question.

SIGNED:
SELF CONCEPT AND ANXIETY
IN BEHAVIOUR DISORDERED MIDDLE SCHOOL CHILDREN:
DISCREPANCY BETWEEN SELF REPORT
AND OBSERVER RATING

Kristine J. Bajuk

A thesis submitted to the
Faculty of Education,
in partial fulfilment for the Degree of Doctor of Philosophy

UNIVERSITY OF WESTERN SYDNEY, NEPEAN
1995
PLEASE NOTE

The greatest amount of care has been taken while scanning this thesis,

and the best possible result has been obtained.
CERTIFICATE OF ORIGINALITY

I certify hereby that the substance of this thesis has not already been submitted for any other degree and is not currently being submitted for any other degree.

I certify that any assistance received in the preparation of this thesis, together with all sources used, have been acknowledged in writing herein.
Acknowledgments

I would like to acknowledge the assistance, support and cooperation of a number of people who have made the completion of this thesis possible.

I am deeply indebted to Associate Professor J.D. Relich, the chairperson of the supervisory panel, for the guidance, assistance and encouragement he has provided throughout my candidature. His support and understanding have been very much appreciated.

In addition, I would like to thank: Ms. S. Richardson, as co-supervisor, for her support and encouragement; and Professor D. McNeil, of Macquarie University, with whom I consulted regarding the use of multiple logistic regression.

Special thanks are also extended to Ms. B. Bajuk, her computer expertise has been an invaluable resource; and to Mr. J. Bajuk for his assistance with the numerous literature searches conducted during the course of this work.

Finally, the staff, parents and students of the participating N.S.W. Department of School Education schools in the Metropolitan South West Region of Sydney deserve special recognition for their support and co-operation in the collecting of data.
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Abstract

This thesis examines the perceptions of interpersonal adequacy held by preadolescent behaviour disordered boys through comparisons with perceptions held of them by putative significant others and normative comparisons with their peers. The sample, selected according to behavioural status, comprised 70 boys drawn from 22 regular primary schools in south west Sydney, Australia. Thirty five boys, identified as behaviour disordered, were matched with boys whose behaviour was perceived to be appropriate in the school setting. Pairs of subjects were selected from the same class and were matched on academic performance, family structure and ethnic/cultural affiliation of the primary caregiver. Empirical verification of the research sample was achieved through statistical comparison with the Child Behaviour Checklist/4-18 and Teacher’s Report Form clinically referred and nonreferred samples. Subjects selected as behaviour disordered were thus confirmed as representative of this clinically referred population, while comparison subjects met the behavioural inclusion criteria. Behavioural reports provided by class teachers and primary caregivers clearly differentiated the groups according to their assigned behavioural status. Unequivocal group differences in state anxiety arousal suggest differential ego involvement in the disclosure of multidimensional self concepts. However, when potential environmental influences and personal background were controlled, no significant group differences were found in reported multidimensional self concept. Statistical comparison of the research sample with the Self Description Questionnaire-1 standardisation sample indicated that subjects’ multidimensional self concepts were commensurable with those reported for a normal population. Indeed, valid prediction of behaviour disorder from multidimensional self concepts, using multiple logistic regression procedures, was difficult. It was thus concluded that the multidimensional self concepts of behaviour disordered preadolescent boys were not low as suggested by the literature. An overview of the results would suggest that the influence of selected putative significant others on the multidimensional self concepts of preadolescent boys is not universal and varies according to behavioural classification.