Chapter 1

Introduction to the study

One of the distinctive and salient features of Australian society is its cultural pluralism. Ethnic and cultural diversity is an ever present influence on all aspects of Australian life, including education. As cultural diversity continues to impinge on Australian educational settings and educators strive to achieve the objectives of social access, is vital for educators to have an understanding of the processes by which different cultures guide, interpret, and support children’s development and the processes by which motivation and active learning of children can be enhanced in multicultural societies. Such an understanding enables educators to provide an education to children that is culturally meaningful and pedagogically current.

Currently, greater emphasis is being placed on educational philosophies that can bring analytical, evaluative and self-regulative approaches to learning. The curriculum models that emphasise active thinking, self-regulation, and problem-solving are presumed to have broad applications for teaching children in a variety of socio-cultural, economic, and political contexts as well as to equip children of the new millennium with a set of essential survival skills. Metacognition is the term that has been used to describe the processes of active, reflective, and self-regulatory thinking processes. Knowledge about one’s cognitive processes and control and regulation of cognitive processes are considered as the two important components of metacognition. Cognitive self-regulation encompassing such activities as planning,
Chapter 1: Introduction to the study

reflection, and evaluation is believed to be the precursor for successful problem-solving or learning. Metacognitive approaches to education are associated with positive academic outcomes, achievement motivation, and self-regulation in students. In view of the wider applications of metacognitive models for teaching and learning and in a range of educational contexts, it is important to understand the ontogenesis of metacognitive abilities in young children.

The existing body of literature on metacognitive development suggests that in order to understand the development of metacognitive abilities (or self-regulation), one must examine the social and cultural contexts in which young children's problem-solving activities are conducted (Attfield & Wood, 1996; Freund, 1990; Moss, 1990; Portes, Zady, & Smith, 1994; Rogoff, Mistry, Goncu, & Mosier, 1993; Wertsch, McNamee, McLane, & Budwig, 1980). Underpinning this view is Vygotsky's (1962, 1978) contention that development of self-regulatory abilities originates in cultural-historical processes and is transferred to individuals through social interaction.

Central to socio-cultural perspectives is the assumption that development of metacognitive abilities is shaped by socio-cultural processes and mediated through adult and peer guidance. There is ample evidence to indicate that dyadic interactions structured by adults and peers provide the form and content for the development of metacognitive abilities. While socio-cultural perspectives situate development in other guidance and enculturation processes, there has been little or no research directed towards investigating the nature of cultural specificity in adult or peer guidance of children's metacognitive development.

In this thesis, an attempt is made to elucidate the nature of cultural specificity in adult mediation of children's metacognitive learning as well as the values and goals associated with adult guidance of metacognitive and child development. In other words, it aims to indicate how primary caretakers of children, mothers, draw on their cultural traditions in guiding preschoolers' metacognitive learning in naturalistic environments. Such a research endeavour is critical for understanding the cultural contexts of metacognitive development in general, and of adult guidance in particular.
Further, investigations on cultural patterns of development and naturalistic interactions are invaluable for multicultural societies that educate children of diverse cultural and linguistic backgrounds.

In the light of above, this chapter gives an overview to the present investigation. The chapter begins with the review of current pedagogical approaches that underpin Australian early childhood educational practices and emphasises the need to adopt culturally appropriate approaches to early childhood education. The need for cross-cultural investigations on adult guidance of metacognitive development is also highlighted. The contents of various thesis chapters are further briefly introduced.

1.2 Cultural diversity in Australian early childhood settings: Need for cross-cultural studies of child development

Cultural and linguistic diversities are central features of the Australian early childhood settings and continue to impact its pedagogy and practices. The acknowledgment of cultural pluralism in Australian society has led to the evolution of multicultural policy in Australia. Implementation of multicultural policy in educational context means improved access to educational services to children of diverse backgrounds, acceptance of cultural and linguistic diversities of children, and incorporation of cultural and linguistic diversities in various aspects of service delivery to children and their parents. Cultural pluralism in educational settings therefore necessitate incorporation of educational programs with cultural epistemologies.

The current paradigms of mainstream Australian early childhood education have been extensively modelled by the notions of Developmentally Appropriate Practice (DAP), which emphasise the values of developmental and individual appropriateness (Fleer, 1995). The term DAP was coined by the National Association for the Education of Young Children (NAEYC) in the United States of America in 1987. Since then, various aspects of mainstream Australian early childhood education viz., curriculum development, instruction, and care-taking behaviours, policy development,
accreditation, have been largely shaped and influenced by the philosophy of DAP. Along with DAP philosophies, child centred (focus on individual and independent growth) and adult centred approaches (emphasis on adult control) are also impacting the mainstream Australian early childhood curricula and practices.

The applicability of the above pedagogical approaches, in particular, DAP philosophies rooted in Western theoretical doctrines for teaching children of diverse cultural backgrounds is questionable. Further, the theoretical views that emphasise developmental appropriateness are also likely to limit the scope of teachers for advancing children’s development (Fleer, 1995). According to Fleer (1995), the inapplicability of DAP practice which emphasise self-directedness and stage view of development in children thus suggest a need to adopt more social interaction and culturally appropriate approaches in Australian early childhood settings.

The need to consider the role of socio-cultural context in children’s development and learning has been emphasised by the NAEYC as well, which is illustrated in their recently revised position statement on DAP. To quote Bredekamp (1997), “decisions about how to care and educate children—decisions about developmentally appropriate practice—cannot be made without knowledge of that (cultural) context in relation to knowledge about child development and learning and knowledge of individual children” (p. 43). The current approaches to early childhood education, including DAP thus appear to recognise and acknowledge the need for programs that demonstrate understanding of and responsiveness to cultural diversity.

Social interaction approaches are postulated to be helpful in resolving the issues pertaining to education of children in diverse classrooms. The significance of social interactions for deriving common symbolic representations from children of diverse cultural backgrounds, for supporting children’s thinking, and for providing opportunities to advance children’s growth/skills has been emphasised. According to Berk and Winsler (1995), these approaches further facilitate joint participation between educators and children and make development ‘activity centred’ rather than ‘child or adult centred’.
According to the social interaction theory of Vygotsky (1962, 1978), all developments have their origins in interactions and participation in cultural routines and adult guided activities in cultural contexts are the catalysts for individual development. There is a large body of literature to document the position that human development is a socio-cultural phenomena (Heath, 1983, 1989; Siegal, Waters, & Dinwiddy, 1988, cited in Berk & Winsler, 1995). The importance of social or adult interaction for advancing children’s development has also been widely reported in the literature (Debaryshe, Buell, & Binder, 1996; Freund, 1990; Kontos, 1983; Rogoff, 1990).

Despite the existence of learner diversity in educational settings, many Australian educational institutions have remained basically unchanged and predominantly reflect the European cultural heritage (Jamrozik, Boland, & Urquhart, 1995). Western ethno theoretical assumptions provide the major influence on educational thought and practice, and most importantly, structure the teaching and learning interactions between teachers and ethnic minority learners. However, as indicated by Fleer (1995), Eurocentric educational approaches may have limited applicability for multicultural classrooms.

As the world moves into the new millennium and societies become more diverse with globalisation, implementation of multicultural perspectives in educational settings can not be challenged and debated any more. Gonzalez-Mena (1997) contends that educators can not afford to dishonour the diversity present in early childhood settings, disregard cultural variations, and in fact, allow the gap between home and school cultures to widen.

Cultural diversity has been generally perceived by educators in the frame of a deficit theory model where differences are viewed as deficits and inadequacies (Villegas, 1991). The interactions of early childhood educators with culturally diverse children, based on the constructions of differences as deficits may lead to problems of communication, motivation, and self-esteem in children. The research evidence available on ethnicity and classroom behaviours has also revealed that children of
ethnic minority groups receive fewer positive interactions from their educators (Dunkin & Doenau, 1991). In contrast to the models of deficit theory, there is evidence that relates ethnicity to academic achievements in children. For instance, it has been reported in the literature on mathematics achievement that children of Asian backgrounds perform well in mathematics as compared to children of Anglo backgrounds (Chen & Stevenson, 1995; Hess, Chich-mei, & McDevitt, 1987).

The available evidence on the educational attainments of children of diverse backgrounds raise fundamental questions as to why there are inequalities in children’s achievements and how pedagogical equity can be achieved in classrooms. Explanations on the differential mathematical achievements of children across nations, incorporating limited observations on metacognitive abilities, have highlighted the role of parental beliefs and support in children’s learning and development (Hess et al., 1987; Stevenson, Lee, & Stigler, 1986). According to Marjoribanks (1991, 1995a, 1995b), differences in learners’ achievements and learning environments are strongly associated with ethnicity. Although the role of biological factors in children’s development can not be denied, there are strong indications to argue that differences in learning or development across cultural groups are related more to cultural attitudes and beliefs of parents rather than individual abilities of children (Stevenson et al., 1986).

Amid the differences of opinion surrounding cultural differences vis-a-vis children’s development, one fact that remains obvious is that no single factor can adequately explain the differences in educational or developmental outcomes of children of diverse cultural backgrounds. Nevertheless, culture is used to explain a major part of differences in educational achievements of children across nations or cultures, based on the premise that development and education are socio-cultural activities and reflect the social and cultural values of the societies. Therefore, an examination of social and cultural contexts in which learning is embedded is critical for addressing the inequalities in school-related outcomes for children from diverse backgrounds.
Children absorb the values of their family and their culture from infancy and carry their cultural and social heritage to child care, preschool or school environments. Their school learning continues to be influenced by their language, attitudes, values, skills, and knowledge derived from home experiences (Partington & McCudden, 1992). The inter-play between socio-cultural processes and cognitive development and the influence of home/cultural environments on children’s learning have been highlighted (Saxe, 1991). A clear interaction between out-of-school and in-school learning has also been documented (Saxe, 1985).

Early childhood settings are the microcosms of dominant culture and they replicate the mainstream cultural procedures, norms, and cultural values. The choice and selection of pedagogical approaches of educators appear to be grounded in their cultural traditions and knowledge (McAlpine, Eriks-Brophy, Desjardins, & Crago, 1995). Nonetheless, it is important to note that along with teachers, learners too are equally swayed by their cultural goals and meanings, which in turn mediate their learning and impact on their learning processes (Broadfoot, 1996).

The home environment continues to exert a major influence on children even after they start school. The cultural background of children appears to influence their responses to educational interventions as well as the benefits they can derive from learning environments. According to Hess and Azuma (1991), even to adapt to mainstream cultural or learning environment support from home culture is necessary. A mismatch between home and school cultures and teaching styles may lead to learning difficulties, confusions over identity, lowered motivation and under academic achievement of children of ethnic minorities (Matthews, 1996).

Lack of cultural sensitivity of early childhood educators in addition, can affect the implementation of the education programs as well. Most importantly, it might result in a communication gap between parents and educators or conflicts over child rearing patterns and lowered parental participation (Gonzalez-Mena, 1997). Lack of considerations for cultural and religious practices of non-English speaking background communities has also been reported to have led to their under utilisation
of child care services in Sydney, Australia (Ethnic Child Care Development Unit reports, 1982, 1991). An understanding of cultural differences in child rearing practices is thus vital to address the conflicts that might arise on issues related to socialisation and enculturation of children (e.g., feeding and sleeping routines, play, education, gender and cultural identity) and delivery of services to parents of a non-English speaking background.

In the context of the changing nature and texture of early childhood settings into culturally diverse environments, educators need to be sensitive and knowledgable about cultural diversity and specifics of cultural traditions and attitudes that affect learning. For example, downcast eyes are a sign of respect in some cultures but not in others. Ramsey (1987) believes that when teachers lack a clear understanding about cultural behaviours and when one's behavioural responses do not match with the other person's cultural norms, misinterpretation of cues and eventually misunderstandings and communication gaps can occur. In order to impart education from the perspective of enhancing children's capabilities as well as creating a collaborative and reciprocal relationship between home and school, it is important that teachers and administrators understand and appreciate the cultural values associated with development and education of children from culturally diverse backgrounds.

As globalisation brings people of various cultures together, there is a growing realisation that one's own concepts and values related to child development or any other aspect of life can not be taken for granted (Lewis, 1996). The values, attitudes, expectations, and behaviours related to social issues, child development, and processes of family life of immigrant families continue to be influenced by their traditional/native cultural values (Storer, 1985). Further, differences between immigrant families' and mainstream early childhood educators views' on expectations of early childhood have been indicated. For instance, Ebbeck and Glover (1998) have reported in South Australia, that while Immigrant parents ranked preparation for school as an important goal of preschool education, mainstream early childhood educators viewed promotion of children's development as a valued goal of preschool education. Therefore, it is important for educators to understand and be sensitive
about other cultures and their educational practices/beliefs/philosophies to successfully manage the learning/teaching of children from diverse backgrounds.

Understanding that children come from different cultural backgrounds is the first step to valuing and capitalising on cultural diversity as a basis for learning (Elliott & Sanagavarapu, 1995). An understanding of the cultural background of the learners will further enable educators to foster closer connections between home and the early childhood settings, avoid cultural clashes with parents, manage temperamental and behaviour difficulties in children, avoid loss of cultural identity, and to promote children’s development to their fullest potential.

Educators of the twenty first century need both cultural sensitivity and cultural competency to effectively manage the cultural diversity existing in the Australian early childhood sector. A body of knowledge related to specific cultural aspects of educational processes and patterns of interaction will enable educators to become not only culturally sensitive but also culturally competent to manage the issues and matters of multicultural education.

In the context of marked differences in the educational outcomes of Asian and non-Asian students, researchers are attempting to understand the Asian cultural and home influences on child development and education (Chen & Stevenson, 1995; Fulgini, 1997). However, most of the research on Asian cultural influences on learning and academic achievement did not include Indian conceptions of child development and education. There has been little focus on Indian families’ beliefs about child development and education. Indian conceptions of child care and development need to be understood in the light of increased immigration of Indians to Australia. According to the 1996 census, 0.5% of the total Australian population (17,892,493) are of Indian origin and 0.3% of the Australian born population had both parents born in India. The population of Indian origin in Australia rose by 39.4% between the periods 1991 to 1996 (Census of Australia, 1996). Forty seven percent of the Indian population in Australia is in the age range of 0-14 years (Bureau of Immigration, Multicultural and Population Research Report, 1995).
As children from Indian cultural communities increasingly participate in Australian schools and early childhood centres, an understanding of child development goals and values of Indian immigrant families is essential to enhance and support learning and achievements of Indian children. Further, values and experiences associated with child development, guidance, and education need to be explored with several cultural/immigrant communities for a broader understanding of child development and education. With an intent of providing cross-cultural information on immigrant Indian and Anglo-Australian families’ views of child development and adult guidance and to test the generality in the pattern of adult guidance of metacognitive development, the present investigation has been undertaken. The chosen sample of immigrant Indian and Anglo-Australian families represent diversities with regard to family organisation and child rearing oriented towards individualism in Anglo-Australian (Schwartz & Bilsky, 1987, 1990) and collectivism in Indian cultures (Kakar, 1994; Luthar & Quinlan, 1993). The comparative study on Anglo-Australian and immigrant Indian mothers’ guidance of their children’s metacognitive development will therefore permit an exploration of the cultural bases of metacognitive guidance in their respective frames of individualism and collectivism.

1.3 The study and its methods: An overview

A substantial amount of research on metacognitive development of young children has indicated the importance of social/cultural contexts of development. An important finding from the research on metacognitive development has been that adults or capable others provide guidance to children and facilitate children’s attempts to internalise the expert forms of successful learning and problem-solving. The observations drawn from studies of adult guidance however, are limited to few cultures and overall, little is known about the cultural patterns of metacognitive guidance. Based on the socio-cultural theoretical perspectives of Vygotsky (1978), the present thesis hypothesised cultural specificity in metacognitive guidance and attempted to explore and expound the metacognitive teaching-learning environments
in Anglo-Australian and immigrant Indian (Telugu speaking) cultural communities in Western Sydney, Australia.

The thesis reports on the ways in which mothers in Anglo-Australian and immigrant Indian (Telugu) communities drew on their cultural traditions and beliefs to guide young children's metacognitive learning. An insight into the nature of home learning/teaching environments of preschool children in Anglo-Australian and immigrant Indian (Telugu) cultural groups that exist in Australian society was also provided.

By hypothesising cultural specificity in adult guidance, the thesis aims to investigate the variations in maternal guidance of preschoolers' metacognitive learning as function of the cultural group of mother and gender of the child. Interactional effects of culture and gender in maternal metacognitive guidance were also explored due to the interrelationship between culture and gender variables. Maternal metacognitive guidance was furthermore analysed for the presence of universality in metacognitive guidance across cultural and gender groups.

Specifically, the study sought to investigate Anglo-Australian and Immigrant Indian (Telugu) mothers' metacognitive guidance in their male and female children’s puzzle-solving. Considering the influential role of mothers on preschool children in both the societies, and as mothers occupy a central position in the lives of preschool children, mother-child interaction was considered as a representative of social/cultural context. Both the verbal and non-verbal forms of guidance and interaction were considered, as non-verbal behaviours also serve important strategic and communicative functions. The results were analysed using quantitative and qualitative approaches for the presence of universal and culture specific aspects of metacognitive guidance. The results of the study have revealed cultural universals and cultural specifics in Anglo-Australian and immigrant Indian (Telugu) family values and interactions related to child development in general, and metacognitive guidance of preschool children in particular. In contrast, the results on comparisons of mother-male and mother-female child dyads’ puzzle-solving indicated many similarities in maternal metacognitive
guidance of male and female children. The interaction between culture and gender was noted to be significant in many components of metacognitive guidance in mother-male child dyads' interactions, with Indian mothers' guidance favouring their sons.

1.4 Organisation of the thesis

The thesis is organised into eight chapters. Following the introduction in this chapter, Chapter 2 extends the discussion on socio-cultural aspects of metacognitive development and examines the research on metacognitive development of young children at a greater depth. The perspectives of the Vygotsky’s (1962, 1978) theory are concluded by emphasising the interrelatedness of individual and cultural development in the ontogenesis of higher mental abilities. Chapter 3 examines the processes of adult guidance in interactions. This chapter further describes at length, the nature of adult scaffolding and guidance and also provides a critical examination of related research. Insights into the consequences of adult guidance on children's development as well as the determinants of adult scaffolding are also provided.

Chapter 4 examines how adult guidance is embedded in cultural contexts and argues that there will be cultural specificity in adult mediation of metacognitive development. This chapter describes the theoretical and cross-cultural empirical bases on which cultural specificity in adult guidance of children's metacognitive development is proposed. In Chapter 5, an elaboration on the research questions used in the study is made in the light of the theoretical and empirical evidence on adult guidance and metacognitive development.

The methodological approaches and procedures employed for the analysis of cultural specificity, gender specificity, and interaction of culture and gender in maternal metacognitive guidance are presented in Chapter 6. This chapter also addresses a range of methodological issues pertaining to the cross-cultural investigations of mother-child interactions. In Chapter 7, results related to analysis of cultural comparisons, gender comparisons, and interplay of culture and gender in maternal metacognitive guidance are presented. The results are discussed and concluded in
Chapter 8 in the light of socio-cultural (Vygotsky, 1978) and activity theories (Leont'ev, 1959, 1979) and empirical literature on metacognitive/adult guidance. The thesis concludes in the same chapter, with a summary, implications, limitations of the study, and directions for future studies in the area of metacognitive guidance.

1.5 Summary

Dealing with cultural diversities of learners has become a central focus of the Australian early childhood education. Educators of the twenty first Century therefore, need to be both culturally sensitive and competent to deal with cultural diversities of children. Central to the management of instruction and learning in diverse classrooms is knowledge on socio-cultural interactions and cultural values associated with education and development. The need for early educators to adopt culturally appropriate programs and social interaction approaches has been indicated in this chapter. To be able to apply social interaction approaches in multicultural classrooms, educators need to be knowledgable on cultural patterns of adult guidance through which early childhood development is consolidated, in particular, on immigrant families’ cultural patterns of guidance in home settings.

This chapter has also signified the importance of metacognitive models of teaching which are perceived to symbolise progressive and contemporary pedagogical approaches with extensive applications for classrooms that represent diversities. The need for investigations on cultural patterns of children’s development, in particular, on adult guidance of metacognitive development was, revealed.

The present study was undertaken with an intent of providing an insight into the cultural patterns of metacognitive teaching-learning interactions in home environments through which metacognitive development is consolidated. The expectation is that more information on cultural patterns of development and interactions will assist educators to provide an education that acknowledges and incorporates the diversities of cultures.
Chapter 2

Developmental origins of self-regulation: Social interactions

"The entire history of the child's development shows us that, from the very first days of development, its adaptation to the environment is achieved by social means, through the people surrounding him. The road from object to child and from child to object lies through another person" (Vygotsky & Luria, 1994, p.116).

In the event of rapid social, cultural, economic, and technological changes occurring in societies around the world, Bondy's (1984) question of 'what children need to learn in order to be successful and productive in an unforeseen future' has important implications for schooling and curriculum reform. Metacognitive abilities have been identified as one of the most important components of the set of survival skills for children in the new millennium. Metacognition refers to an individual's knowledge about his or her cognitive competencies and the capacity to control and coordinate those abilities by planning, predicting, checking, and evaluating.
The notion of metacognition has frequently been linked to successful problem-solving and learning. The research on mathematical problem-solving has revealed that successful learning is contingent upon the metacognitive abilities of learners and that domain specific knowledge alone can not predict the success of learning (Gray, 1991). Metacognition has also been linked to various positive academic outcomes. Attempts made at analysing the theoretical and empirical aspects of learning, reading, remembering, and problem-solving have illuminated the role of metacognition for successful learning and problem-solving and its wider applications for classroom teaching and learning (Kulleseid, 1986; Resnick & Glaser, 1976).

Metacognitive approaches to learning have become a central focus of instruction in various educational settings and educators are now stressing that teaching students to be independent learners, who can plan, structure, and regulate their own learning activities should be a primary aim of any classroom teaching (Smagorinsky, 1991). Therefore, it is important that educators understand the nature of metacognitive development, particularly its developmental origins in early childhood years. Such an understanding will enable educators to create learning environments where children can be guided to develop and refine their metacognitive skills.

According to socio-cultural perspectives, all developments have their origins in social contexts. In this framework, it is interesting to explore how metacognitive development, a higher ordered psychological ability, is shaped by socio-cultural processes. Further, knowledge of the means or forms that make metacognitive learning a cultural or social experience will also be critical for planning the educational curricula.

In the light of above, this chapter reviews the literature on metacognitive development with the objectives of analysing the association between problem-solving and metacognition, exploring the socio-cultural origins of metacognitive development, and identifying the scope for further investigations in the area of metacognitive development.
2.2 Metacognition: Definitions

The term metacognition has been generally associated with the processes of cognitive reflection and is simply defined as "thinking about thinking" (Gray, 1991). Flavell (1976) was the first person to coin the term metacognition and has defined metacognition as "knowledge concerning one's own cognitive processes and products or anything related to them e.g., learning relevant properties information or data". Metacognition refers, among other things to the active monitoring and consequent regulation and orchestration of these processes (self-regulation) in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective (p.232). The two important components of metacognition in Flavell's definition are knowledge and self-regulation of cognitive processes.

The knowledge component of metacognition has been further subdivided into three categories of knowledge of person, task, and strategies and an interrelationship between these three components has also been proposed (Flavell, 1976). Cognitive self-regulation, the second component of metacognition has been recognised as necessary for successful problem-solving and involves the tasks of planning, monitoring the success or failure of actions, staying aware of goals, and coordinating the strategies to reach these goals (Baker & Brown, 1984; Brown, 1978). The self-regulation component has also been subdivided into two categories of control and regulation processes (Kluwe, 1987).

The constructs of knowledge and self-regulation components have been widely incorporated in later definitions of metacognition. For example, King's (1989) definition of metacognition as "an awareness of one's own cognitive processes and the self-regulation and the orchestration of those processes in relation to a learning task" (p. 367) is corresponding with Flavell's notions of knowledge and self-regulation. Similarly, Brown's (1978) categorisation of metacognitive processes in problem-solving into two general categories of activities that are concerned with i) conscious reflections of one's own cognitive abilities and activities and, ii) with self-regulatory mechanisms during an ongoing attempt to solve problems, also coincides with
Flavell's distinction of the two components of metacognition (e.g., cognitive awareness & regulation).

The distinction between the two components of metacognition apparent in many definitions, however, did not appear to be universal. For instance, in Clark's (1988) definition of metacognition as the executive controller of cognitive processes responsible for self-regulated learning and accomplishment, the emphasis is only on self-regulation processes.

The above definitions have indicated the proposition that peoples' cognisance about their cognitive capacities, limitations and strategies, as well as skills of control and execution of problem-solving or learning experiences are central to metacognitive processes.

The concept of metacognition has a long history going back to 1960s. According to Meichenbaum, Burland, Gruson, and Cameron (1985), "the notions of metacognition are reminiscent of Skinner's (1968) self-management behaviours and Miller, Galanter and Pribram's (1960) plans, Neisser's (1967) executive routines and Atkinson and Shiffrin's (1968) control processes that organise and control the operations of what may be thought of as the more basic on-line learning and memory processes" (p. 5). It is also viewed as a skill by which a learner can manage his or her own thinking behaviour.

Metacognitive processes are reflected usually in learning and problem-solving experiences, either in children's independent attempts or in adult-child collaborative situations, that involve conscious control of cognitions. The terms metamemory, metacomprehension, and metaattention have been used to describe the processes of metacognition in recall, reading, and attention regulation contexts and analogously to the concept of metacognition. Language indicative of metacognitive processes in learning or problem-solving situations, often includes verbs like think, mean, decide, understand, remember, forget, know, and guess (Elliott, 1990). Metacognitive experiences may occur in all situations that invoke careful and highly conscious
Chapter 2: Metacognitive development: Social interactions

thinking (Flavell, 1979). These situations require planning before and evaluation after the task. According to Brown and Barclay (1976), metacognitive experiences are thus precursors to problem-solving.

The various definitions of metacognition as well as its classification into sub-components have led to a greater debate on issues pertaining to: what is ‘meta’ and what is ‘cognitive’; distinction between the two forms of competence: knowledge about cognition and control of cognition as well as their relationship (Schraw, 1994). Despite the existence of controversies surrounding the distinction between the two components of metacognition, interest in metacognitive field has been ever growing due to the basic tenet that metacognition lies at the roots of the learning processes (Brown, 1987).

2.3 Research on metacognition: An overview

Metacognition has been identified as an element necessary for successful learning and problem-solving. Research has associated metacognitive activities such as goal setting, reflection, and evaluation with increased use of problem-solving heuristics and higher level responses to problems (Artzt & Armour-Thomas, 1992).

In fact, metacognitive skills have been recognised as important not only in general problem-solving, but also in many other academic domains such as reading, writing, and mathematical problem-solving (Lee, 1990; Mueller, 1997). Educators and developmental psychologists have begun to look at the role of metacognition in various academic domains and have indicated that the processes of conscious observation, evaluation, and making adjustments to on-line thinking behaviours are vital to successful learning. According to Ruddell (1991), the presence of metacognitive processes in greater depths will lead to higher levels of academic success.

Metacognitive abilities have often been correlated with classroom learning. Individual differences in children's performances and achievements have been
explained using the concept of metacognition and are postulated to arise as a factor of variations in metacognitive abilities in children. For example, Marfo and Ryan (1990) have indicated that differences in reading abilities are attributable to variations in children's use of metacognitive strategies as well as their awareness about metacognitive processes. A significant correlation between strategy use, metacognitive knowledge and recall performance has also been indicated in their work. Similarly, Gayoux (1991) has indicated that expert functioning on tasks was associated with metacognitive skills. In other studies, Montague (1991) and Moss (1990) have also shown that superior performance of gifted and average children compared to non-gifted and delayed students' performance was related to their metacognitive abilities. Poor performance of children on the other hand, has been associated with limited or poor metacognitive skills. Taken together, the above studies appear to suggest a strong relationship between cognitive achievements and metacognitive abilities, which again sparks the fundamental question on the separability between cognition and metacognition.

Individual differences in mathematical achievements of children across nations have also been correlated with metacognitive skills. Differences in mathematical and metacognitive skills of American and Japanese children have been reported in some studies (Karjala, 1993; Mayer, Tajika, & Stanley, 1991). In the same way, differences have been noticed between German and American children's metacognitive abilities/strategies, with German children displaying more strategic abilities than American children (Carr, Kurtz, Schneider, Turner, & Borkowski, 1989; Schneider, Borkowski, Kurtz & Kerwin, 1986). In a study that extended the comparison beyond the US to an Australian context, variations in use of strategies of Australian, native Japanese, and overseas Japanese students in Australia have also been revealed. In this case, Japanese students used memorising strategies significantly more than did Australian students (Purdie, 1995).

Along with cultural variations in children's metacognitive abilities, variations in metacognitive abilities and strategies of boys and girls have been documented. For example, studies on first graders' mathematics strategy use of boys and girls have
revealed differences in their metacognitive abilities (e.g., Carr & Jessup, 1994). Girls were noticed to adopt overt strategies (e.g., counting on fingers) in mathematical problem-solving more than boys. By contrast, boys were reported to use retrieval strategies (counting in the head) in the same learning contexts (Carr & Jessup, 1994, 1997; Carr, Jessup, & Fuller, 1995). The variations in mathematical strategy use of boys and girls are related to their metacognitive abilities, attributional beliefs, and social rationales of strategy use (Carr & Jessup, 1994). Further, the strategy use and preferences of boys and girls have been found to be impacted by their perceived parental beliefs, with boys in particular, being affected by the perceptions that parents value those strategies that denote ability (Carr, Jessup, & Fuller, 1995).

The need to understand parental perceptions and socio-cultural environments for identifying the precursors of cultural or gender differences in mathematical/metacognitive abilities have been indicated in some studies (Kurtz, Schneider, Carr, Borkowski, & Rellinger, 1990; Purdie, 1995; Wang, 1993). There is some evidence from the literature on mathematics achievement of Asian and non-Asian children to support the view that cultural differences in mathematical achievements are related to variations in parental support, perceptions, and values associated with mathematics learning (Chen & Stevenson, 1995; Fulgini, 1997; Miller, 1994). The relationship envisaged between metacognitive abilities and parental or environmental factors indicates the need to explore the socio-cultural contexts in which metacognitive development originates. The proposition of socio-cultural bases of metacognitive development further implies that metacognitive abilities can be acquired and that metacognitive ability is not a trait unlike intelligence.

There is ample evidence to support the view that metacognition is a learned behaviour. Researchers have demonstrated increase in metacognitive abilities of children through training and instruction. Instructional implications of metacognition have been a major theme in many investigations. Metacognitive approaches to teaching have been found to enhance students' abilities to learn to reflect, develop awareness, and self-monitor (Cardelle-Elawar, 1992). Moreover, metacognitive methods of teaching have been shown to be more effective than the traditional methods of
teaching (Glaubman, Glaubman, & Ofir, 1997). Increased use of problem-solving heuristics and higher level responses to problems have also been associated with the skills of planning and monitoring (Artzt & Armour-Thomas, 1992). Further, it has been shown that metacognitive instruction not only leads to achievement but also to a shift towards positive changes in attitudes to learning and increased motivation levels in students (Vojnovich, 1997; Zimmerman, 1994).

The importance of metacognitive instruction, particularly for novice’s learning has also been indicated. Developments in narrative competence of novice writers of secondary school years have been found to be facilitated by computer based metacognitive guidance (Elliott, 1992). However, this does not mean that experts do not benefit from metacognitive modes of instruction. Rather, metacognitive forms of teaching have been found to be helpful, even for experts in refining their existing competencies in constructing narrative text (Elliott, 1992).

The teaching implications of self-regulatory strategies for children with learning difficulties have been clearly documented (Elliott & Hall, 1997), with a number of investigations indicating that a metalevel form of instruction is related to improvements in abilities of children with additional needs (Fairchild, 1996; Montague, 1997; Nolan, 1991). Thus, metacognition has a potential to improve the cognitive abilities of individuals, increase the other concomitant affective variables such as motivation, and to develop positive attitudes to learning.

The investigations on metacognition have been based on a number of theoretical assumptions. For example, schema theory was invoked widely in metacognitive research on reading. The research on problem-solving in contexts of home and school, parent-child, and child-child cognitive interactions has been predominated by Vygotskian theoretical concepts of social interaction (Paris, Newman, & Jacobs, 1985; Moss, 1990).

An important line of investigations on metacognition has focussed on the developmental origins of metacognition (Paris et al., 1985; Moss, 1990, Wertsch et
al., 1980). Many studies in this direction have illustrated the importance of adult-child interactions for enhancing the metacognitive abilities of children. However, most of the studies on adult guidance have been based on middle class and mono-cultural groups. The importance of understanding the cultural patterns of metacognitive development has been highlighted by many researchers (Mullis & Mullis, 1986; Rogoff, 1990; Wang, 1993). Studies addressing the socio-economic and cultural aspects of adult guidance of metacognitive development are lacking or limited in the literature on metacognitive development, thus indicating a need for cross-cultural investigations on adult guidance of metacognitive development.

In summary, the above review has underlined the importance of metacognition for successful learning, problem-solving, and motivation. A considerable amount of literature on metacognition has taken into account instructional implications as a major issue. Additionally, emphasis has also been laid on protocols that compared the metacognitive abilities of children with and without learning difficulties and novice and expert learners. The literature on metacognition also indicated how this concept has been extended to improve the performance of children with additional needs. Recent interests have been focussed on understanding the developmental aspects of metacognition within Vygotskian perspectives. There is little/no evidence of cross-cultural observations on adult guidance of metacognitive development and socio-cultural patterns of metacognitive development.

In terms of the implications of metacognition for teaching and learning, it is vital to understand the nature of its development and more so, its developmental origins in young children and in various social and cultural contexts. Such an endeavour will enable the educators to promote self-regulation and optimal development in learners right from their foundation years as well as to understand the origins of individual differences in metacognitive skills of children. In the following section, the literature related to the developmental origins of self-regulation is reviewed in the frame of problem-solving activity.
2.4 Self-regulation: The heart of problem-solving

Problem-solving is an important skill for all individuals. People are always confronted with problems of different kinds at various moments in their lives, varying from context to context. Preparation in such circumstances will enable individuals to tackle new situations, new problems, and in turn lead to learning of new skills. Early training in problem-solving skills in children would certainly go a long way in shaping their adult life.

Metacognitive abilities have been postulated to prepare individuals to adapt easily to the changes and challenges posed by unfamiliar and difficult problem-solving situations. Further, metacognitive approaches to problem-solving have also been associated with increased mental flexibility and autonomy in individuals as well as increased interest of people to attempt more challenging problems (Ganz & Ganz, 1990). Metacognitive abilities of self-regulation and self-control are thus critical to successful problem-solving. To say in the words of Bondy (1984), “such skills promote the independence and discipline needed for lifelong learning and self-renewal” (p.235).

Metacognition in problem-solving relates to awareness of one's cognitive processes and the procedures used to implement those cognitive processes for arriving at the solution. The various processes of planning, monitoring, prediction, and evaluation have been identified as the necessary components of metacognition in problem-solving. The relationship between metacognition and problem-solving has become the focus of attention of many researchers. The role and importance of metacognition for successful problem-solving has been affirmed in several investigations (Lee, 1990; Mevarech, 1995; Volet, 1991). The importance of metacognition for successful problem-solving therefore necessitates the need to explore the forms of metacognitive processes vis-a-vis problem-solving.
Problem-solving behaviours of human beings have been studied with great interest throughout the history of scientific psychology, in particular, by the experimental psychologists. Problem-solving has been defined in various ways using various theoretical constructs. In spite of the diversity in theoretical propositions and definitions, according to Resnick and Glaser (1976), the universally accepted definition that psychologists could agree on is the one "that refers to a situation in which an individual is called upon to perform a task not previously encountered and for which externally provided instructions do not specify completely the mode of solution" (p. 209). This definition implies that a problem situation is one where individuals are required to devise strategies from available cognitive processes for inventing a solution.

The other important definition by Wertheimer (1959), states problem-solving as "a discovery does not merely mean that a result is reached which was not known before... but rather that a situation is grasped in a new and deeper fashion... these changes of the situation as a whole imply changes in the structural meaning of part items, changes in their place, role, and function which often lead to important consequences" (cited in Resnick & Glaser, 1976, p.169-170).

Under the rubric of an information processing model, problem-solving has been viewed as a process of encoding a problem, comprising actions such as: problem detection, feature scanning, and goal analysis, which are, later regarded as components of metacognition (Resnick & Glaser, 1976).

Problem-solving in different contexts means different things. For example, a mathematical problem-solving in an academic context will be different from a memory problem in a daily living situation. The different contexts in which problems are encountered may lead to different motives, goals, and outcomes. However, one thing that is obvious, is the fact that successful completion of any task in any context would require metacognitive processes of conscious planning, monitoring, and evaluation.
Polya (1957) has highlighted the role of planning, self-monitoring, and reflection for successful mathematical problem-solving, which have been later termed as components of metacognition (cited in Gray, 1991). Along with factual and procedural knowledge, metacognitive knowledge and regulatory abilities have also been identified by educators as essential for successful problem-solving. The investigations on developmental origins of problem-solving skills of children have illuminated the importance of metacognitive abilities for successful problem-solving as well as the emergence of metacognitive abilities in the course of development of problem-solving abilities in children.

2.5 Developmental changes in problem-solving: Emergence of metacognitive abilities

Understanding the developmental transitions in problem-solving abilities of children has become a topic of investigation for developmental and educational psychologists. A number of investigations have revealed significant differences in problem-solving approaches and performances of young and older children (Li & Shallcross, 1992; Vezin, 1990). With increasing maturity and age, children have been found to move from less to more systematic strategies and holistic, intuitive, and similarity based approaches to analytic, rational, and dimensional approaches. To a large extent, the research on problem-solving has depicted young children as poor performers on a number of tasks in comparison with older children.

Systematic attempts at finding the nature and characteristics of problem-solving behaviours of young and older children, as well as the factors to which the performance differences are attributable, have been limited for a long time. According to Brown and DeLoache (1978), explanations of young children’s poor performance have involved a repetitive argument “that little people have little problem-solving capacity, and with age, problem-solving capacities increase” (p.4). However, few attempts have been made to explain the deficits in problem-solving performances in terms of the limitations in the information processing system of young children.
Flavell (1976) has attempted to explain the differences between young and mature memorisers using the notions of mediational theories of learning such as production and mediational deficiencies. While a production deficiency has been thought to occur due to an inability to produce a task suitable mnemonic, a mediational deficiency has been believed to occur when mnemonic fails to enhance the performance. Brown and DeLoache (1978), on the other hand, have attributed superior problem-solving abilities of children to self-conscious participation and intelligent self-regulation.

The development of problem-solving abilities in children has been ascribed largely to the development of self-regulatory skills. It has been argued that with maturity, children acquire self-regulatory skills at varying rates and degrees of competency, which are the foundation for learning, thinking, and problem-solving (Brown, 1987; Flavell, 1976). Interest in metacognitive aspects of problem-solving has expanded since 1970s and a vast majority of literature today, asserts the role of self-regulation for successful problem-solving.

The term self-regulation has been defined in several ways. Butterfield and Belmont (1977) have defined it “as a process of change in control processes or sequence of control processes in response to an objective change in information processing of the task” (p.284, cited in Borkowski, 1992). By defining self-regulation in the frame of executive controller mechanisms, Borkowski (1992) has indicated that the ability to employ appropriate cognitive strategies in problem-solving is an act of self-regulation. According to Borkowski (1992), if strategy A is used with task X, and if task Y is then introduced, the subject is said to employ executive functioning if strategy B replaces A. Or if strategy A on task X is found to be ineffective and hence is replaced by strategy B in the course of problem-solving, the substitution becomes an instance of self-regulation” (p. 256). Thus, the essential components of self-regulation are knowledge of strategies and the ability to employ effective strategies.

The construct of self-regulation has been synonymously used with various terms such as self-control, self-direction, voluntary action, self-discipline, and self-guidance
(Purdie, 1995). The elements of self-initiation of action and self-choice have also been believed to be implied in the processes of self-regulation. Active participation of learners in their learning has been indicated as central to the processes of self-regulation. According to Zimmerman (1994), “students can be described as self-regulated learners to the degree that they are metacognitively, motivationally, and behaviourally active participants in their own learning processes” (p.329).

Borkowski (1992) has postulated that self-regulation serves many purposes and its operations are spread along the different stages of a task. He has also added that the acquisition of self-regulatory skills is a complex process and that “the function of self-regulation initially, is to analyse and ‘size up’ tasks in order to select an approach to problem-solving (through the choice of a viable strategy). Later, during the course of solving, the job of self-regulation is to monitor the course of solving and, perhaps to adjust or revise the strategy” (p.253). The need for employment of self-regulatory strategies in the entire course of problem-solving has thus been indicated.

It has been generally proposed in the literature on problem-solving that the task functions of novices are devoid of intelligent self-regulation. The expert functioning on the other hand, has been highly related to metacognitive or self-regulatory development (Gayoux, 1991). The differences between experts and novices have centred around their metacognitive functioning in most of the research on cognitive psychology. Significant qualitative differences have been reported in the metacognitive skills of experts and novices. For instance, Keskinen and Salmela (1993) have revealed higher level of automatisation and planning strategies in experts compared with novices. Experts have also been reported to spend more time on analysing the problem and attempting to improve their performance through constant reflections than novices (Stinespring, 1991).

Notwithstanding the above proposition, Brown and DeLoache (1978), have argued that everyone is a novice to a certain extent when one encounters a novel problem. However, compared to experts, novices may not be aware of their capacities or may even fail to use the techniques which they already have in their cognitive repertoire.
The failure of novices to refer to their strategic knowledge bases, according to Chi (1977, cited in Brown & DeLoache, 1978) occurs more due to inexperience on the new task and is not necessarily related to age. With experience, it is assumed that novices become familiar with the necessary rules and sub processes and can employ an array of self-regulatory techniques. Finally, as experts, their performance would run smoothly as a result of automaticity. Experience on the task seems to be vital in transforming a novice task/metacognitive functioning into an expert task/metacognitive functioning.

Supporting the proposition that metacognitive deficits are not necessarily related to age, Flavell and Wellman (1977) have indicated that task familiarity and experience on task are some of the important factors that influence the metacognitive performance of children. Further, they have mentioned that although novices and young children can not employ metacognitive activities in their initial attempts to solve problems, this does not mean that they lack self-regulatory abilities.

Along with novices, young children have been characterised to have limited metacognitive abilities and lack the abilities to apply or transfer available metacognitive skills immediately on to new problems. Vezin (1990) has indicated variations in younger and older children's metacognitive abilities, with eight-year-olds demonstrating more metacognitive strategies for expressing information, reasoning skills, and a higher level of understanding and recall compared to the six-year-olds. Lack of awareness about the usefulness of metacognitive operations has been viewed as contributing to limited metacognitive functioning of young children (Brown & DeLoache, 1978). Developments in awareness about the metacognitive processes, metacognitive repertoire and refinements in metacognitive skills have thus been associated with age. The common view that older children have more metacognitive abilities compared to young children also suggests a developmental continuum in the emergence of self-regulatory competence rather than deficit explanations in the differing competencies.
Opposing the traditional deficit characterisation of self-regulatory abilities of young children, Hoard and Clark (1992) have indicated that even preschoolers can exhibit self-regulatory behaviours of subvocalisations, task-relevant processing verbalisations, questioning, and self-correction of performances. Preschool children have also been reported to have clear knowledge as well as some conceptions about their cognitive processes (Weinberger & Bushnell, 1994). Woody-Ramsey and Miller (1988) have moreover shown that preschoolers are capable of using selective strategies when the task is made meaningful through supportive cognitive context. These data, nevertheless, suggest the need for supportive contexts for young children.

Age and experience on the task have been extensively associated with superior task performance. Although age is an important factor in children’s problem solving performance, even young children can show the same progression of naivety to competence but within simpler task domains (Chi, 1977, cited in Brown & DeLoache, 1978). Children are universal novices and they build up the knowledge and confidence required to operate as experts through experience (Bransford, Nitsch, & Franks, 1977, cited in Brown & DeLoache, 1978). Yet there are little developmental data to suggest the representative features of self-regulatory growth of problem-solving in young children.

In addition to the role of experience and age in predicting the task or metacognitive functioning, the effects of cultural and linguistic backgrounds on problem-solving have been emphasised. It has been generally argued that linguistic variations have consequences for perception and attention, and therefore for peoples’ problem-solving (Li & Shallcross, 1992). Along these lines, Miller (1994) has indicated a significant relationship between mathematical problem-solving and language specific systems of problem-solvers. Similarly, Li and Shallcross (1992) have demonstrated the impact of cultural values on problem-solving approaches of children. In their study, they have found that the pace of problem solving in children varies as a factor of the cultural values of children, with Chinese children adopting a reflective approach consistent with their cultural value of ‘thinking several times’ as opposed to American children’s ‘trial and error approaches’.
There is other evidence to indicate that the developmental sequences of children's mathematical problem-solving across cultures are tied to the differences in languages, cultural values, and methods of problem-solving. For example, Fuson and Perry (1993) have shown cultural variations in the developmental sequence of addition solution procedures of Spanish-American and American children of first, second, and third-grades as well in the functions and potential of addition solutions employed by these children. In another study, Miller (1994) has also indicated that the differences in mathematical competence between American and Chinese school children are tied to the structure of number-naming systems in their home language. Taken together, these data highlight the cultural bases of problem-solving abilities or approaches.

From the above discussion, it was apparent that the development of strategic and metacognitive skills is analogous to the developmental changes in problem-solving skills. Examination of emergence of strategic action on selected tasks from infancy to maturity has indicated that metacognitive development progresses with age (Brown & DeLoache, 1978) and is associated with experience on a range of tasks. The self-regulatory skills identified for successful problem-solving include predicting the consequences of an action or event, checking the results of one's own actions, monitoring one's ongoing activity, reality testing, and a variety of other behaviours for coordinating and controlling deliberate attempts to learn and solve problems (Brown, 1978). To reiterate the importance of self-regulatory abilities for problem-solving, it is worth mentioning the remarks of Brown and DeLoache (1978) that "these skills are the basic characteristics of efficient thought, and one of their most important properties is that they are trans-situational. They apply to the whole range of problem-solving activities, from artificially structured to real world, everyday life situations. A growing child has to learn these various skills, but perhaps of equal importance, he or she has to learn that they are almost universally applicable" (p.15).

The development of cognitive self-regulation during problem-solving activities has been considered as an important aspect of cognitive growth and change. Understanding of development of one's own and others' cognition is considered instrumental both in cognitive performances and in a further understanding of the
social world of self and others (Wellman, 1985). Interest in describing the
development of self-regulatory abilities of young children has expanded in recent
years. Along with the descriptions on changes from naivete to expertise, researchers
have believed that it is equally important to understand the conditions in which
metacognitive development emerge, in particular, the mechanisms beneath the
developmental progression.

According to Wellman (1985), the developmental acquisition of metacognitive
abilities can be explained using mechanisms and origins. While the frameworks of
mechanisms have been applied to examine the external experiences and internal
processes of acquisition, the perspectives of origins on the other hand, have been
utilised to explain the emerging abilities and precursors of metacognitive
development.

Various attempts aimed at delineating the origins of metacognition have indicated that
the acquisition of metacognition is a complex process and encompasses various
cognitive components, concepts, and insights drawn from both external or universal
experiences and internal or individual constructions. Wellman (1985) has suggested
that it may be apt to use the term “Theory of Mind” to refer to a person’s
metacognition, which is believed to be a derivative of both universal and individual
conceptions of cognition.

The initial attempts at understanding the origins of metacognition have been focused
on preschool children’s conceptions of cognitions. It has been indicated by Wellman
(1985) that children begin to identify diverse cognitive processes and can differentiate
between their and others’ cognitive processes as early as in their preschool years.
Knowledge of preschoolers’ conceptions of cognition has illuminated the need for
understanding various issues and perspectives that account for the acquisition of these
abilities. Due to the significance of preschool years for metacognitive abilities,
developmental acquisition of young children’s metacognitive or self-regulatory
abilities has become a significant and a central topic of investigation.
Most of the early research on metacognition (or strategic and self-regulatory processes) has been limited to examining children's abilities on individual tasks or their task performances. Wertsch (1985) has indicated that it is equally important to understand how strategic processes can be carried out by social groups and in collaboration for at least two reasons. Firstly, in everyday contexts, the problem-solving abilities are generally distributed among social members and individuals do not work in isolation. In addition to this, due to the limitations in applying the findings drawn from individual task performance to social situations, it is necessary to undertake investigations in social or collaborative contexts. Wertsch (1985) has further stated that group’s problem-solving is not a total of individuals’ added psychological processes.

Secondly, and of significance to the present investigation, Wertsch’s proposition that the most important way to understand the strategic functioning of an individual is to trace this functioning back to its origins in social interaction. He suggested that in the ontogenesis of metacognitive abilities, adults first model to their children the problem-solving heuristics and processes through their dialogic speaking and reasoning processes in interaction; these are later internalised by children.

Wertsch’s (1985) view of the social origins of metacognitive development is congruent with Vygotsky's (1978) cultural-historical theory of the genesis of higher mental functions which claims that all higher psychological functions develop in social interactions. Vygotsky’s (1978) socio-cultural theory provides a framework to understand the ontogenesis of metacognitive skills in children. In the following section, important concepts in Vygotsky's theory of development are briefly discussed.

## 2.6 Self-regulatory development: Social interactions

Development of self-regulation has been indicated as one of the important concepts in Vygotskian theory. According to Rohrkemper (1989, cited in Braten, 1991), the basic tenet of self-control has been inspired by Marx, who defined consciousness as an
active constructor of experience, that also organises and controls an individual’s behaviour. Braten (1991) believes that Vygotsky tried to operationalise the principle of conscious control in his analysis of self-regulatory development. Tracing the historical roots of metacognition, Brown (1987) has also suggested that one of the roots of metacognition is linked to Vygotskian (1962, 1978) perspectives of self-regulation and conscious control of cognition.

In the ontogenesis of self-regulatory development and the maintenance of psychological functions, Vygotsky has emphasised the role of language/speech. According to Vygotsky (1978), all psychological tools are internally oriented and speech helps individuals to “acquire the capacity to be both the subjects and objects of their own behaviour” (p. 26). Further, he has mentioned that speech is central in not only reconstructing the forms of cognitive processes such as attention, memory, and problem-solving into speech mediated higher forms, but also in integrating many cognitive capacities of the individual.

Overall, speech is postulated to play a major role in the development of self-regulative processes in Vygotsky’s theory, by enabling children to carry several functions and actions and by helping them to be less impulsive and more reflective in their actions. Speech has also been viewed as representing a developmental path, akin to the development of self-control, as well as corresponding with it. In this line, the inner speech stage is believed to precede the external speech stage. In terms of its psychological functioning, speech has been viewed as inner speech. But in the context of the forms of expression, it has been termed as external speech. According to Vygotsky and Luria (1994), egocentric or inner speech serves the function of primitive speech thinking or thinking aloud.

Vygotsky (1978) has highlighted the importance of inner speech in the development of planning and regulatory abilities. Observations of Levina (1982, cited in Braten, 1991) have supported the view that egocentric speech does serve the purposes of “gnostic” function before planning. Based on their observations, Vygotsky and Luria (1994), have revealed that “the child solves a practical task with the help of not only
eyes and hands, but also speech” (p.109). Inner speech has been held to be vital in difficult task situations. The co-efficient of egocentric speech has been noted to double during difficult situations compared with normal problem-solving situations (Vygotsky & Luria, 1994). Inner speech is seen as serving the function of regulation, and eventually internalising words into thought. The role of speech in the development of self-regulatory abilities is thus highlighted by its cognitive regulation and reflection functions.

The cultural bases of development is another important notion in Vygotskian theory of development. According to Vygotsky (1978), any function in the child’s cultural development appears on two planes; first on the social plane and then on the psychological plane. While elucidating the origins of higher psychological functions, Vygotsky (1978) has made a fundamental distinction between the natural and cultural development of the child. The natural line of development is seen as the product of growth and maturation and cultural development on the other hand, is perceived to be the result of socio-cultural interactions that comprise experiences with cultural tools and technologies, mastering of habits and forms of cultural behaviour, and cultural modes of thinking. The position taken by Vygotsky has been clearly summated by Luria (1994) who states that

“no development - that of the child included - in the condition of modern civilised society can be reduced merely to the development of natural inborn processes and the morphological changes conditioned by the same; it includes, moreover, that social change of civilised forms and methods which help the child in adapting itself to the conditions of the surrounding civilised community” (p.46).

Vygotsky (1978) has emphasised that development is a complex process, involving qualitative changes and has its roots in history or culture. This equally applies to many psychological or mental functions, suggesting that development of self-regulation is a socio-cultural process. An important question that arises from socio-
The cultural proposition of development is - what are the mechanisms that make self-regulation a cultural-historical process?

According to social perspectives of Vygotsky, it is the sign system of human language, the torch bearer of culture, that makes the development a cultural or historical process. Cole and Scribner (1978) have further suggested that as a tool of thought existing outside the individual, language is “created by society over the course of human history and changes with the form of society and the level of its cultural development” (p.7, cited in Braten, 1991).

The sign system of language has been seen as a means by which individual activity and individual consciousness are transformed into a social plane of development (Braten, 1991). The cultural development of child has been believed to be embedded in the use of signs as means of accomplishing psychological tasks. Development has been believed to be mediated through the social relations between people and sign is the means by which the process of mediation can be achieved. Inter-personal communication is seen as a central mechanism in the transference of development from social to individual plane and achievement of conscious control over one’s own cognitive processes. Because social interactions underlie the individual development, development is essentially a socio-cultural process.

Human language is considered as a mediator in the transition of development from social to individual plane. Through social interaction, children internalise thinking processes and the means and solutions modelled to them by adults and other capable members. The changes in the planes of functioning are also reflected in the use of language by children. For example, Vygotsky (1978) has indicated that the developmental transition from communication with others to self-regulation, reflects social or interpersonal and self-regulatory or intrapersonal levels of functioning. The transition from interpersonal to intrapersonal communication is thought to reflect in the planning function of egocentric speech as well (Braten, 1991). According to Vygotsky (1978), when children are unable to perform a cognitive task and make verbal requests to another person during those situations, such requests indicate the
beginnings of development of self-regulatory verbal planning. Through experience, children will be able to explain to others at a later stage, as to what they intend to do before embarking on accomplishing the tasks. According to Levina (1982, cited in Braten, 1991), planning-for-others therefore, precedes planning-for-oneself.

The significance of education and child rearing for internalising the historically based abilities has also been outlined in Vygotsky’s theory. For Vygotsky, the difference between assisted performance and unassisted performance indicates the fundamental nexus of development, which he termed the “zone of proximal development” (ZPD). The concept of ZPD is defined by Vygotsky (1978), as the distance between the actual level of development (what the child can do) and the potential level of development (what the child is capable of in collaboration with more capable persons). This definition refers to those cognitive capacities and functions that are in the process of maturation. To say in the words of Vygotsky, “these functions could be termed the ‘buds’ or ‘flowers’ of development rather than ‘fruits of development’” (p.86). The importance associated with teaching and instruction in advancing children’s development is thus inherent in Vygotsky’s definition of ZPD.

The definition of zone of proximal development further purports the cultural transmission of skills with an emphasis laid on social guidance for children’s development. For example, Vygotsky’s (1978) statement on the ZPD that “… what is in the zone of proximal development today will be the actual developmental level tomorrow … that is, what a child can do with assistance today will be able to do it by itself tomorrow” (p.87) clearly implies the significance of socio-cultural guidance for internalising culturally transmitted abilities.

Vygotsky has claimed that cognitive processes are transmitted through social interactions. Adult or other collaboration in children’s activities has been believed to be helpful for modelling self-regulatory behaviours to children. In this way, even peers are considered as competent scaffolders. For example, joint participation enables adults and peers to display cognitive processes, share their cultural knowledge, and also provide an opportunity to modify and correct children’s modes
of cognitive functioning. Above all, adult or peer participation also facilitates sharing of cognitive or metacognitive responsibilities. As mentioned by Rogoff (1990), the expert assumes metacognitive control of the situation, monitoring the novice's activities to see that they are appropriate for the task, goal-directed, and completed successfully. The expert's metacognitive control has been considered as essential for novices to gain an awareness and control over mental functioning. While fulfilling the executive function, experts have a chance to model important metacognitive processes to novices.

To sum up the above discussion, Vygotsky's cultural-historical approach has emphasised the importance of cultural line of development in children's development, along with the biological line of development. Vygotsky's theory has also emphasised the processes of transference from social interactions to the individual plane. The important themes in this theory are self-control, social interactions, zone of proximal development, and mediation. Adult and peer interactions have been believed to supply children with culturally appropriate means of understanding, which become part of their individual psychological functioning over a period of time. The cultural bases of children's development has been clearly highlighted by Vygotsky (1978).

### 2.7 Metacognitive research in Vygotskian frameworks

The need for investigating the origins of metacognitive abilities has been indicated through the extensive research undertaken on documenting the individual differences in self-regulatory abilities of children. Such an understanding on origins of metacognitive development according to Wellman, Ritter, and Flavell (1975, cited in Kontos, 1983) is prerequisite to the development of a metacognitive theory.

Analysis of social interactions has been considered as an important step in understanding the developmental trajectories of metacognitive abilities. The need to investigate social interactions and social guidance in delineating the individual differences and developmental origins of metacognitive skills has been highly emphasised by various researchers (Freund, 1990; Kontos, 1983; Wertsch, 1979;
Wertsch et al., 1980; Zaragoza & Fadil, 1997). A major impetus for this view has been Vygotsky's (1962, 1978) theory, which proposes that development of higher mental abilities develops through early social interaction between the young child and more competent individual. Specifically, it has been hypothesised in the literature on metacognition that other or adult-regulation precedes the development of metacognitive or self-regulatory development.

Vygotsky's theory has been extensively employed in the analysis of other-child interactions during a variety of social interaction contexts. The commonly used task has been puzzle completion (Kontos, 1983; Kontos & Nicholas, 1987; Wertsch et al., 1980). The other problem-solving tasks utilised are classification (Rogoff, Ellis, & Gardner, 1984), number correspondence (Saxe, Guberman, & Gearhart, 1987), play interactions (Moss, 1990), and sorting task (Freund, 1990).

Vygotsky’s theoretical frameworks have also been used in other studies on memory development, collaborative adult-child problem-solving, origins of inner speech, and intervention research (Braten, 1992). A large body of empirical literature that employed Vygotskian theoretical notions has indicated that social interactions and practices facilitate the development metacognitive abilities (Fairchild, 1996; Moss, 1990; Paris et al., 1985; Wertsch et al., 1980). In the examination of social influences on children’s development, a major focus has been on the role of adults, most predominantly on mothers’ support in children’s development (Moss, 1990; Wertsch et al., 1980). Studies on the role and influences of other social members such as peers, fathers, teachers are also on the increase (e.g., Mannle, Barton, & Tomasello, 1992; Mullis & Mullis, 1986).

In the literature on metacognitive development, more emphasis has been placed on understanding older rather than young children’s metacognitive development and abilities, due to the perceived applicability of notions of guidance and mediation to formal educational settings and limited understanding on young children’s metacognitive abilities. However, with the recognition of importance of preschool years for metacognitive development, increased interest has been placed on
understanding the metacognitive developments of preschool children. There is
evidence to indicate that between the ages of three and five, the child shows a
readiness to operate on his or her own mental representations (Flavell, Speer, Green,
& August, 1981). An increase in children’s abilities to be aware of their
metacognitive abilities and to articulate their sensory or metacognitive functioning
between the ages of four to seven years has also been indicated (Weinberger &
Bushnell, 1994). Preschool years are now considered as foundation period for
metacognitive development. In Vygotsky’s terms, the years three to five are marked
by the entrance of metacognitive skills into the zone of proximal development.
Therefore, studies on young children’s metacognitive development should yield
deeper insights into the developmental origins of metacognitive abilities.

There is substantial evidence to indicate the role of various social members in
promoting children’s metacognitive development. Many of the studies of adult-child
collaboration have given a clear evidence for the benefits of scaffolded instruction in
the acquisition of metacognitive (or self-regulatory) competence (e.g., Freund, 1990;
Samaras, 1996; Zaragoza & Fadil, 1997). Dyadic interaction, structured and guided
by adults or others has been considered as essential for the development of
metacognitive abilities, especially in the preschool years. The individual differences in
metacognitive competence which are apparent by school age, have been viewed to be
consolidated through social exchanges in the preschool years.

The literature on metacognitive development also indicated that the special status
conferred to school instruction within Vygotskian theory has been overlooked by
contemporary researchers, with a greater emphasis laid on studies in contexts other
than school (Wertsch & Youniss, 1987, cited in Braten, 1991). It is important to
note, however, that both informal interactions between adults and children in the
home, and more formal instruction in the school are important for promoting

Overall, the results of several studies on social interaction have indicated that other-
child cooperation within the zone of proximal development, also termed ‘scaffolded
instruction', is essential for the acquisition of self-regulatory competence. Investigations have also outlined the need to analyse the socio-cultural settings for understanding the developmental progressions as well the socio-cultural processes and social exchanges by which individual differences in metacognitive abilities are mediated.

2.8 Summary

Metacognition has become a topic of investigation for both educators and psychologists as it is a significant factor in learning and problem-solving. This chapter has outlined the importance of metacognitive approaches for problem-solving. The review of empirical literature on metacognition has enumerated the need for understanding cultural contexts of self-regulatory development and cultural guidance of self-regulatory development. The discussion on Vygotsky’s theory of development has further endorsed the need for examining the socio-cultural bases of development of self-regulatory abilities.

Investigations that employed the Vygotskian notions of social interaction have illuminated the significance of adult and peer guidance for self-regulatory development. The emphasis placed on social construction of metacognitive development is raising several questions as to the nature and type of adult and peer guidance in self-regulatory development as well as its impact on self-regulatory development. For instance, if adult support is a precursor to internalisation of self-regulatory skills, is this a factor in differential outcomes of children across groups or sub-groups? Are the differences in self-regulatory abilities of children consolidated through variations in adult guidance and how? What are the determinants of adult guidance? And with differing social or cultural contexts, can differences be expected in guidance? In the following chapter, the role of adult-child interactions in the development of metacognitive abilities has been examined in detail, with a focus on processes of guidance as well as on factors that contribute to the variations in adult guidance.
Chapter 3

Adult guidance: Processes and determinants

It is within this dyad that a person first learns to relate to the "Other" and begins to develop his capacity to love (in its widest sense); it is here that an individual originates as a social being (Kakar, 1994, p.52).

The theoretical perspective of Vygotsky (1962, 1968) that social interaction is an avenue for the development of young children's metacognitive abilities has gained the attention of researchers over the past two decades. Investigations aimed at analysing the impact of social interaction have clearly outlined the significance of adult guidance for facilitating children's cognitive or metacognitive development (Plumert & Nichols-Whitehead, 1996; Samaras, 1991; Wertsch et al., 1980).

In view of the implications of adult guidance for children's metacognitive development, the various mechanisms and processes through which adults might influence the development of these abilities in young children need to be delineated. Equally important is to understand the impact of process and status variables on adult guidance or in other words, its various determinants. Such an understanding helps
educators to create an environment in which metacognitive abilities of young children can be developed and promoted.

The goal of this chapter is to review the theoretical and empirical literature surrounding adult guidance of metacognitive development for delineating the mechanisms and processes of adult guidance as well as its determinants. An ancillary goal is to identify the need and scope for further investigations in this domain. In tune with the above, the review of literature presented in this chapter, primarily focussed on adult/parental guidance. As the investigations on adult guidance of preschoolers' development are grounded in the theoretical perspectives of Vygotsky (1978), Wertsch (1979), and Rogoff (1990), this chapter commences with a discussion on the theoretical constructs of adult guidance.

3.2 Theoretical constructs of adult guidance

The importance of adult guidance for children's development has been well recognised in social sciences. Some of the earliest references to the significance of adults in children's lives can perhaps be traced to Freud's (1938, cited in Kakar, 1994) concept of psychological reciprocity between mother and child. The notion of adult support for children's development has been extensively popularised in research on educational and developmental psychology. For instance, there is ample evidence to signify the importance of adult guidance for the development of cognitive and metacognitive abilities (Denham, Mason, & Couchoud, 1995; Freund, 1990; Kontos, 1983; Rogoff et al., 1984; Wertsch et al., 1980). As discussed in the previous chapter, a major impetus for this view is Vygotsky's (1962, 1978) theory of cognitive development, which highlights the developmental origins of self-regulation in early social interactions between the young child and other more competent individuals such as parents, peers, and teachers. Even simple and routine parent-child activities are believed to contain metacognitive regulatory tactics, such as, directing the child's attention, maintaining goal direction, and other task evaluations. Parents and other
cultural members are assumed to take scaffolding responsibilities intuitively in each and every aspect of their interactions with their children.

According to Vygotsky's theory, children internalise the cognitive regulatory tactics that are exposed initially to them in their interactions with other social members. The transition of development from the interpsychological plane to the intrapsychological plane of development is one of the main tenets of Vygotskian theory. An important question that needs to be addressed then is how social interactions facilitate the transition of development from the plane of interpsychological functioning to the intrapsychological plane of functioning? A greater insight into the mechanism of transition can be derived from the analysis of Vygotsky's notions of guidance and the zone of proximal development, which were later explicated and elaborated by Bruner (1985), Wertsch (1978), and Rogoff (1990).

3.2.1 Internalization of metacognitive development

Vygotsky (1978) has proposed that the development of psychological abilities is essentially social in origin. The processes by which external or social plane of functioning forms into internal or plane of individual consciousness is termed as internalization. This indicates that the process of internalization is not an automatic transfer of development from a social plane into an individual plane of functioning. Rather, it involves a process of social guidance through which individual cognitive abilities are formed.

Vygotsky has specified that children's internalization of cognitive self-regulation is facilitated through speech and adult regulation of task activities and children's behaviours. He contended that internalization is facilitated by three guidance actions of: a) taking responsibility for those task components that are beyond children's abilities; b) regulating and sustaining children's attention, goal direction, monitoring, and evaluating the task processes; and c) delegating task responsibilities to children when they are ready to operate independently. The concept of internalization implies
the significance of social facilitation as a precursor to higher mental functions as well self-regulation as its expected outcome.

The transformation from 'other' guidance to 'self-regulation' has been explained using the notion of "zone of proximal development" (ZPD). As stated before, ZPD refers to the distance between a child's 'actual developmental level' (e.g., independent problem solving) and the 'potential level of development' (e.g., problem-solving under adult or peer guidance). The adult's sensitivity to the "zone" between what the child can do with assistance and what a child has mastered is a key concept in Vygotsky's (1978) theory of cognitive development.

The concept of ZPD has been extended to domains other than problem-solving in neo-Vygotskian discussions. This suggests that there are different zones for different domains and skills and that a ZPD has to be created for each domain and culturally valued skill. Do variations in cultural contexts and values impact on the creation of ZPD? For example, if mathematical problem-solving is a valued skill in Asian cultural groups, is the ZPD created for mathematical problem-solving in Asian cultural groups different from that created in other cultural groups? Due to the implications of ZPD for educational practice, it is necessary to explore the processes by which teaching and learning interactions are framed (ZPD) as well as the influences of cultural differences on adult and peer guidance in ZPD.

Learning and development are generally conceived to be the outcomes of internalization in which children reach the "potential" level of development from the "actual" level of development. The theoretical notion of the ZPD indicates a process of social support that mediates the developing abilities in children. According to Rogoff (1990), some of the important functions of the ZPD are bridging the gap between children's known and unknown information through communication, structuring of learning activities, delegation of task responsibilities, and transfer of responsibilities by making adjustments in adult support. Diaz, Neal, and Vachio (1991) also contend that joint collaboration and the transfer of responsibility are the
two important functions of the ZPD. The processes of social support and transfer of responsibility are thus inherent in the ZPD.

Scaffolding is a related concept that has been used to indicate a process of guidance in ZPD where a social member controls elements of learning that are beyond the learner’s capacity (Wood, Bruner, & Ross, 1976). Teachers, adults, experts, more capable peers, and even computers are assumed to provide scaffolding assistance to children. The concept of the zone of proximal development is further elaborated by Rogoff and Gardner (1984) using the notion of ‘guided participation’, which emphasises the active participation of children in their development.

To quote Rogoff (1986):

"Children put themselves in a position to observe what is going on; they involve themselves in the ongoing activity; they influence the activities in which they participate; and they demand some involvement with the adults who serve as their guides for socialisation into the culture that they are learning. Together, children and adults choose learning situations and calibrate the child’s level of participation so that the child is comfortably challenged" (p. 38).

The notion of ‘guided participation’ in the above quotation exemplifies the interrelationship between adult support and children’s individual effort. Although the concepts of guided participation and the ZPD appear to be similar with respect to adults’ role in guidance, there is an important difference between these two concepts. For instance, in guided participation, assessment of children’s readiness and existing knowledge precedes the scaffolding and structuring processes. In the conceptualisation of ZPD on the other hand, such an emphasis on assessment of children’s readiness is not apparent. Thus both adult perspectives (Vygotsky, 1978) and the perspectives of adult-child unit (Rogoff, 1986) have been used to explain the social facilitation of metacognitive development.
Internalization of development is also assumed to have a developmental path. According to Vygotsky (1979), the transition of development from the social plane of functioning to the individual plane of functioning involves four systematic steps. The following section outlines the model of internalization proposed by Vygotsky (1979).

3.2.2 Stages in internalization

The transition of development from a social to an individual plane of functioning is theorised to occur in four successive levels along the continuum of adult to self-regulation (Vygotsky, 1979). While these levels do not provide a full account of the transition, according to Vygotsky (1979), they suggest the developmental path from other-to-self-regulation in the ZPD. The first level in the transition is characterised by the predominance of adult control and a lack of situation definition between an adult and child. In other words, children and adults do not have a common understanding of the situation or task which according to Vygotsky (1979) occurs due to the inability of children to comprehend adults’ strategic assistance and adults’ discourses in the frame of goal accomplishment. In the next level of transition, adults succeed in making children respond to their verbal utterances, yet children will not be able to understand the full implications of the utterances in the context of task demands. Beginnings of self-regulation are theorised to occur in the third stage when children take some responsibility for task completion. Internalization is believed to occur in the fourth stage when children begin to operate independently without adult guidance. The first three levels of the transition are hypothesised to occur under the platform of the ZPD with extensive amounts of adult regulation. Although the importance of children’s cooperation in deriving the situation definition was indicated by Vygotsky (1979), from the above, it appears that adult or other control is predominant in the processes of internalization.
3.2.3 Processes of internalization

Given the proposition that the transition from other-to-self-regulation occurs in stages, what mechanisms actually make this transition possible? According to (Wertsch, 1979), achievement of a situation definition (shared understanding of the task or situation) between an adult and child is central to the progression of development from one level to the other in the ZPD. In the context of interaction between two adult members, a greater coherence between the directives of one participant and the actions of other participant is generally expected. In other words, adult participants are presumed to share a common definition of situation. However, in interactions with children, Wertsch (1979) believes that capable others have to create a definition of situation. For example, in a puzzle-solving situation when children do not share an adult's definition of situation and refer to round puzzle pieces as cookies, adults help children understand their actions in the frame of puzzle-solving through verbal or non-verbal mediation. Communication is therefore, a primary mechanism by which coherence between capable others and children can be established and maintained.

The significance of communication for providing metacognitive support to children, apart from deriving a situation definition between capable others and children, has also been indicated. According to Wertsch (1979), social agents use a range of semiotic and referential perspectives to provide cognitive and metacognitive support and to model metacognitive strategies to children. Based on the perspectives of Davidson (1963, cited in Wertsch, 1979), he has indicated a four level hierarchy of communicative moves in adults’ or others’ communication with children. The first level of communicative moves relates to the use of linguistic acts such as questions and directives. The other three subsequent levels of communicative moves relate to the employment of cultural conventions (e.g., pointing), localised conventions (e.g., elicited through mutual agreement of participants), and mutual belief acts (e.g., arranging the environment in such a way that the child focuses on the specific aspects of the task that lead to solution).
Adults and capable others use questions and directives either to provide the metacognitive support or to enable children to execute a set of routines and steps. The differential use of linguistic acts is held to reflect the division of metacognitive responsibilities between others and children. For instance, use of questions denotes delegation of metacognitive responsibility. Commands, on the other hand, imply a minimum load of metacognitive responsibility on children (Wertsch, 1979).

Wertsch (1979) has also indicated that adults use a range of communicative references to help children understand the goals and their related task processes. He has observed mothers regulating children's attention using deixis (e.g., simple pointing or expressions such as this or that) or common referring expressions (the round thing to represent a wheel), or context bound referring expressions (e.g., the wheel, that specifies the task component). He has further indicated that adults are sensitive in adapting their semiotic challenges to the demands elicited by children and has indicated variations in functional uses of communicative references of mothers (Wertsch, 1985).

Delegation of task responsibilities to children has been indicated as another means by which internalization of skills in children can be promoted. According to Wertsch (1979), children learn to understand adult's definition of situation in the process of executing adult's instructions. The transfer of responsibility from the interspsychological to intrapsychological plane of functioning is believed to occur in a context where children's situation definition correspond with adult's definition of situation (Wertsch, 1979).

The important assumptions in Wertsch's analysis are that capable others utilise a variety of communicative moves in providing metacognitive guidance to children and that the types of communicative moves used will reflect the pattern of the distribution of metacognitive responsibility between scaffolders and children. Wertsch's model of transition can thus provide a framework for examining variations in metacognitive/linguistic guidance.
As mentioned before, while the dominance of adult control in defining the situation or in task activities is imperative in Wertsch’s (1979) model of transition, does this mean that children are passive recipients of adult guidance and that learning or development has to be initiated by others? And do children’s actions have to correspond with adult’s definition of situation? According to Elbers, Maier, Hoekstra, and Hoogsteder (1992), Goudena (1991) and Rogoff et al. (1993), children are not passive recipients of social guidance and that there is a need to consider their spontaneous curiosity and innate potential in the process of internalization.

The model of transition from ‘other’ to ‘self-regulation’ proposed by both Vygotsky and Wertsch have been criticised as implying a linear model that diminishes children’s role in their development. As argued by Elbers et al. (1992), internalization is not simply the result of cultural socialisation. According to Elbers et al. (1992), any model that limits the role of children as passive recipients in their development does not permit understanding of the nature of ‘adult-child dyads’ cooperation in the construction of children’s development. Based on their observations of children’s active participation and involvement in problem-solving, they have proposed that “the basis of internalization is not the adults’ situation of definition but the jointly elaborated situation definition of parent and child” (p.115). They further brought a new perspective to the model of internalization as a course of development from ‘joint’ to self-regulation and redefined ‘other regulation’ as ‘joint regulation’.

Amidst the criticisms surrounding Vygotsky’s or Wertsch’s model, many investigations on adult guidance have employed the notion that social support is a precursor to individual development. The significance of social-psychological learning environment and guidance created by social agents in the transmission of cultural capital to children is unarguable. Presuming that social guidance is a precursor to self-regulation, what are the various contexts and forms in which the learning outcomes of children can be maximised? What level of assistance is actually necessary for learning or development to occur? And what is the role of different social members (viz., parents, grand parents, teachers, & peers) in providing social guidance to children. Most importantly, how does social facilitation promote the development
of metacognitive development in children? And are there variations in other guidance of metacognitive development in various cultural groups? The empirical literature on adult guidance and interactions is reviewed in the following section with an intent of finding answers for the above raised questions.

3.3 Research on adult or other guidance

As stated previously, the notion of cultural socialisation of development of Wertsch (1979) and Vygotsky (1978) has been widely employed in the literature on adult guidance. A major component of the cultural socialisation is the interactions of children with parents and other cultural members. Parents function as supportive, knowledgeable others performing a role that children gradually learn to perform for themselves (Vygotsky, 1978; Wertsch, 1979).

The idea that interactions of children with others affect cognitive or metacognitive development underlies a large body of literature on parent-child, especially mother-child interactions (Freund, 1990; Hess & Shipman, 1968; Hess & McDevitt, 1984; Wertsch, 1979). The seminal work in this area was undertaken by Hess and Shipman (1968), who observed mothers helping their four year old children solve specific tasks (e.g., copying an etch-a-sketch design; sorting toys). Their research has helped to understand the association between children's cognitive functioning and styles of maternal behaviours and has also brought to the fore the importance of mother-child interaction for the development of cognitive abilities. However, their initial research attempts were limited with respect to descriptions of the content of mother-child interaction, subsequent developments in skills, benefits of mothers' interactions to children's learning, and above all, the representativeness of the experimental tasks for interaction studies. Hess and Shipman's research (1968) has thrown light on the need to understand the methodological and conceptual issues surrounding investigations of adult guidance as well as the need to address those issues in subsequent studies of interactions.
3.3.1 Social support of children’s metacognitive development

The social origins of metacognitive processes have been outlined in the literature on metacognitive development. Several investigations designed from the Vygotskian perspective of internalization have begun to explore adult-child interactions and have supported the notion that social agents initially regulate children’s problem-solving and cognitive behaviours and cede their regulation as children’s competencies grow (Freund, 1990; Moss, 1990; Rogoff, 1990; Wertsch, 1979; Wertsch, et al., 1980). Thus, social agents can model metacognitive strategies (e.g., planning, prediction, monitoring) to children by undertaking executive controller role in interactions.

As mentioned earlier, delegation of responsibilities to children enables them to internalise metacognitive abilities. Children learn to understand the expert forms of metacognitive functioning by participating in adult guided routines and tasks and practising those tasks several times before they become consciously aware of the goals and the functional significance of their actions. According to Wertsch (1979), children may not realise that adult actions are goal oriented. In this scenario, while adults enter the interaction with an intent of guiding and interpreting children’s actions as per their understanding of the overall goal of the activity, children learn to understand adults’ actions and guidance procedures as goal oriented actions by their participation in adult guided activities.

The expert forms of metacognitive functioning are also modelled for children through teaching-learning transactions. Rowe (1986) for example, has indicated a significant increase in the use of monitoring and critical thinking strategies in children following parental modelling of metacognitive strategies. Metacognitive activity however, is not always explicitly modelled for learners and most of the teaching and learning interactions are often conducive to the induction of metacognitive skills. Besides, the externalisation of cognitive skills and transition from other-to-self-regulation are not limited to formal settings alone where the explicitly stated goals are
teaching. In fact, a majority of conversations in interactions have been noted to comprise comments that can be described as guidance (Wong, Groth, & O’Flahavan, 1996). Thus social agents can model metacognitive strategies to children either explicitly through teaching interactions or implicitly by encouraging their participation in cultural routines.

Understanding the goal of the task, making the child aware of the goal with the help of conceptual or perceptual facts (but not through explicit analyses or explanations), arranging the environment for efficient task accomplishment, and, reviewing the status of progress towards solution have been indicated as some of the important components of metacognitive guidance (Wertsch, 1979). Planning and identification of goal is an important component in social facilitation of metacognitive development. According to Wertsch (1977), the notion of goal-directedness is pivotal in any act of metacognition. He further argues that without the notion of goal, there can not be any scope for elaboration on other aspects of metacognition viz., monitoring one’s own cognitive activity and evaluating the task procedures for task completion.

References to the notion of goal are widely available in the theoretical frameworks of Soviet psychology, in particular, in Leont’ev’s theory of activity (1959, 1979), which is also known as “activity theory”. According to the activity theory, there are three levels of abstraction which are activity, action, and processes of goal accomplishment. The analysis of collaborative problem-solving has been approached using the three tiered notions of activity theory.

An “activity” is viewed as distinct from a generic human activity and is defined as an activity mediated by mental reflection (Wertsch, Minick, & Arns, 1984). Some of the examples of mediated activities are play, instruction or formal education and work, which naturally imply different motives and task interpretations. Task performance is likely to be influenced by the subject’s motive system or interpretations. The notion of “action” is related to the socio-cultural milieu under which an activity is performed. The concept of “operations” is defined in terms of the conditions and approaches in which goal driven activities are undertaken. Analysis of metacognitive guidance in
problem-solving might therefore include aspects such as task interpretation or motives, contexts of goal completion and the methods of goal accomplishment. According to activity theory, even though the goals may be the same, variations in task performance are likely to result depending on the motives and methods of problem-solving. The theory of activity thus provides a framework for analysing the collaborative problem-solving interactions of dyads as well as values and motives associated with problem-solving/task.

Sustaining the mindfulness of children for purposeful problem-solving has been indicated as another important aspect of metacognitive/adult guidance. The term mindfulness refers to the volitional, metacognitively guided use of non automatic and effortful processes (Salomon & Globerson, 1987). The extent to which the mindfulness of learners is sustained determines the outcomes of learning and depends on the personal, perceptual, and attitudinal factors (Salomon, 1985). Mindfulness thus plays a vital role in learning situations and can encompass aspects such as attention management, positive feedback, and control, and regulation of behaviours and distractions. The modes of sustaining children’s mindfulness in adult guidance might then include attention management, praise, minimisation of frustration, and management of child behaviours. According to Rowe (1986), concentration, motivation, and interest can be maintained and strengthened through metacognitive guidance. Therefore, adult guidance is important not only for organising children’s cognitive processes and thinking, but also for maintaining and strengthening less cognitive phenomena such as concentration, motivation, and interest.

The medium in which social facilitation of metacognitive development occurs is communication and is believed to play a significant role in mediating the teaching-learning interactions of learning and development. Several studies have shown that parents use a range of styles such as direct commands, lecturing, and explicit instruction in their interactions with children (Brophy & Bear, 1969 cited in Hess & McDevitt, 1984). To improve the child’s capacity for self-regulation, parents and other capable others have also been observed to use other techniques such as scaffolding or questioning (Wertsch, 1979; Wertsch et al., 1984). The use of
questions was indicated to predominant, with mothers more likely to use questions while guiding their preschoolers' problem-solving rather than directions (Wertsch, 1979).

Overall, in the literature on adult-child interactions, more emphasis has been laid on documenting the variations in use of communicative styles. Analyses of the impact of communicative styles on subsequent children's development and social guidance are limited. The descriptions of adult-child communication and interactions are also lacking in some investigations (Freund, 1990; Kontos, 1983). Despite the significance of both verbal and non-verbal forms of communication for establishing situation definition or internalization of skills in children, the focus of a majority of studies has been on analysis of verbal mediation (Freund, 1990; Mullis & Mullis, 1986; Wertsch, 1979). The need to consider the role of non-verbal mediation for promoting internalization has also been indicated (Rogoff et al., 1993).

On the whole, the literature on adult guidance has highlighted its importance for enhancing children's cognitive or metacognitive abilities (Freund, 1990; Gauvain & Rogoff, 1989; Radziszewska & Rogoff, 1988; Rogoff et al., 1984). The significant effects of adult guidance in advancing a variety of cognitive abilities such as attention span, memory, writing skills, and locus of control have also been documented (Berk & Winsler, 1995; Debaryshe et al., 1996; Samaras, 1996; Zaragoza & Padil, 1997).

A number of studies on social guidance of metacognitive development have been based on monocultural or white and middle class groups (Freund, 1990; Moss, 1990; Mullis & Mullis, 1986; Wertsch et al., 1980). An important question that needs to be addressed in this context is to what extent the observations drawn from limited cultural or singular groups are applicable to other cultures at large? Concomitant to this, other questions that are of significance to educators and researchers are: From whose guidance do children benefit? What is the role of parents, teachers, and peers in supporting children's development?
3.3.2 Whose guidance is beneficial for children’s metacognitive development?

The question relating to the role of various social members in promoting children’s metacognitive development is of interest due to the implications of social support for children’s metacognitive development. In the literature on social guidance, while the focus of most studies has been on mother-child interactions, little is known about the role of other social members in supporting children’s development. Children come into contact with other significant social members such as father, siblings, peers, and other elder members of the family and society. Teachers (Mocly, Hart, Leal, Santulli, Rao, Johnson, & Hamilton, 1992), computers (Elliott & Hall, 1997; Samaras, 1991), and peers (Ellis & Rogoff, 1982; Troyer, 1991) are indicated as the significant ‘others’ who can provide scaffolded guidance to children. However, to what extent do mothers, fathers, teachers, and peers contribute to the development of children’s metacognitive abilities and how they offer other-regulation in interactions need examination.

a) Parents

The differential contribution of parents to children’s development has attracted the attention of some researchers. The role of fathers in promoting children’s cognitive or metacognitive skills has been examined through the comparative studies of father-child and mother-child dyads’ problem-solving interactions. For instance, in a puzzle-solving context, Mullis and Mullis (1986) have found that in comparison with fathers, mothers tended to use more problem-solving and metacognitive behaviours with their 9-year-olds than with their 12-year-olds.

In contrast to the above evidence that documented differences in parental interactions or guidance, Brody, Pillegrini, and Sigel (1986) and Pratt, Kerig, Cowan, and Cowan (1988) have indicated similarities in levels of assistance afforded to preschoolers on block construction, matrix classification, and story retelling tasks by mothers and fathers. They have also revealed similarities in parental use of scaffolding, contingent
shifting patterns and tutoring behaviours (e.g., shift rule and adjusting assistance). These findings suggest that mothers and fathers are equally effective in socialising their children's cognitive skills.

In the context of inconclusive findings on the influences of fathers and mothers in children's development, the need to examine the influences of both the parents on children's cognitive development has been generally indicated in the literature. For instance, Davis and Lange (1973) contends that research dealing with a single parent's influence may be of limited explanatory value in child development.

b) Peers

While most of the research on social interaction effects on cognition and metacognition has been focused on adult-child interactions (Freund, 1990; Moss, 1990; Pratt et al., 1988), perhaps with an assumption that young children are deficient in metacognitive skills, few studies have considered child-child interactions. The influences of peer guidance on children's development have been examined in some studies and involved mostly older age group children (Damon, 1984; Forman & Cazden, 1985, cited in Perlmutter, Behrend, Kuo, & Muller, 1989).

There was evidence to indicate that children as young as preschool age can work together effectively and that preschoolers are effective scaffolders (Mamle et al., 1992). In other observations, Troyer (1991) has demonstrated first grade Caucasian children (6-7 yrs) taking responsibility that traditionally belonged to parents and teachers and has argued that peers are also capable scaffolders.

In contrast to the beneficial effects of peer guidance, there is other evidence to indicate that peer guidance may not be beneficial at all times. For example, Goos (1994) indicated the negative effects of child-child interactions on senior secondary grade students' metacognitive decision making. These results indicate the need to
examine the conditions of peer interaction as well as the factors that may lead to variations in peer guidance.

Children's age seems to be one important factor that varies the effects of peer interaction on children. For instance, Perlmuter et al. (1989) have shown that elementary school children benefit from peer interaction more than younger (4.6 years) or older preschoolers (5.2 years), even in the most complex task situations. In their study, younger preschool children did not benefit by working with a peer and peer guidance had no effect on retention of simple or moderately complex tasks. It even had a negative effect on retention of complex tasks. In contrast, peer interaction had a positive effect on retention of simple tasks, a neutral effect on retention of moderately complex tasks, and a negative effect on retention of more complex tasks on older preschool children. But it had a positive effect on retention of even the most complex tasks on elementary-school children. These results suggest that the beneficial effects of peer interaction are greater on older age group children however, they depend on the nature of the task as well.

The effects of peer interaction have also been compared with the effects of adult guidance. The findings of Radziszewska and Rogoff (1988) have suggested that working with a more matured and skilled adult partner produces greater efficiency in applying the learned skill than working with a capable peer. In their study, Radziszewska and Rogoff (1988) have shown that children working with adults displayed greater use of planning or planning strategies and greater involvement in an errand planning task than children who were working with their 9-to-10 year-old peers. They have also indicated superior post test performance of children from adult-child dyads compared with children from peer dyads.

Further, differences in teaching interactions and instructional styles between child-child and adult-child groups have also been indicated. In Ellis and Rogoff's (1982) study, for example, child teachers (8 to 9-year-old) instructing 6 to 7-year-old children learn classification tasks have used demonstration and modelling strategies. They also tended to take a product approach and concentrate more on immediate actions that
lead to goal accomplishment rather than focus on overall instructional goal. Adult teachers in this study on the other hand, have opted to instruct children more through verbal than non-verbal methods. Differences in the post test performances of children have also been revealed in this study, with a superior performance by children, who were guided by adult teachers. These findings also suggest that adult guidance is more beneficial than peer guidance.

c) Teachers

The role of teacher guidance in facilitating children’s cognitive and metacognitive development and puzzle-solving skills has also been examined. Major differences in guidance approaches of teachers as compared with parents have been reported. For example, Wertsch et al. (1984) have indicated differences in the guidance approaches of mothers and teachers in rural Brazil. In their study, mothers were observed to take direct responsibility for task completion. Teachers on the other hand, were noted to employ indirect forms of guidance. Differences in the task interpretations and situation definitions of mothers and teachers have also been noted. These findings thus illuminate the need for understanding the task interpretations and task accomplishment methods of the dyads in explaining the cultural or sub-cultural variations in guidance patterns.

Further, differences in the effects of parental and teacher guidance on children’s participation have also been revealed. For example, Olthof, Goudena, and Groenendaal (1989, cited in Elbers et al., 1992) have reported that mother interactions facilitate more child initiation and independency than do teacher child interactions in simple tasks (e.g., dressing a doll, making a puzzle and reading a book). In their study, children (3 to 6 years) have been found to take fewer initiatives and act in a subordinate manner in their interactions with teachers.

In brief, the above review has outlined variations in the nature of guidance of different social members, along with variations in the impact of their guidance on children’s
development or participation. While the research attempts to explore the role and impact of different social members in supporting children's cognitive and metacognitive development are just beginning to expand, the question regarding whose guidance is more beneficial than others remains unanswered. What is certain though is that children need support from different cultural members to develop and refine their cognitive or metacognitive skills.

3.3.3 Variations in adult/parental guidance

From the review of literature reported in the previous section, it appears that the benefits children can derive from adult or peer guidance are dependent on intervening variables such as age of children, or other concomitant variables (e.g., gender, nature of task). The literature on social interactions has revealed significant variations in adult guidance. Understanding the differences in adult regulation is particularly important in the light of its contribution to the cognitive or metacognitive development of children. The following section therefore, explores the research on variations in adult guidance which are likely to arise as a function of factors related to a) adults, b) children, and c) nature of task.

a) Factors related to adults/parents

A variety of factors have been associated with variations in adult guidance. One such dimension that has been linked to adult guidance is the type and nature of verbal guidance. Use of "distancing strategies" such as encouraging children to observe and interpret events phrased in inquiry form have been noted to be helpful to facilitate children’s representational competence (Siegel, 1982, cited in Hess & McDevitt, 1984). Other techniques, like building on prior knowledge, have also been found to be helpful in easier retrieval of new material (Brown, Bransford, Ferrara, & Campione, 1983, cited in Hess & McDevitt, 1984). Inviting children to generate responses in problem-solving situations has been observed to serve as a mnemonic
prop and helped children to rehearse the materials specific to the exchanges (Price, Hess, & Dickson, 1981, cited in Hess & McDevitt, 1984).

Employment of directives, on the contrary has been believed to impede children’s explanatory behaviour. According to Hess and McDevitt (1984), direct control tactics that maximise parental dominance impede children’s performance and that the combined use of both direct and indirect tactics was far more beneficial than the use of direct tactics alone. In an another study, Goncu and Rogoff (1987) have shown that children receiving guidance adjusted to their level of competency performed better than children who observed demonstration. The implications of the above findings are that verbal guidance styles that encourage children’s participation predict better performance in children than those styles that hinder children’s participation in guided activities.

Parenting style is an another important dimension that appears to be relevant to children’s task performance and metacognitive guidance. The three major types of parenting styles that are associated with children’s development and interactions are authoritarian [restrictive style of interaction], authoritative [warm and nurturant style of interaction], and permissive [no restrictions and limits] (Baumrind, 1973, cited in Pratt et al., 1988). Considerable research on parenting style has associated authoritative parenting with positive child outcomes (e.g., Baumrind, 1973, cited in Pratt et al., 1988) and authoritarian parenting style with aggression and other socio-emotional problems in children (Weiss, Dodge, Bates, & Pettit, 1992). In the context of adult guidance and problem-solving, Pratt et al. (1988) have shown that authoritative parents provide more sensitive interventions and scaffolding to their 3-year-old children than non-authoritative parents on selected difficult tasks of block construction, matrix classification, and story retelling. They have also shown that authoritative styles of tutoring predict dyadic success on tasks more than non-authoritative tutoring styles. The significance of sensitive, supportive, and nurturance guidance for encouraging children’s problem-solving has been indicated from these results.
Security of attachments of children has been indicated as an important factor that impinges on adult guidance and problem-solving performance of young children. Attachment is simply defined as “the strong affectional tie that humans feel for special people in their lives” (Berk, 1997, p.405). Through their study, Frankel and Bates (1990) have shown that the puzzle-solving performance of mother-toddler dyads was related to toddler’s prior attachment security. In their study, they have shown that mothers in secure dyads provided a better quality of assistance and supportive presence to their toddlers at two years of age. Positive involvement of mothers at home (as defined by maternal characteristics of responsiveness to children, positive affective behaviours, stimulation provided in educational activities and reciprocal communication by child) has been found to predict effective and unconflicted puzzle-solving. Negative control of mothers and negative behaviours of children at home did not predict puzzle-solving interactions of the mother-toddler dyads.

An examination of parent-child interactions with school-aged children in the context of parents’ marital satisfaction and gender relationship likewise showed variations in adult guidance predicted by the variations in marital satisfaction of parents (Brody et al., 1986). There were no differences in mothers’ or fathers’ teaching styles whose marital relationships were rated as non-distressed. Compared to mothers, fathers with marital problems used less positive feedback and were more intrusive. Overall, mothers with marital problems provided positive feedback, intruded less often in their children’s learning and asked more questions. Children of mothers with marital problems have been reported to be more responsive to mothers’ teaching than children of non-distressed mothers. These findings have revealed that mothers compensate their marital dissatisfaction through their active involvement in children’s learning and that marital dissatisfaction of mothers does not necessarily lead to impairments in children’s learning.

Variations in parental guidance have been associated with their perceptions of children’s temperament as well. Results from Gauvian and Fagot’s study (1995) have shown that children rated by their mothers as having a difficult temperament received less encouragement, fewer opportunities to explore in their learning activities, less
positive feedback, greater physical control, and less opportunities to practice the
modelled actions. However, the effects of lack of social opportunities on children’s
individual performance are not indicated in this study. To this end, Fagot and
Gauvian (1997) have indicated that maternal perceptions have a long term impact on
children’s cognitive abilities. In their study, they have shown that maternal
perceptions of children’s temperament at an age of 18 months impact on their
children’s problem-solving performance at 30 months of age. This study suggests that
there is a need to consider the affective component of interaction in understanding the
cognitive domains.

Variations in adult guidance have also been found to be predicted by the intelligence
of scaffolders. Along these lines, Hess and McDevitt (1984) have revealed that
mothers’ intelligence was significantly associated with their intervention techniques
and specifically direct commands. Variations in guidance as a factor of socio-
economic status of families have also been reported. An association between socio-
economic status and informational specificity in the mothers’ teaching of preschool
children in the form of verbal labels and attention-focusing techniques has been
documented. For the most part, lower-class mothers have been reported to spend
little time orienting children to the task and use non-verbal communication (Hess &
Shipman, 1968). Socio-economic differences have been commonly observed to
mediate the learning experiences of preschool children (Tzuriel, 1996).

Studies on cultural differences in maternal regulation are beginning to emerge. The
influences of cultural background on adult guidance have been reported in few studies
(Junefelt & Tulviste, 1993; Rogoff et al., 1993). However, the focus of these studies
has been on regulation of physical/cognitive behaviours and forms of adult
scaffolding. For example, Junefelt and Tulviste (1993) have revealed cultural
variations in praise and regulative behaviours of mothers in different cultural contexts.
Rogoff’s et al. (1993) examination of Guatemalan, Mayan, and Indian tribal adults’
guidance of toddlers learning has also indicated differences in guided participation, a
concept that views development as occurring through children’s initiation and active
participation in adult cultural activities.
A few other studies of mother-child interaction have also revealed variations in mothers' guidance between industrialised and non-industrialised societies with respect to forms of guidance (Levin, 1990; Rogoff, 1990). It has been generally viewed that differences in psychological functioning of children of various cultural backgrounds are due to the variations in adult-child interaction patterns (Ignjatovic-Savic, Kovac-Cerovic, Plut, & Pesikan, 1988). While a number of cross-cultural studies of mother-child interaction have been conducted in the broad domain of adult guidance, there is a necessity to conduct investigations specifically on metacognitive guidance involving a range of cultural contexts before any conclusions are drawn on the universality of metacognitive development.

b) Factors related to children

A variety of child dimensions has been identified in the literature on didactic interactions. There is a body of research exploring age of child, gender of child, and intelligence of child as they relate to aspects of adult or other guidance in collaborative interactions. Variations in adult regulation with respect to age of the child have been widely documented (Freund, 1990; Kontos, 1983; Mullis & Mullis, 1986; Rogoff et al., 1984; Plumert & Nichols-Whitehead, 1996; Saxe et al., 1987; Wertsch et al., 1980). A consistent finding of the several studies has been that younger children receive more guidance in problem-solving activities than older children. For the most part, mothers of younger children have been noted to display greater task responsibility and regulation in their guidance, even though the task demands increased equally for younger as well as older children. Mothers of younger children have also been found to regulate the crucial task components to a greater degree and use more direct prompts than did mothers of older children.

Variations in maternal linguistic guidance in response to the varying needs of younger and older children have been commonly indicated. For instance, Freund (1990) and Wertsch et al. (1980) have demonstrated that mothers of younger children use more task-specific, concrete verbalisations than mothers of older children, who use more
planning, goal directing, and monitoring verbalisations. The sensitivity of mothers to the developmental demands and needs of children has been reflected through these findings. Although a number of studies have indicated variations in maternal guidance as a function of age of the child, Martin and Reutzel (1996) have argued that the variations in guidance are more likely to be determined by maternal impressions of children's development rather than age of the child.

There is considerable evidence for gender-based differences in adult guidance and in the ways in which adults perceive and approach their interactions with boys and girls. Societies in general have different expectations for male and female children with respect to their behaviour, skills, and achievement. Variations in parental interactions with boys and girls are therefore presumed. For example, in a problem-solving context, Mullis and Mullis (1986) have indicated variations in interactions of parents with their sons and daughters. In another study, parental use of language was noted to vary by the gender of the child, with mothers using more directives in their interactions with daughters (Hess & McDevitt, 1984). Likewise, the interactions of boys and girls with their parents can also vary as per the gender related expectations of parents or society (Mullis & Mullis, 1986).

Socialisation practices of parents appear to influence the problem-solving behaviours of boys and girls differently. For example, while positive involvement of mothers in infancy has promoted independent puzzle-solving behaviours in daughters, it has produced dependent puzzle-solving behaviours in their sons (Frankel & Bates, 1990). The other findings of Frankel and Bates' study are that difficult temperament in boys has been found to predict more effective, unconflicted problem-solving, while for girls it predicted more conflict, discordant interaction during problem-solving.

In addition, the impact of adult or other intervention on children's learning or school related abilities has also been noted to vary as a function of gender of the child. In a teaching intervention activity conducted with 4-year-old children and whose school related abilities were measured at ages 4, 5 to 6 and 12 years, the impact of maternal directiveness on boys has been found to be negative and less marked (Hess &
McDevitt, 1984). Mothers in Hess and McDevitt's study used direct teaching tactics more with girls than with boys, and the use of direct commands and requests for generative verbalisations have also been found to be significantly related to school achievement of girls but not boys.

The gender-based variations in interactions indicate that the cognitive opportunities provided to male and female children can be dissimilar. The variance in cognitive opportunities available to boys and girls can in turn have an impact on their later cognitive or problem-solving performance. To this end, Mullis and Mullis (1986) and Tchernigova (1995) have reported superior task performance and more task-related verbalisations in the problem-solving of boys compared with girls. Some of the explanations available for the variations were that in structured situations, girls may be more cognitively mature than boys and independently carry out the problem-solving strategies without verbalising them and that parents might have had high expectations for their sons to solve problems. The evidence of gender differences in interaction, particularly in exchange of information in task situations, and problem-solving behaviours indicates the need to examine the processes of social interaction through which gender differences in achievements and skills are consolidated.

The nature of social support provided by parents or other social members may also depend on the child's capacity to comprehend and internalise metacognitive strategies provided in joint problem-solving. For instance, Moss and Strayer (1990) have shown that parents vary their verbal exchanges and metacognitive support consistent with their child's level of comprehension and capacity. Their results have indicated that mothers of gifted preschool children (4 years) were significantly more likely to encourage metacognitive strategies of monitoring or prediction in their children than mothers of average children in tasks of puzzle-solving, matching, and free block design. From the sequential analyses of mother-child interactions, Moss and Strayer (1990) have also shown increased use of metacognitive skills in gifted preschoolers in comparison with average children after interactions with mothers. However, it is not clear from these findings whether the use of metacognitive strategies are accelerated by maternal modelling or innate abilities of gifted children. These findings suggest that
there is a need to consider and assess the participation of children in joint problem-solving as well as their cognitive capacities.

Taken together, the discussion in this section points to the importance of considering age, gender, and cognitive capacities of the child in studies of collaborative interactions or social guidance.

c) Factors related to task

The significance of nature of the task and task difficulty in predicting the patterns of adult guidance has been generally highlighted in the literature (Rome-Flanders, Cronk, & Gourde, 1995; Freund, 1990; Plumert & Nichols-Whitehead, 1996). For instance, Freund (1990) has shown that interactions with familiar task and within a meaningful context, led to greater internalization and improvements in 3 and 5-year-old children's individual performances on sorting task. In another study, mothers' familiarity with a formal operations task has been found to elicit higher level strategies during problem-solving interactions and facilitated greater participation of their children in task processes. Task familiarity of mothers has also been found to have a positive impact on later performance of their children (Normandeau & Arsenault, 1994).

Task difficulty has been noted to vary maternal guidance styles. Overall, mothers have been noted to display more responsibility and regulation with increased task demands on 3 and 5-year-old children in a sorting task (Freund, 1990). When the demands on children's competencies decreased during the easy version of the task, mothers in Freund's study were noted to offer more general goal direction, planning, and monitoring. Similar observations have been reported by Plumert and Nichols-Whitehead (1996), where mothers used more directive prompts in the earlier part of the task session than in the latter part of the task session in their interactions with 3-year and 4-year-olds in hiding and finding tasks. Mothers' sensitivity to the increased task demands on children's competency is shown by above studies.
Age-related expectations of task difficulty of mothers have also been found to vary the maternal regulation patterns (Rogoff et al., 1984). Based on the analyses of mothers' interactions with younger and older children on a classification task, Rogoff et al. (1984) have indicated that mothers vary their guidance as per their age-related expectations of task difficulty rather than actual competencies of children.

The nature of task is another factor that has been found to influence communication or regulation styles of scaffolders. Parents have been observed to use less categorical inferential messages in more structured tasks such as block-sorting tasks than in story telling (Davis & Lange, 1973). The benefits of adult guidance have been found to be determined by the nature of the task as well. For example, Kontos and Nicholas (1987) have shown that the beneficial effects of adult interaction on subsequent child performance could not be established in studies that involved unfamiliar and challenging tasks. Thus, selection of task is a crucial factor in collaborative adult-child interaction studies.

Along with factors such as nature of task, familiarity and/or difficulty of task, interpretations related to task have been noted to vary adult guidance. Variations in guidance patterns and task interpretations of parents and teachers in rural Brazil as reported by Wertsch et al. (1984) have shown that mothers use more direct forms of regulation compared with teachers (e.g., picking up the pieces or placing the pieces) in their interactions with children aged 6.5 years. These variations in guidance patterns of mothers and teachers, according to Wertsch et al. (1984), are consistent with their task interpretations and motives where mothers viewed the task setting as an opportunity to provide assistance. The motive that governed mothers' guidance actions was correct and efficient completion of the task (work). On the other hand, teachers in this study viewed task situation as an occasion for promoting independence in children and they had a teaching or learning motive for task completion (instruction).

The view that task interpretations determine the style of guidance has been confirmed by other researchers as well. For instance, in Renshaw and Gardner's study (1990),
while parents with process orientation (learning goals) have employed indirect error correction strategies, parents with product orientation, in contrast, utilised direct correction strategies. Variations in task definitions have been similarly reported by Elbers et al. (1992). Based on their observations of adult-child dyads on a construction task, Elbers et al. have added a new category of play or affective mode of interaction and interpretation, to the list of work and instruction motives outlined by Wertsch et al. (1984) previously. The findings of Wertsch et al. (1984), Renshaw and Gardner (1990), and Elbers et al. (1992) have confirmed the view that task interpretations and motives have a bearing on the mode of interaction. To sum up, the literature presented in this section has shown that the assessment of task motives and interpretations are vital to understand the cultural or sub-cultural differences in guidance patterns and task performances of adult-child dyads.

3.4 Summary

This chapter presents the theoretical and empirical literature surrounding social guidance of children's development. The theoretical constructs of both Vygotsky (1978) and Wertsch (1979) have highlighted the significance of social facilitation for internalization of metacognitive skills and development. The review provided insights into the processes and mechanisms of internalization of cognitive or metacognitive skills in children. The model of transition of development from other-to-self-regulation proposed by Vygotsky and Wertsch has been criticised as a cultural model that implies adult control.

Despite the criticisms raised on the cultural model of development as implying adult control, a majority of empirical studies of adult-child interaction have been designed from the adult perspective based on the premise that social facilitation is a precursor to individual development. The focus of a number of studies has been on analysis of maternal guidance. The need to assess the child's part in other-child interaction to recognise the active role played by children in their development (Elbers et al., 1992; Rogoff et al., 1993; Saxe et al., 1987) as well as the necessity to analyse the role of
various social members in facilitating individual development was also stressed. Furthermore, the variations in guidance interactions indicated as a function of child's age, task difficulty, gender of the child and parent, have highlighted the need to assess their influences on adult regulation.

Given that a majority of observations on adult guidance of children’s metacognitive skills are drawn from white and middle class samples (Elbers et al., 1992; Freund, 1990; Moss, 1990; Mullis & Mullis, 1986; Plumert & Nichols-Whitehead, 1996), the nature of adult guidance of metacognitive development in different cultural contexts need examination. Although an important dimension of investigations on adult guidance is beginning to focus on cultural approaches to guidance, investigations aimed at analysing cultural specificity in adult or other guidance of children’s metacognitive development are limited or lacking. The presence of cultural differences in metacognitive abilities of young children (Carr et al., 1989; Purdie, 1995) raises a question as to whether these differences are consolidated through variations in cultural patterns of metacognitive guidance.

The fundamental questions that need to be addressed in future investigations of metacognitive development are to what extent the patterns of other guidance observed in few cultures relate to the patterns of various cultures? And are there variations in social guidance of metacognitive development afforded to children in different cultural groups or contexts? Based on the socio-cultural perspectives that development and education are culturally constructed and mediation is culturally bound, the presence of cultural specificity in maternal metacognitive guidance of preschoolers’ problem-solving is presumed in this thesis. The following chapter presents the theoretical and empirical bases on which cultural specificity in maternal guidance of metacognitive development can be postulated.
Chapter 4

Cultural specificity in metacognitive guidance

"Aspirant members of a culture learn from their tutors, the vicars of the culture, how to understand the world. That world is a symbolic world in the sense that is consists of conceptually organised, rule-bound belief systems about what exists, about how to get to goals, about what is to be valued. There is no way, none, in which the human being could possibly master the world without the aid and assistance of others for, in fact, that world is others" (Bruner, 1985, p.32, cited in Ebbeck, 1995).

According to socio-cultural perspectives, children’s cognitive or metacognitive development has its origins in cultural contexts and is mediated through adult guidance, primarily in verbal interactions. Adult guidance is also presumed to be shaped by the cultural contexts and to quote Wertsch (1991), “mediated action can not be separated from the milieu in which it occurs” (p.18). Accordingly, if metacognitive development is rooted in cultural environments in which children grow, and emerges largely through interactions with adult members of the culture, are the variations in children’s metacognitive abilities across cultures due to the cultural variations in adult’s guidance of development? And is there any evidence for cultural specificity in adult scaffolding of children’s metacognitive development?
In the previous chapter, it was indicated that an important line of investigation in adult guidance is beginning to focus on cultural contexts of development. Rogoff (1990) has indicated that interactions with social members in cultural contexts are important mechanisms for shaping the development of cognitive or metacognitive competencies. Morelli and Tronick (1991) also contended that cognitive functioning in children develops in cultural contexts and through their participation in socio-cultural routines. The need to examine children’s participation in cultural routines for understanding the genesis of higher mental functions, as well as the need to explore the nature of adult guidance in various socio-cultural groups is highly emphasised in the literature (Moreno, 1991; Mullis & Mullis, 1986; Rogoff et al., 1993, Wang, 1993; Wertsch, 1979).

Rogoff et al. (1993) have documented cultural differences in guided participation. As mentioned earlier, guided participation is a neo-Vygotskian concept of adult guidance that emphasises joint participation of adults and children in children’s development. However, with respect to the development of metacognitive abilities, the literature is yet to indicate the specific role of culture in shaping metacognitive development and more so, its impact on metacognitive guidance.

Adult or other guidance of metacognitive development is universal. Yet, important differences are expected in the cultural arrangements and processes of adult guidance of children’s metacognitive development for at least two reasons. Firstly, the theoretical perspectives of Vygotsky (1978) suggest that adult guidance is situated in the cultural contexts. Secondly, the empirical evidence from cross-cultural research on child development points to variations in parental interactions, behaviours, and goals that mediate the influences of culture on child development. Besides, it is also possible that cultural variations in children’s metacognitive abilities would have arisen as a function of cultural variations in metacognitive guidance and metacognitive learning environments. In the light of the above, an attempt is made in this chapter to explore the socio-cultural theoretical and empirical bases on which cultural specificity in metacognitive guidance can be postulated and investigated. This chapter begins with the examination of cultural influences on child development, with an intent of
delineating its effects on adult guidance, a mediating variable between culture and child development.

4.2 Research on cultural influences on child development/special guidance

The role of culture in shaping children's development is emphasised in the literature on educational, social, and developmental psychology, and culture and ethnicity are identified as important predictors of children's developments and achievements. Studies conducted within an anthropological framework have demonstrated the embeddedness of beliefs about life, children, and their growth within culture. Heath (1983, cited in Herbel, Canella, Teague, & Ford, 1994) has shown that differences in socio-cultural worlds will result in the development of different cognitive or social strengths among children of various groups. Children in different cultures are socialised differently and the development of cognitive abilities are a product of cultural participation and are not merely the result of biological factors. Some of the earliest evidence for the influences of culture-specific socialisation on children's development was documented by Mead (1934), who pointed out that socialisation of children is specific to cultural groups and comes through bonding and interactions with parents and other social members.

The role of culture in shaping children's behaviours and its influence on the organisation and arrangement of children's activities have been clearly indicated by other researchers as well (Farver, Kim, & Lee, 1995; Rogoff et al., 1993). Culturally determined differences in children's achievements, abilities, and learning in general (Karjala, 1993; Fuson & Perry, 1993), and, specifically, in metacognitive abilities have been documented (Kurtz et al., 1990; Purdie, 1995; Schneider et al., 1986).

There is considerable evidence to support the notion that cultural differences in children's performance and abilities are due to the variations in cultural beliefs, child rearing interactions, and forms of parental support (Hess et al., 1987; Morelli & Tronick, 1991; Rogoff, 1990; Roopnarine, Talukder, Jain, Joshi, & Srivastav, 1990; Stevenson et al., 1986; Whiting & Edwards, 1988). While the above evidence points
to the influences of culture on child development and social interactions, the processes by which culture influences children's development and adult-child interactions is not clear. In the following section, the definitions of culture are examined initially, before exploring its influences on child development or social guidance.

4.2.1 Culture: Definitions

The term culture is often used synonymously with race and ethnicity. It is important to clarify the meanings of race and ethnicity in order to better understand the influences of culture on children's development. Ethnicity refers to membership to a group who share a common heritage. Race, on the other hand, relates to physical characteristics of individuals. The term culture has been characterised as representing human diversities along with ethnicity and race. According to Segall (1986), at the very heart of the concept of culture is the expectation for variations in human beliefs, attitudes, and behaviours. Culture is broadly viewed as a concept that encompasses many things related to an individual's way of life. The broadness and vagueness inherent in the common definition raise questions as to what features of life can be termed as components of culture, and whether there is an universal definition for culture?

Anthropologists and sociologists have defined culture in several ways using different theoretical perspectives. The earliest definition of culture has been given by the famous anthropologist, E. B. Tylor (1871, cited in Cole & Scribner, 1974), who has defined culture as a complex, which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society. The emphasis on acquisition of knowledge related to social phenomena and social behaviours is inherent in Tylor's definition.

Culture has also been defined as "the man-made part of the human environment" (Herskovits, 1948, p. 17, cited in Triandis, 1980), which is further distinguished into two aspects of physical and subjective cultural environment. According to Triandis, Vassiliou, Vassiliou, Tanaka, and Shanmugam, (1972, cited in Triandis, 1980), while
physical culture comprises objects made by humans, such as houses, tools, and gardens, subjective culture, on the other hand, includes people's cognitions, attitudes, and behaviours.

In contrast to the above definitions where the focus was on social, physical, and psychological phenomena, other definitions have emphasised the meanings associated with symbols and their transmission. Geertz (1975) for example, has defined culture as “historically transmitted patterns of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about and attitudes toward life” (p.89, cited in Jamrozik et. al., 1995).

In other definitions of culture, social aspects of living such as structure of the family, family roles, social customs, and group have been included. Eggen and Kauchak (1994) for instance, defined culture as “referring to attitudes, values, customs, and behaviour patterns that characterise a social group” (p.165). An important and a rather complex definition has been given by Liffman (1981), according to whom, “culture in the important sense, relates to the deep aspects of individual and group life. It deals with attitudes, values, and assumptions about such universals as birth, death, pain, understanding of sex and family roles, of faith, divinity, luck, future, progress, misfortune, and the like” (p.7 cited in Jamrozik et. al., 1995). Culture according to this definition is a deep and complex facet of life.

Culture has been viewed as the collective programming of the mind that distinguishes members of one category from another (Hofstede, 1991). According to Lewis (1996), this collective programming begins right after birth and reinforced in kindergarten, school, and through to the work place. He further says, that even the decision of where to put babies to sleep after returning from hospital reflects the cultural goals of development. For example, an Asian child is put in the same room as the parents. But Western parents often put children in a separate room, which may imply valuing of independence in children's development.
It was apparent from the various definitions of culture that there is no universally accepted definition of culture. Different people have defined culture dissimilarly incorporating various behavioural and social components into their definitions, which often resulted in complex and vague definitions. In the context of a lack of a universal definition of culture as well as the complexity in definitions, the need for an unambiguous and simple definition of culture has been indicated in the literature. It has also been highlighted that the definition of culture should not be too broad and indicative of nothing in particular. Further, the various definitions have illustrated the difficulties involved in isolating common elements of culture as well as those elements which can have a profound influence on children’s development and social guidance than the others.

Due to the conceptual difficulties inherent in defining culture, cross-cultural investigators have been debating over the selection of physical, behavioural, and social aspects on which culture can be operationally defined. In this respect, Cole and Scribner (1974) believe that guiding hypotheses help cross-cultural researchers either to have clear definitions or to analyse the influences of culture on development or any other psychological phenomena. However, Cole (1985) has pointed that culture and individual’s psychological phenomena are not separate entities and that they are interdependent. Cole (1992) has also proposed that culture is a medium within which biological and environmental factors interact to produce child development, indicating the difficulties in treating culture as an independent variable. Therefore, it is a challenge for researchers to draw out a research strategy that will help to understand how individual and cultural processes interweave. An examination of the processes by which culture can influence psychological phenomena or vice-versa may enable cross-cultural researchers to understand their mutual effects.

4.2.2 Cultural influences on child development: Processes

Socialisation is the process by which cultural influences on children’s development can be examined as it is a process by which children are helped to grow towards
adulthood and to become effectively functioning members of a society or culture. It is also a tool that is shaped by culture it transmits.

Parents as the primary agents of socialisation, transmit their cultural and social values to children through their child rearing practices and interactions. They exert a major influence on children's development, especially in the preschool years and also remain as the dominant and important sources of cultural transmission even after children start school. Although families are characterised as settings of socialisation and cultural transmission, according to Stein (1985, cited in Stratton, 1988), they are not the filters through which cultural values are transmitted to children. Rather he sees families as catalysts in the creation of culture. To quote Stein (1985), "it is a mistake to see family as an agent of culture ... instead culture is a result of the externalisation and recreation of the family (p.219, cited in Stratton, 1988)." This statement challenges the causality of culture on families and indicates the need to examine the specific processes by which parents or families mediate cultural influences on children's development.

According to Stratton (1988), culture indicates both context (and product) of families' functioning as well as cognitive aspects of parental behaviours. Based on the notion that parental cognitions are the mediators of cultural influences, Stratton (1988) believes that the first step in attempting to understand the cultural influences on development might be to analyse parental cognitions as "studies on parental beliefs about children, which are reflected in cultural values, seem to be the most central to an understanding of how families set up the socio-cultural environment within which children function" (p.7).

Parents in different cultures seem to conceptualise children's development differently and bring up their children in different ways. The notion that parents develop and use a coherent set of beliefs about development in the process of socialising their children supports the cognitive perspective for examining parental belief systems and how those beliefs relate to parental behaviours. Hence, analysis of parental cognition or
cognitive aspects of parental behaviour is vital in cultural studies of child
development.

The seminal work done by Kohn (1969) on the relation between social context,
parental beliefs, and child outcomes has also revealed that “a) elements in parents’
social context influence the goals and values parents have for their children, b) these
values lead to differences in parenting practices, and c) that the differences in
parenting practices ultimately will result in differences in child outcomes” (p.64, cited
in Okagaki & Sternberg, 1993).

A large body of literature has confirmed a correlation between either parental values
and children’s achievements or parental practices and child development (Fuligni,
1997; Harwood, Schoelmerich, Ventura-Cook, Schulze, & Wilson, 1996; Hess et al.,
1987; Stevenson et al., 1986; Okagaki & Sternberg, 1993). For example, in the case
of academic achievement, Marjoribanks (1980, 1995b) has shown that explanations
for variations in children’s achievements are rooted in parental attitudes towards
achievement and the involvement of parents in their children’s activities. From this
evidence it appears that culture influences children’s development in the way child
development is viewed and constructed and those conceptions and cultural values are
communicated to future generations via interactions and discourses.

4.2.3 Cultural specificity in parental beliefs of child
development

The widely documented differences in children’s abilities across cultures are
hypothesised to originate in parental values and emphases (Chao, 1996; Crystal &
Stevenson, 1991; Weisner & Garnier, 1992). Parents in diverse cultures appear to
have a set of norms underlying their conceptions of child development and refer to
their implicit cultural norms to understand and support their children’s needs and
temperaments (Bril, Zack, & Nkounkou-Hombessa, 1989). The culmination of
convictions, images, views, and rules governing child rearing are usually referred to as
naive theories or parental belief systems (Holden & Edwards, 1989). Several studies
have revealed that parents in different cultural groups vary in their implicit theories of

According to Stratton (1988), parents incorporate their cultural beliefs into their family routines and interactions with children which are labelled as “general” and “specific” beliefs. The cultural conceptions that parents have for children of any age or gender are termed as general beliefs. Other examples for general beliefs are beliefs about gender role, moral values, political and religious views, and beliefs about the nature of child development. These views are held by people in general and can be applied to a particular child as well as relate to a broader belief system in any culture or society. Specific beliefs are what parents hold for a particular child. The review of literature on child rearing beliefs presented in this chapter focuses on general beliefs of child development.

Evidence from cross-cultural research has indicated that values and beliefs associated with child rearing and guidance are not universal. The concepts of development that parents hold and immediately use to understand their children’s behaviours are influenced by their beliefs and values, and these vary from culture to culture and within cultures. For example, Japanese mothers perceive infants as independent biological beings who need to be incorporated into the culture and made interdependent. American mothers on the other hand, view infants as dependent biological beings who need to be helped to become independent (Caudill & Weinstein, 1969, cited in Pomerleau, Malcuit, & Sabatier, 1991). The constructions of child development thus appear to be different in Eastern and Western cultures.

Cultural differences in parental expectations for various areas of children’s development have been generally indicated between Asian and non-Asian cultural groups. For instance, Japanese mothers have been reported to expect earlier control of emotions. In contrast, American mothers have been noted to emphasise verbal assertiveness in their children (Hess, Kashiwagi, Azuma, Price, & Dickson, 1980, cited in Okagaki & Sternberg, 1993). In another study, parents from Cambodia, Mexico, the Philippines, and Vietnam have rated conforming to external standards as
being more important than developing autonomous behaviours in their children. American-born parents on the other hand, favoured developing autonomy over conformity in their children (Okagaki & Sternberg, 1993). For the most part, while American parents have been reported to value autonomy and independence, Asian parents have been noted to value conformity and interdependence in their children (Dosanjh & Ghuman, 1998; Martini, 1996; Messinger & Freedman, 1992). Further, Asian orientation toward children is termed as moralistic where individuals are encouraged to derive satisfaction through their diligence and sincere efforts to conduct themselves morally (Ekblad, 1986; Suzuki, 1980, cited in Kelley & Tseng, 1992).

Overall, the literature on parental views of child development has indicated that parents in different cultures have different beliefs about the ages at which children can be expected to perform certain tasks (Goodnow, Cashmore, Cotton, & Knight, 1984; Norimatsu, 1993), expectations for children’s schooling (McGillicuddy-DeLisi & Subramanian, 1991; Stevenson & Lee, 1990), the traits and values parents want to develop in their children (Pomerleau et al., 1991; Okagaki & Sternberg, 1993), socialisation goals and behaviours (Harwood et al., 1996), and achievement goals (Niles, 1998).

Variations in parental beliefs of child development have been documented between immigrant and mainstream cultural groups as well. For example, Pomerleau et al. (1991) have revealed differences in Quebecois, immigrant Haitians, and Vietnamese mothers’ values and beliefs about child development. The most striking differences have been noted in the area of developmental time tables, with native Quebeccoin mothers expecting the emergence of infant competencies at an earlier age than mothers of the other cultural groups, and Vietnamese and Haitians mothers stressing the importance of fostering social and moral development. The variations in views of child development among the mothers of the three cultural groups indicated in this study have been noted to relate to their cultural views of child development.
In contrast to the above findings, Kelley and Tseng (1992) have shown similarities in child rearing goals between immigrant Chinese and Caucasian American mothers. These findings raise an issue as to what extent the data collected from immigrant families is representative of their home cultural views.

While the above research evidence has indicated that cultural or parental beliefs are the mediators of children's development, it is not yet clear from the literature as to which cultural beliefs are strongly associated with parental actions or have an impact on child development. It appears that not all strongly endorsed cultural beliefs can have an impact on children's experiences or parental actions. According to D'Andrade and Strauss (1992), some cultural beliefs are more incorporated into everyday routines of families, while others seem to be readily available, expressed, and endorsed but not readily acted on. Those beliefs that are instantiated into the daily routines have been proven to produce detectable effects on children's development (Weisner, 1984).

In brief, the discussion in this section has indicated that the assessment of cultural constructions of child development or parental cognitions are vital to understand the cultural influences on child development. The literature has also raised important points on the possibility of changes in immigrant families' cultural views of child development as well as the differences in the impact of cultural beliefs on parental interactions or child development.

4.2.4 Cultural specificity in parental child rearing/interactions

In an attempt to understand the origins and variations in children's development, researchers have shown cultural variations in parental interactions and rearing patterns along with the differences in their beliefs. In general, cultural variations have been reported with respect to maternal teaching strategies (Carr et al., 1989; Junefelt & Tulviste, 1993; Pomerleau et al., 1991), rates of maternal object stimulation provided to children (Bornstein, Tal, Rahn, Galper’in, Lamour, Ogino, Pe’cheux, Toda,
Azuma, & Tamis-Lemonda, 1992), play behaviours of parents with children (Best, House, Barnard, & Spicker, 1994), and parental discourses (Martini, 1996).

Further, differences in parental interactions and care taking behaviours of Asian and non-Asian backgrounds have been indicated in a variety of interactional contexts and settings. For example, in the context of children’s discipline, differences in American and Asian mothers’ strategies for regulating children’s behaviour have been indicated (Sinha, 1985). In this study, American mothers have been noted to use power and compliance, and by contrast, Indian and Japanese mothers, reported using appeals on the basis of feelings and consequences. In another study, Chinese parents have been reported to be lenient and indulgent toward young children and tend to be more disciplinary with older children (Ho, 1986).

Adult intervention in children’s activities and the strategies used to regulate and guide children’s development have been found to vary according to their culture. Anglo mothers have been commonly observed to utilise more perceptual questions in their instructions and to encourage their children to ask questions (Moreno, 1991). They are also depicted as more sociable with their children, interact in a friendly, playful, conversational manner, and treat children as equals compared with mothers in other cultures. Compared with Anglo mothers, mothers in other cultural groups have been observed to stress more nurturing involvement and maintained dominance and authority with their children (Whiting & Edwards, 1988).

In the context of puzzle-solving interactions also, Anglo mothers have been observed to encourage independence in their toddlers’ puzzle-solving attempts (Messinger & Freedman, 1992). In contrast, Asian or non-Anglo mothers have been observed to encourage interdependence in their children’s puzzle-solving by assisting them either to fit a shape in the puzzle before they attempt (Messinger & Freedman, 1992) or guide them with directions.

The encouragement given to children to ask questions in non-Anglo cultures (e.g., Aboriginal) has also been reported to be less compared with the encouragement given
to children in Western nations (Harris, 1980, cited in Partington & McCudden, 1992). The findings on the child rearing practices of Asian and Western mothers thus suggest that the development of independence is a valued goal in Western cultures, where as interdependence is a valued goal of socialisation in non-Western cultures.

In the literature on cultural contexts of child development, more emphasis has been laid on comparisons across cultures. Little is known about cultural variations in child rearing goals and interactions within cultural groups. In a few studies that have examined the sub-cultural variations of immigrant families, differences have been noticed in maternal speech addressed to children in two Italian cultural contexts (Carnaioni, Longobardi, Venuti, & Bornstein, 1998), in child rearing practices of first and second generation Punjabi (Indian) families living in Britain (Dosanjh & Ghuman, 1998), as well as in child rearing values of two generations of Greeks (Georgas, Berry, Shaw, Christakopoulou, & Mylonas, 1996). These findings have pointed that child rearing values and practices of immigrant families may be sensitive to acculturation.

In contrast to the evidence on changes in child rearing practices of immigrant families, there is other evidence to indicate that many immigrant families try to preserve their traditional child rearing values. For example, Papps, Walker, Trimboli, and Trimboli (1995) have indicated variations in the use of disciplinary techniques between Anglo, Greek-Australians, Lebanese-Australians and Vietnamese-Australians, with Vietnamese mothers reporting to use power assertion less frequently than mothers from the other cultural groups. Similarly, Kelley and Tseng (1992) have also shown variations in child rearing practices of immigrant Chinese compared with Caucasian American mothers. In this case, Caucasian American mothers have stated to use non-restrictive, nurturing, and rule setting techniques. Chinese mothers on the other hand, preferred to place more emphasis on physical punishment and verbal control methods. From the above data it is clear that while some changes in child rearing values or practices are possible among immigrant cultural groups, they also aim to maintain their home/traditional cultural values. The cultural variations in immigrant families' views and practices of child rearing compared with mainstream families' cultural
views, clearly substantiate maintenance of home cultural values/practices among the immigrant families.

On the whole, cultural variations in parental teaching and interactions with children (Bornstein et al., 1992; Franco, Fogel, Messinger, & Frazier, 1996), in Asian and Anglo or European families' interactions (Trommsdorff & Friedlineier, 1993), and in mainstream and immigrant cultural groups (Martini, 1996; Papps et al., 1995) have been indicated. The cultural differences in instruction and interactions have been found to be associated with their culture-specific goals for child development. Cultural variations in parental beliefs or interactions specific to metacognitive guidance and interactions appear to be lacking in the literature.

4.2.5 Cultural specificity in parental communication

Communication is an important aspect of parental interactions and child rearing. It is a means by which cultural traditions and forms of cultural behaviour can be transmitted between groups and from one generation to the other. This section explores the influences of culture on the form and content of communication between children and caregivers as well as the variations in parental communication across or within cultures.

Children regularly hear their parents use their home language or the predominant language of that community. According to Shatz, (1991), language is a powerful tool of parenting. Language is believed to be the carrier of cultural values and when parents communicate, they also convey their cultural values. In fact, language serves several functions of socialisation, cultural transmission, and internalization of psychological development. Language has a strong impact on child development because of its pervasiveness in daily interactions.

Parental communication to children in different cultural groups has been found to be different and the differences in communication are presumed to be related to cultural values. The use of language, subtlety or silence according to Rogoff (1990), may be
related to cultures. In Navajo families for instance, talk is a sacred gift that is to be used as required and Navajo families are characterised to use more demonstration techniques in their interactions with children (Cazden & John, 1971, cited in Rogoff, 1990). Little speech is addressed to infants in Samoan and Papua New Guinea cultures until they can walk independently. Similarly, in other African rural societies also, adults do not talk to infants as they do with adults with an assumption that children are not ‘potential human beings’ until they can walk (Camaioni et al., 1998).

The hierarchical views of social relationships and cultural constructions of child development have been noted to influence parental conversations with children as well as children’s conversations with parents. For example, frequent use of imperatives in African mothers’ speech addressed to their infants has been related to social hierarchies in African societies (Rabain-Jamin & Sabeau-Jouannet, 1997). Children in Western cultures have been characterised to interact with caregivers as conversational peers and to initiate, interact actively and ask questions. In contrast, children in Aboriginal cultures have been depicted as listeners (Harris, 1980, cited in Partington & McCudden, 1992). These cultural variations in children’s conversational styles have been related to the emphases placed on development of individuality and interdependency in children in those cultures.

The cultural preferences for forms of social speech in mother-child interactions with children (e.g., non-comprehension signals) indicated by Robinson (1988), further support the cultural bases of communication. According to Robinson (1988), children are often taught explicitly on the cultural preferences for forms of speech. She has observed Australian mothers spending much effort in teaching their preschool children to say “I beg your pardon” in their conversations instead of saying “what”.

Because language reflects the cultural code, analysis of communication has occupied an important place in cross-cultural studies. The analysis of linguistic mediation in mother-child interactions has been approached by developmental psycholinguistics in several frameworks. Affective and communicative components are two broad categories under which analysis of maternal speech has been frequently accomplished.
A further category of regulative component has also been addressed in studies of adult guidance (Freund, 1990; Junefelt & Tulviste, 1993; Wertsch et al., 1980). Cultural variations in mothers' use of language have been documented in the literature on social guidance. Junefelt and Tulviste (1993) have shown variations in the use of speech in regulation of children's physical activity between American, Estonian, and Swedish mothers, with Estonian mothers using more imperatives, the American mothers using questions, and the Swedish mothers using declaratives. They have also reported commonalities in American, Estonian, and Swedish mothers' use of questions in verbal activity.

In another study, Fernald and Morikawa (1993) have also indicated both cultural differences and similarities in mothers' speech addressed to their infants. In this case, while similarities have been noticed in linguistic simplification and frequent repetition between American and Japanese mothers, differences have been noted in the labelling of objects. These differences in labelling they argued were influenced by cultural differences in interactional styles and child rearing beliefs.

Along with cross-cultural differences, intra national differences in mothers' speech to their children have also been observed (Camaioni et al., 1998). In general, differences have been reported in the speech addressed to children in industrialised and non-industrialised societies or European or non-European societies (Rabain-Jamin & Sabeau-Jouannet, 1997; Bornstein et al., 1992). Parental speech in traditional, agrarian based and non-European cultures has been commonly characterised to comprise directives and as representing the hierarchical view of social relationships and child rearing practices. More directive speech styles are correlated with working class families in Western societies, rural, and economically traditional societies (Hoff-Ginsberg & Tardif, 1995). In contrast, tutorial didactic, and conversational styles of communication have been associated with industrialised and Western nations.

It has been indicated by Ochs and Schieffelin (1984, cited in Rogoff, 1990) that the speech between children and caregivers in different cultures can be broadly classified into two patterns that reflect child centredness and societal focus. According to Ochs
and Schieffelin (1984, cited in Rogoff, 1990), the speech of middle class U.S. families reflects caregivers’ adaptation to children’s needs, where caregivers simplify their talk, provide encouragement and scope for negotiation of meanings and encourage children’s participation and initiation. The speech in other cultures (e.g., Samoan) reflect the societal focus, where caregivers’ speech directs children toward the third party and build circumstances to which they want their children to respond.

Overall, cultural specificity in parental communication has been documented in the literature and the differences in communication are theorised to represent cultural differences in the constructions of child development. Despite the evidence for cultural bases of communication, there is a debate as to whether the differences in communication are a function of linguistic variations (Gopnik & Choi, 1990) or cultural values (Shatz, 1991). In addition to this, Fernald and Morikawa (1993) have also argued that parental communication to children is determined not by cultural factors alone but by a complex interaction of biological, linguistic, and cultural factors. However, according to socio-cultural theoretical perspectives, language and verbal discourse are socio-cultural activities and communication patterns are therefore deep rooted in cultural values. Bakhtin (1981) has also argued that language and discourse are social phenomena because they arise in the context of a social relationship. Additionally, Volosinov (1987) has pointed that the word or utterance is a social phenomena and is the product of the interaction between speakers as well as a product of the broader context of the social situation in which an utterance emerges.

As stated previously, different cultures will have different constructions about life, world, and other aspects of living. Besides, the mechanisms used to transmit cultural knowledge to future generations are also different across cultural groups. Shweder (1989, cited in Shatz, 1991) for example, categorised cultures according to a tripartite system centred on individualism, community, and worldliness. Triandis (1989, cited in Shatz, 1991), on the other hand, classified cultures into two groups of individualistic and collectivistic cultures. Language use is supposed to reflect such differences and in turn mediate individual differences in children across cultures. Language use is a central source for differences in cultural values, goals and norms of
development, and approaches to learning and problem-solving. Shatz's (1991) relational model of language socialisation emphasises that cultural values have a direct bearing on a community's language practices and that language is a medium for cultural transmission. Parental language styles therefore reflect cultural values, which are likely to lead to variations in development of values/skills in children. In short, cross-cultural observations on parental communication have revealed variations in communication patterns between caregivers and children, which are hypothesised to be rooted in their cultural values. The evidence for cultural differences in forms of verbal and non-verbal communication (e.g., gaze or other cultural conventions), highlight the need to consider them in cross-cultural investigations, which has been reiterated by other researchers as well (Rogoff et al., 1993).

In summary, the cross-cultural literature presented in this section revealed cultural specificity in child rearing beliefs, practices, and communication patterns. An important and consistent finding from investigations on cultural patterns of child development has been that the development of independence, self-regulation, and self-reliance are the valued goals of socialisation in Western or European societies. Whereas development of interdependence, social conformity, and obedience to authority are the valued goals of socialisation in Eastern or Asian societies (Dosanjh & Ghuman, 1998; Messinger & Freedman, 1992; Niles, 1998; Norimatsu, 1993). The emphasis placed on independence or interdependence has important implications for children's development or social guidance. The constructs of individualism and collectivism seem to be helpful in understanding the cultural bases of parental constructions of child development or socialisation practices in Eastern and western cultures.

4.3 Other determinants of child development/social guidance

The preceding section has underlined the potential role of culture in determining parental socialisation or children's development. However, differences in children's development/socialisation are not related to culture alone. It has been indicated that social class and educational differences of parents can affect children's development
(e.g., Lambert, 1984). Thus along with culture, socio-demographic factors such as socio-economic status and gender also seem to influence parental interactions and child development. Due to the implications of socio-demographic variables in determining children's development or social interactions, the following section examines the impact of selected socio-demographic variables of gender of the child and the parent and socio-economic and acculturation status of families on child rearing or social interactions.

### 4.3.1 Gender of the child and the parent

Along with culturally specified socialisation practices, gender has been identified as an important determinant of both parental and child behaviours and their interactions. Therefore, both the gender of the child and the parent have important consequences for socialisation, child rearing, and developmental outcomes.

The gender of the parent seems to have important implications for caregiving and socialisation of children. Women are universally portrayed as nurturers and are expected to provide warm and nurturing care. Fathers, in contrast, are characterised to assume control and power. The empirical evidence available from Western and Asian societies has confirmed the universal assumption that mothers are warmer and less controlling than fathers (Block, 1978, 1984; Berndt, Cheung, Lau, Hau, & Lew, 1993; Lau, Lew, Hau, Cheung, & Berndt, 1990). From these findings, it appears that the interactions of mothers and fathers with their children would be different.

Consistent with the view that gender differences are possible in parental interactions with children, Russell, Aloa, Feder, Glover, Miller, and Palmer (1998) have indicated that mothers use authoritative styles of parenting and fathers, on the other hand, use authoritarian and permissive styles of parenting. In other observations that comprised Australian parents, mothers have been reported to be more directive and provided more information to their children in their interactions than fathers (Russell & Russell, 1987).
Further, cultural variations in parental interactions and parental bonding with their children have been reported. For example, comparisons of Indian and American women’s reports on caring and overprotectiveness behaviours of parents have revealed differences in parental bonding (Luthar & Quinlan, 1993). In this case, Indian students have perceived their parents as more warm and caring than American women. Analogously, in another study, adults in Hong Kong perceived their parents as less warm and more controlling than did the adults in Taiwan and mainland China (Berndt et al., 1993).

The involvement of mothers and fathers in children’s development has also been found to vary across cultures. While fathers have been commonly reported to spend less time in caregiving compared with mothers (Hossain, Field, Pickens, Malphurs, & Valle, 1997; Tulananda, Young, & Roopnarine, 1994), considerable differences were noted in fathers’ involvement in different cultures. Compared with Asian fathers, the involvement of American fathers in caregiving and socialisation of children has been found to be higher (Tulananda et al., 1994).

As mentioned before, gender of the child is an important factor in determining the developmental differences in children or parental interactions with children. Cultural norms and values define the gender roles and behaviours for children. Children in each culture are exposed to a set of societal rules which are primarily based on their age and gender. While tracing the developmental origins of gender differences in moral development, Gilligan and Attanucci (1988) have indicated variations in moral orientations of male and female children, which are believed to be related more to their socialisation practices.

In congruence with the view of differential socialisation of male and female children, variations in parental interactions with their sons and daughters have been indicated. For instance, Russell et al. (1998) have indicated that parents are more likely to use authoritarian styles with boys and authoritative styles of reasoning and induction with girls. Along with this, the literature has also indicated an interaction between gender of the child and gender of the parent. For example, American fathers described
themselves as being more strict towards their sons, whereas American mothers described themselves as being more restrictive toward their daughters (Lytton & Romney, 1991). In another study, Lindahl and Heimann (1997) have also shown that the social proximity between parents and children in social interactions was related to the gender of the child or the parent, with a significantly higher degree of proximity in mother-daughter dyads' interactions than in mother-son dyads' interactions.

Further, cultural variations in parental attitudes or interactions towards male and female children have also been indicated. For example, American parents have been generally noted to treat their sons more warmly than their daughters (Collins & Russell, 1991). In Chinese families, fathers have been reported to exert more control over their sons than their daughters (Ho, 1986). These data suggest an interaction between cultural background of the parent and the gender of the child.

Children's interactions with their parents have been noted to be impacted by their gender as well as the gender related parental expectations of their behaviours. For instance, Carr et al. (1995) have shown that boys are more likely to be affected by the perceptions that parents value strategies that indicate high ability. In other observations, Marcos (1995) have shown that children address more directives to their fathers and expressives to their mothers. The literature on mathematics achievement of boys and girls has also indicated that mathematics achievement of children has been associated with sex-stereotypes in parental beliefs (Eccles, Jacobs, & Harold, 1990). In contrast, Lee, Ichikawa, and Stevenson (1987) have found little evidence for variations in mothers' beliefs about mathematics as a function of gender of the child. The empirical evidence on gender related expectations for mathematics achievement thus appears to be inconclusive.

In brief, social interactions seem to be determined to a large extent by either the gender of the child or the parent. The empirical evidence on gender influences of interaction although inconclusive, signifies the need to consider it as a co-variable, particularly in cross-cultural investigations.
4.3.2 Socio-economic status of families

Socio-economic status has been identified as one of the important variables that predicts socio-cultural differences in parental beliefs (Miller, 1988). It is generally considered to influence every aspect of life including the knowledge on which beliefs are constructed, and relating to either child development or any other matter of life. For example, Bronfenbrenner (1958, cited in McGillicuddy-DeLisi, 1982) has suggested that knowledge and theories about child development filter through social class.

The influences of socio-economic status on children's development and social interactions have been indicated in the literature. There is evidence to indicate that teaching styles, maternal regulation, and parental values can be determined by social class (Camaioni et al., 1998; Hoff-Ginsberg, 1991; Hoff-Ginsberg & Tardif, 1995). Overall in the above studies, middle class parents have been portrayed as encouraging self-direction and autonomy in children, facilitating social competence, and viewing their children as active constructors and participants in their development. Lower class mothers, in contrast, have been depicted as more controlling and directive in their approach compared with mothers of other socio-economic standards.

Due to the potential impact of socio-economic status on social interactions or child development, it is important to ensure that differences obtained across cultures are not a result of these demographic differences. Historically, cross-cultural research has confounded culture and socio-economic status due to the difficulties involved in separating the effects of culture from the other potential socio-demographic variables, or vice-versa. It is a challenge for cross-cultural researchers to elucidate the effects of culture from the other potential socio-demographic variables.

To isolate the influences of culture and socio-economic status on any selected phenomena under study is generally difficult. Such an attempt is even more difficult in cross-cultural studies that comprise immigrant families, due to two important reasons. Firstly, most of the immigrant families are likely to fall under the lower
socio-economic status, especially in their initial stages of settlement in a new country, due to their economic struggles (Harwood et al., 1996). Secondly, it is difficult to validate the verbal data collected on immigrant families’ cultural values as to whether those beliefs are culturally determined or consequences of economic struggles.

Despite the above mentioned difficulties, it appears that there is a need to consider the socio-economic status of immigrant families. For instance, Gutierrez, Sameroff, and Karrer (1988) have shown that acculturation contributes to changed beliefs about child development, more so in high socio-economic status families compared with lower socio-economic status families. These data thus highlight the role of socio-economic status of families in predicting the sub-cultural variations within a single ethnic group as well as the need for assessment of socio-economic status of immigrant families.

In contrast to the above evidence that supports the significance of socio-economic status, many cross-cultural researchers have argued that cultural beliefs are the critical factors through which other demographic influences such as age, gender, and socio-economic status affect parental behaviours and children’s development (Chao, 1994; Harwood, Miller, & Lucca Irizarry, 1995, cited in Harwood et al., 1996). For example, Goodnow (1988) and Miller (1988) have indicated that cognitive schemas that comprise parental beliefs are influenced by cultural values. Even though a relationship is possible between various socio-demographic variables such as income, gender or education, Hossain et al. (1997) have argued that these variables do not necessarily predict parental behaviours and interactions.

Besides, there is evidence to indicate that the effects of culture are more dominant in shaping children’s development or parental interactions than socio-economic status. Goodnow et al. (1984) and Pomerleau et al. (1991) have shown that maternal notions of developmental expectations are sensitive to ethnic or national differences, with little or no impact evident from the dimensions of socio-economic status. Similarly, Harwood et al. (1996) have also shown that culture and socio-economic status contribute independently to group differences, with cultural effects being stronger
than the effects of socio-economic status. Yet, the question on the relative influences of socio-economic status and culture remains unanswered till their influences on social interaction or child rearing have been substantiated extensively.

4.3.3 Immigration/Acculturation

Adaptation of immigrant families into a new culture may lead to changes in their living conditions and views about life and children, in other words, acculturation. In the processes of adaptation, it is likely that many parents tend to question and debate their cultural beliefs, child rearing values, and practices (Karrer & Falicov, 1980, cited in Gutierrez et al., 1988). Frequent encounters with mainstream cultural values and practices, reflections, and evaluations of their traditional cultural values may also lead to a synthesis of new beliefs, replacement of their traditional values and deviations in traditional belief systems or practices of immigrant families.

The research on influences of acculturation on immigrant families’ values and practices related to child rearing is contradictory. For example, Chiu (1987, cited in Kelly & Tseng, 1992) has indicated maintenance of traditional values regarding approval of emotional expressions of children among Chinese immigrant families. In contrast to these findings, Kriger and Kore (1972, cited in Kelly & Tseng, 1992), have revealed differences in Chinese American families’ values with respect to the approval of emotional expressions of children, whose views have also been found to be comparable to American family values. Other researchers have also observed some changes in traditional child rearing beliefs and practices of immigrant families as a result of their acculturation (Dosanjh & Ghuman, 1996; Gutierrez et al., 1988).

Further, it has been shown in few studies that some aspects of child rearing are more susceptible to acculturation than the others. For instance, Kelly and Tseng (1992) have observed changes in immigrant Chinese families’ views about child rearing but not in their traditional child rearing methods. In contrast, Dosanjh and Ghuman (1998) have revealed changes in their child rearing practices through their study on child rearing in two generations of Punjabis and have indicated that immigrant Punjabi
families are more likely to hold on to their traditional child rearing value of promoting interdependence in their children. It is thus difficult to conclude as to whether child rearing values are more resistant to influences of acculturation or child rearing methods.

Despite the possibility for some changes in immigrant families’ child rearing values or methods as a result of acculturation, Lum and Char (1985) have pointed that the maintenance of traditional values in immigrant families goes on through several generations till they are completely assimilated into mainstream societies. The dynamics of acculturation thus appear to be complex and difficult to understand. However, they are best summarised by Dosanjh and Ghuman (1998), as “complex and comprising a continuity with some traditional norms alongside the adopting of some of the norms of mainstream lifestyles” (p.35). Therefore, it is vital to assess the child rearing methods and values of immigrant families for drawing correct interpretations on their cultural patterns of child development or adult guidance.

### 4.4 Cultural influences on child development/adult guidance: Theoretical underpinnings

As has been suggested by the literature in the previous section, parental interactions and cognitions mediate children’s development and provide explanations for cultural variations in children’s development or abilities. Accordingly, if children’s development is a product of culture specific socialisation or guidance, then it is possible that cultural variations in metacognitive abilities would have been consolidated through cultural specific patterns of guidance. The presence of cultural specificity in child rearing beliefs, behaviours, and interactions indicated in the previous section strongly support the proposition of cultural specificity in adult guidance of metacognitive development.

In addition, the theoretical perspectives of both Vygotsky (1978) and Wertsch (1979) that children's development occurs in interaction with members of a cultural community who are more skilled in the use of cultural tools and approaches to problem-solving also support the view of cultural specificity in metacognitive
guidance. While Vygotsky (1978) referred to the cultural process of development in interaction to occur in "zone of proximal development", Rogoff (1990) termed it as "guided participation". Heath (1989) labelled "the learner as cultural member", and Lave and Wenger (1991) named the processes as "legitimate peripheral participation" (p.1, cited in Rogoff et al., 1993). The socio-cultural theory of Vygotsky thus provides a frame-work for analysing the cultural influences on adult guidance.

Vygotsky has emphasised that development involves internalisation of skills from participation with more skilled partners who bring the cultural tools, knowledge, and values within the reach of children in the "zone of proximal development" (ZPD). Cole (1985) has further indicated that in the ZPD, culture and cognition create each other and interactions in the zone of proximal development are the crucible of development and culture. He also suggested that it is in these zones, that variations can be expected in guided interactions due to the adaptations of individuals to specific cultural environments. Adaptations in ZPD will result both in similarities across cultures, based on the universalities of the processes of communication and guidance, as well as in variations based on the valued goals of child development and means available to facilitate development.

Rogoff (1990) and Whiting and Edwards (1988) have furthermore indicated that participation of children in cultural activities organised by parents and capable others is one mechanism for shaping the development of social and cognitive competencies. Participation in cultural routines shapes the way an individual thinks and the way he or she behaves (Tulviste, 1991). The study of children in day-to-day activities with members of their own culture will therefore helps to understand the emergence of mental processes and behaviour and also provides a scope for examining the similarities and differences existing among children living in different communities (Morelli & Tronick, 1991; Whiting & Edwards, 1988). Moreover, the category of people with whom children are engaged is influenced by socio-cultural factors.

The theoretical perspectives of Vygotsky emphasise the role of a social system that comprises both formal institutions of society and the informal interactions of its
members in channelling children's development. A common problem is likely to be managed differently in two social systems when the two settings involve different socio-cultural arrangements, tools, values, and expectations with regard to a particular problem. The cultural differences in skills and developments of children can thus be attributed to the problem-solving or developmental contexts and social settings. Based on the cross-cultural observations of guided participation in Guatemalan, Mayan, and Indian cultural groups, Rogoff et al. (1993) have emphasised the need to understand the societal bases of shared problem-solving that includes the problem, its nature, the values that determine the goals and means, the tools available, and the institutional structures of the interaction. They have also argued that understanding the cultural context of development requires the study of values and skills considered important in that society or culture. Collaborative problem-solving context thus represents socio-cultural milieu as well as a mediated activity.

As stated in Chapter 3, central to the internalisation of skills is adult or other guidance. In interactions, capable others mediate children's problem-solving efforts for successful and steady progress. Wood et al. (1976) have labelled the forms of adult assistance provided to children in collaborative interactions as scaffolding, a process that consists of controlling the task elements and enabling the learner to concentrate on the required aspects of the task. The significance of adult guidance, in particular, maternal guidance documented in Chapter 3, for facilitation of preschoolers' development, suggests that maternal guidance can be taken as a representative of adult mediation.

According to socio-cultural theory, mediated action can not be disassociated from the context in which it occurs. Accordingly, differences in contexts and environments may bring differences in adult mediation. In support of the above proposition, Junefelt (1990) has assumed that in the process of socialisation, a child is taught not only the skills in use of cultural tools and technologies, but also taught how to share the culture's intersubjective situation definition in problem-solving. Cultural differences in adult regulation can be expected further, due to the differences in skills,
values, tools, and technologies that are promoted according to cultural goals of development.

The problem-solving, interaction and communication approaches are culture specific. If social interaction has a constructive role in development, then it can be expected that “variations in social interaction (and not only individual differences in what is “inside the boundaries of the skin”) are not ephemeral differences, but give rise to more lasting different tendencies in further interactions and, indirectly, in total future development of the child” (Ignjatovic-Savic et al., 1988, p.149). Hence, it is vital to explore the cultural bases of adult guidance.

Most of the available research on adult guidance of children’s metacognitive development is based on monocultural and middle class families and comprised analyses of mother-child dyads’ interactions. Although, Pomerleau et al. (1991) have indicated cross-cultural differences in mother-child interactions and later Rogoff et al. (1993) have made limited cross-cultural comparisons by only using the notions of scaffolding and guided participation, cultural diversity in adult guidance of children’s metacognitive learning has not yet been examined. Cross-cultural studies on metacognitive guidance are required to fully understand the cultural specific and universal patterns of metacognitive development in children.

Adult or other regulation may be universal. Yet, the theoretical perspectives of Vygotsky (1978), the arguments of Cole (1985), Rogoff (1990), and Whiting and Edwards (1988) strongly support the assumption of cultural specificity in adult or other regulation of children’s metacognitive learning. The questions that need to be addressed then are: i) what are the differences and similarities in the way each socio-cultural group facilitates development of metacognitive skills in young children? and ii) to what extent are the variations in children’s metacognitive skills a function of the differences in socio-cultural orchestration of thinking?

Based on the socio-cultural notions and cross-cultural empirical evidence presented in this chapter, cultural specificity in maternal regulation of metacognitive development
in preschoolers’ problem-solving is hypothesised in the present thesis. An attempt is made in this investigation to explore the presence of cultural specificity in maternal regulation of preschoolers’ metacognitive development by comparing maternal metacognitive guidance in Australian and immigrant Indian cultural groups.

4.5 Summary

This chapter has raised an important question as to the presence of cultural specificity in adult guidance of children’s metacognitive learning. In the context of limited or lack of investigations that addressed the cultural variations in metacognitive guidance, an attempt has been made in this chapter to explore the theoretical and empirical constructs on which cultural specificity in maternal metacognitive guidance can be proposed.

This chapter presented both the theoretical and empirical literature related to cultural contexts of child development or social interaction. The review of literature has indicated considerable evidence for cultural variations in parental constructions of child development, socialisation, and communication patterns. Besides, it has outlined the difficulties involved in defining culture and in disentangling its influences from other socio-demographic factors. Most importantly, the need to consider the constructs of individualism and interdependency in understanding the Western and Asian cultural patterns of child development as well as age and gender of the child as co-variables in cross-cultural studies has been highlighted. As far as immigrant families are concerned, the review of literature has raised important issues on the influences of acculturation on their traditional child rearing beliefs and behaviours. The findings on the influences of acculturation on immigrant families’ child rearing values are inconclusive.

The socio-cultural theoretical perspectives and cross-cultural empirical literature on child rearing strongly support the assumption of cultural specificity in maternal metacognitive guidance of children. In addition, the literature has also suggested a possibility for variations in mother’s metacognitive guidance as a function of child’s
gender along with a scope for interplay between culture and gender in metacognitive guidance. The following chapter presents the summary of research issues and research questions formulated from the review of literature on adult/social guidance.
Chapter 5

Research issues and questions

The embeddedness of children’s development in socio-cultural contexts and the significance of adult guidance for providing metacognitive support have been indicated by the theoretical and empirical literature on social guidance. Most importantly, the need for investigations on cultural patterns of metacognitive guidance has been outlined. Based on the socio-cultural notions of Vygotsky (1978) and indications in the literature for variations in adult guidance as a factor of the gender of the child, cultural specificity in maternal metacognitive guidance of male and female prescholars’ puzzle-solving is proposed in the present thesis. This chapter presents the broad research issues and research questions formulated from the review of literature in previous chapters. As there are few, if any investigations on cultural variations in metacognitive guidance, the research issues considered for investigation in this thesis are stated as research questions rather than research hypotheses and are studied through exploratory investigations.
5.2 Summary of research issues and questions

5.2.1 Cultural specificity in metacognitive guidance

Metacognitive models of teaching and learning have been presumed to have broader applications for teaching children in a range of socio-cultural and economic contexts. The empirical literature on metacognitive development in Chapter 2 has affirmed the significance of metacognition for successful learning and problem-solving and its role in mediating the individual differences in children’s learning and problem-solving abilities. The instructional implications of metacognition has been a central theme in the research on metacognition. Most of the research attempts have been directed towards understanding school age group children’s metacognitive abilities.

Recent research interests however, have been directed towards analysing the developmental origins of metacognitive abilities in young children, and preschool years are indicated as the foundation years for the development of metacognitive abilities (Flavell et al., 1981; Weinberger & Bushnell, 1994). The need to investigate the role of social guidance in delineating the individual differences in metacognitive abilities of children and the origins for cultural variations in metacognitive abilities (Kurtz et al., 1990; Mayer et al., 1991; Purdie, 1995; Schneider et al., 1986) has been highly emphasised. A major impetus for this view is Vygotsky’s (1978) theory of social interaction.

According to Vygotsky (1978), “human learning and development are essentially social in origin and it is through interactions that children grow into the intellectual life of those around them” (p.88). As per the socio-cultural theoretical notions, development of metacognitive abilities of planning, prediction, checking, and evaluation have their origins in social interactions and adult (other) regulation precedes self-regulation.

The view of social facilitation of children’s development has been supported by a substantial body of literature in the area of social interactions (Attfield & Wood,
Adult guidance has been found to facilitate children's development by providing metacognitive support, motivation, and by sustaining children's interest and attention on the task. The significance of social guidance for providing opportunities to enhance children's mastery of language, social orchestration of thinking, and cultural modes of problem-solving has been generally highlighted. A major focus of the studies on adult guidance has however, been on mothers' support in children's metacognitive development in collaborative puzzle-solving contexts (Fairchild, 1996; Freund, 1990; Moss, 1990; Wertsch et al., 1980). Studies on the role of various other social members (e.g., fathers, peers, and teachers) in guiding children's development are beginning to expand (Moely et al., 1992; Troyer, 1991). Variations in teachers' and mothers' guidance (Wertsch et al., 1984), adult and peer guidance (Radziszewska & Rogoff, 1988) and fathers' and mothers' guidance (Mullis & Mullis, 1986) have been documented. The findings on the influences of various social members in promoting children's metacognitive development are inconclusive.

An important issue that has been raised in the literature on adult guidance is the role and participation of children in adult guided activities. The emphasis placed on adult guidance of children's development has been criticised as implying adult control in children's development and the need to consider children's participation in adult-child interactions has been emphasised (Elbers et al., 1992; Rogoff et al., 1993).

While the benefits of adult regulation have been widely documented, it is not yet known to what extent culture is a factor in determining the individual differences in metacognitive development and whether there are cultural variations in adult guidance of metacognitive development.

Variations in adult guidance as a function of age of the child (Plumert & Nichols-Whitehead, 1996), nature of the task and task difficulty (Freund, 1990), gender of the child (Frankel & Bates, 1990), and gender of the parent (Pratt et al. 1988) have been commonly documented, highlighting the need to consider their influences on adult
guidance. Most of the observations on adult guidance are limited to few cultures and little is known in particular, about the cultural patterns of adult guidance of metacognitive development. A need for cross-cultural studies of metacognitive development and metacognitive guidance has been highly emphasised in the literature (Mullis & Mullis, 1986; Wang, 1993; Wertsch et al., 1980).

Recently, few investigations have aimed at studying cultural variations in adult guidance. Rogoff et al. (1993) have documented cultural variations in guided participation (a neo-Vygotskian concept of adult guidance), where the focus is on assessment of collaborative and scaffolded interactions between adults and children. However to date, there appears to be no empirical evidence that addresses the issues of cultural specificity in adult mediation, specific to metacognitive learning and scaffolded interactions.

Based on the socio-cultural notions of Vygotsky (1978) that situate children's development in social guidance, it can be presumed that the individual differences in metacognitive abilities could have been due to the variations in adult or other guidance. The cultural variations in metacognitive abilities of children thus suggest the assumption of cultural specificity in metacognitive guidance. Further, Cole (1985) has suggested that in the teaching-learning interactional context, also termed as a zone of proximal development, culture and cognition create each other. Interactions in ZPD according to Cole (1985) are the crucible of development and culture. He has also suggested that variations in guidance in ZPD are possible due to the adaptation of individuals to specific cultural environments and values and goals associated with child development.

In the light of the theoretical constructs of Cole (1985), Wertsch (1979) and Vygotsky (1978) that encompass development and adult guidance in cultural contexts, as well as the cross-cultural empirical evidence on child rearing, cultural specificity in adult guidance of metacognitive development is proposed in this thesis. An attempt is made in this investigation to elucidate cultural variations in
metacognitive guidance by comparing Australian and immigrant Indian mothers’ metacognitive guidance in their preschoolers’ puzzle-solving.

Furthermore, based on the evidence in Chapters 3 and 4 that guidance is likely to be mediated by the values and goals associated with guidance and child development (Elbers et al., 1992; Renshaw & Gardner, 1990; Wertsch et al., 1984), cultural variations in maternal values associated with adult and metacognitive guidance are also presumed in the present investigation. Besides, there is clear evidence for cultural variations in parental beliefs and values of child development (Chao, 1996; Goodnow et al., 1984; Okagaki & Sternberg, 1993; Pomerleau et al., 1991; Rogoff et al., 1993) and variations in task motives or interpretations related to task (Renshaw & Gardner, 1990; Wertsch et al., 1984). Overall, the literature on child rearing in Chapter 4 has indicated that the development of independence is a preferred goal of child development in Western societies. On the other hand, development of interdependence is a valued goal of child development in Eastern or Asian societies (e.g., Niles, 1998). From this evidence, it appears that the constructs of independence and interdependence are valuable in interpreting Australian and Indian mothers’ metacognitive guidance behaviours.

In addition, variations in task motives or task interpretations have also been noted and are presumed to vary the guidance and interaction patterns (e.g., Wertsch et al., 1984). The relation envisaged between child rearing beliefs and guidance interactions thus suggest the need to analyse the values and beliefs associated with metacognitive guidance and problem-solving. Moreover, an understanding of values associated with child development is vital to draw clear interpretations on guidance and interaction behaviours.

As far as immigrant families are concerned, the literature on child rearing has raised an important issue on the influences of acculturation on traditional child rearing beliefs and practices of immigrant families. While there is evidence for some changes in child rearing beliefs and practices of immigrant families (e.g., Kelly & Tseng, 1992), these families have also been reported to maintain their traditional child rearing beliefs (Lum
& Char, 1985; Dosanjh & Ghuman, 1998). The findings on influences of acculturation are therefore contradictory and inconclusive. Given the inconclusive evidence on changes in child rearing values of immigrant families, of interest then is the question of whether the maternal views on metacognitive guidance are similar or dissimilar in Australian and immigrant Indian cultural groups.

5.2.2 Cultural universality in metacognitive guidance

As stated previously, adult guidance of metacognitive development is universal. Cultural similarities in parental teaching styles or communications with children have been indicated in the literature. The importance of studying children's development in cultural contexts for understanding both similarities and variations in children's development or achievements has been emphasised (Rogoff et al., 1993). Above all, it is important to remember that analysis of cultural universals and cultural specifics on any aspect of investigation are required for developing a comprehensive understanding on the selected phenomena or for universal psychology (Berry, Poortinga, Segall, & Dasen, 1992). On the assumption that interaction and guidance are both universal and culture specific, cultural similarities in maternal metacognitive guidance as well as in maternal values related to metacognitive guidance are also expected. The following questions are formulated with respect to cultural comparisons of maternal metacognitive guidance.

<table>
<thead>
<tr>
<th>Question 5.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What are the similarities and differences in</td>
</tr>
<tr>
<td>a) the forms, nature, and content of maternal metacognitive guidance provided to</td>
</tr>
<tr>
<td>preschool children in Australian and immigrant Indian cultural groups? and</td>
</tr>
<tr>
<td>b) the views of Australian and immigrant Indian mothers relating broadly to child</td>
</tr>
<tr>
<td>development and specifically to adult or metacognitive guidance, and puzzle-solving?</td>
</tr>
</tbody>
</table>
5.2.3 Maternal guidance of male and female children's metacognitive learning

Variations in adult guidance as a factor of the gender of the child have been indicated in the literature presented in Chapters 3 and 4. The thinking and behaviour patterns of male and female children in various societies seem to reflect the gender-linked expectations of their cultural communities. According to social learning theories, gender differences are a product of social conditioning and the differential socialisation of male and female children has been extensively documented in the literature on child development. For example, boys are portrayed as aggressive, competitive, and good at mathematical and spatial skills, while girls are depicted as nurturing, passive, and good at verbal skills.

Variations in parental interactions as a function of the gender of the child (Frankel & Bates, 1990; Hess & McDevitt, 1984; Mullis & Mullis, 1986; Russell, et al., 1998) as well as gender based differences in problem-solving achievements of children have also been reported (Tchernigova, 1995). The available empirical evidence on gender differences highlights the need to consider gender of the child in studies of adult guidance. Of interest then is the exploration of variations in maternal metacognitive guidance as a function of the gender of the child.

Question 5.2

Do Australian and immigrant Indian mothers vary their metacognitive guidance as a function of the gender of the child?
5.2.4 Interaction between cultural group of the mother and the gender of the child

Differential socialisation of male and female children is evident in both Western and Eastern societies. Along with this, cultural variations in parental attitudes towards male and female children have also been indicated. For example, in India, traditionally, there is a greater preference for boys and Indian parents have been reported to show more interest in their male children's development than in their female children's development (Kakar, 1994; Roopnarine et al., 1990). There is other evidence for cultural variations in parental interactions with their sons and daughters (Collins & Russell, 1991; Ho, 1986; Lytton & Romney, 1991). In the light of the above evidence, it would be interesting to explore the interaction between culture and gender of the child in metacognitive interactions and guidance. Based on the perspectives of social conditioning and the available empirical evidence on cultural differences in parental interactions with male and female children, a question that is of relevance to this study is:

<table>
<thead>
<tr>
<th>Question 5.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an interaction between culture and gender in maternal metacognitive guidance afforded to male and female children in Australian and Indian cultural groups?</td>
</tr>
</tbody>
</table>

5.2.5 Metacognitive guidance: Components, forms, and contexts

As the present investigation seeks to understand the similarities and differences in maternal metacognitive guidance of preschoolers' puzzle-solving across cultural and gender groups, as well as an interaction between culture and gender in metacognitive guidance, it is important to analyse which components, forms, and contexts of metacognitive guidance are to be considered for investigation.
Metacognitive processes in problem-solving relate to the actions of planning, prediction, monitoring, and evaluation (Brown, 1978). Understanding the goal, monitoring the task processes towards goal, predicting the task actions, and evaluating the outcomes (Wertsch, 1978) as well as sustaining the mindfulness of children for successful learning or problem-solving (Salomon & Globerson, 1987) have been indicated as major components of metacognitive guidance.

As discussed in Chapters 2 and 3, metacognitive development is believed to originate in interactions with social members, who bring cultural tools and expertise to interactions. According to Vygotsky (1978), cognitive or metacognitive development results through the internalization of adult or other regulatory acts. Transition of development (social plane to an individual plane of functioning) is one of the important tenets in Vygotsky’s theory. The notion of transition has been further elaborated by Wertsch (1979), who posited four successive levels in the transition of development from a social to an individual plane of operation.

Internalization of metacognitive development is postulated to be facilitated by three guidance actions such as, adults and capable others taking responsibilities (task or cognitive) that are above children’s capacities, regulating children’s attention, and providing metacognitive support, and delegating responsibility to children when they are ready to operate independently (Vygotsky, 1978). Thus, the components of metacognition that can be considered in the analysis of maternal guidance are planning, prediction, checking, and evaluation. The other concomitant components are sustaining mindfulness of children through attention regulation, praise, and regulation of task or delegation of task responsibilities.

Further, analysis of verbal and non-verbal communication has been indicated as an important component of metacognitive guidance. As indicated previously, language is the medium in which internalization occurs largely and the process that facilitates transition of development from social to the individual plane of functioning is scaffolding. Wertsch (1979) has highlighted the importance of semiotic and non-semiotic means of assistance for achieving intersubjectivity (shared understanding
between people) and for providing metacognitive support in interactions. The forms of discourse are specific to culture and reflect cultural codes and values. Variations in language mediation in interactions with children will therefore, reflect variations in cultural values of child development.

Due to the importance of communication for social guidance, analysis of verbal mediation has occupied a central position in studies of mother-child interactions. Various theoretical constructs drawn from psycho-linguistics and philosophy of action have been used in the analysis of communicative moves utilised in metacognitive guidance. Wertsch (1977) has outlined a four level hierarchy in communicative moves for the analysis of metacognitive interactions, which are linguistic acts, non-linguistic acts, conventions, and belief systems respectively. In the present study, priority is given to analysis of linguistic styles, which are presumed to reflect the socio-cultural patterns of division of metacognitive and task responsibilities.

Cultural variations in the forms of communication and the cultural preferences for forms of communication (Camaioni et al., 1998; Robinson, 1988; Rogoff et al., 1993) indicated in Chapter 4, further point to the need to consider non-verbal forms of guidance. Besides, the need to consider non-verbal forms of communication in cultural studies of guidance and interactions has been reiterated by others as well (e.g., Rogoff et al., 1993).

The evidence from studies of adult guidance has shown that joint problem-solving context promotes social exchanges between caregivers and children and also facilitates analysis of metacognitive guidance. As mentioned in Chapter 3, children’s metacognitive development can be facilitated by their participation in formal or informal settings and a majority of conversations between children and capable others in fact comprise comments that can be termed as guidance (Wong et al., 1996). Collaborative puzzle-solving has been indicated as the widely used context in the studies of adult guidance (Kontos, 1983; Wertsch et al., 1980). Puzzle-solving can thus be a taken representative of socio-cultural activity.
The notions of activity, action, and the processes of goal completion of the theory of activity (Leont’ev, 1959, 1979) have further indicated the importance of assessing the task motives and goals of problem-solving. According to activity theory, variations in goal accomplishments are related to the variations in task interpretations and methods of goal/task accomplishment. The theory of activity can provide a framework within which analysis of cultural variations in problem-solving of dyads can be accomplished.

In the light of the above, the following components of metacognitive guidance were formulated. Differences or similarities are expected with respect to each of the following categories in Australian and Indian mothers’ metacognitive guidance of male and female children’s puzzle-solving.

1. Maternal metacognitive modelling (planning, prediction, monitoring, and evaluation);
2. Strategic guidance of mothers (verbal and non-verbal);
3. Forms of sustaining mindfulness;
4. Maternal task regulation and division of task responsibilities;
5. Orientation to puzzle-solving;
6. Task initiation of mothers and children;
7. Task motives of mothers;
8. Goal achievement of mother-child dyads;
9. Linguistic styles (questions, directives etc) of mothers and children; and,
10. Non-verbal forms of communication or guidance.

5.3 Summary

This chapter presents the research issues and research questions that have been raised from the review of literature on social guidance of children’s development. While the socio-cultural theory of Vygotsky (1978) situates children’s development and adult (other) guidance in cultural contexts, little is known about the role of culture in shaping individual differences in children’s metacognitive abilities and adult (other) guidance of metacognitive development. Based on the socio-cultural theoretical
constructs of Vygotsky (1978) and arguments of Cole (1985) and Wertsch (1979), cultural specificity in maternal guidance of metacognitive development is proposed in this thesis. Based on the notions of universality of adult guidance, cultural similarities in maternal metacognitive guidance are also presumed. Due to the interactive nature of culture with gender of the child, variations in maternal guidance as a function of the gender of the child are expected, along with an interplay between culture and gender in maternal metacognitive guidance. As there are limited or no investigations on cultural aspects of metacognitive guidance, the issues related to cultural influences on metacognitive or adult guidance are presented as research questions. Figure 5.1 presents the conceptual frameworks used in this investigation.

![Diagram of conceptual framework]

Setting: Australian and Indian mother-child dyads' puzzle-solving

Figure 5.1: Conceptual framework of the investigation

The various questions raised in this chapter are used as framework, for analysing the relation between culture and maternal metacognitive guidance, gender of the child and maternal metacognitive guidance and the interplay of culture and gender in maternal metacognitive guidance. The following chapter reports on the methodology employed to achieve the objectives of the present investigation.
Chapter 6

Methodology

“Cross-cultural developmental comparisons cause us to rethink the origins and ontogeny of development. Without it, our understanding of the basics of human nature, whether in motor control, language acquisition, or emotional expression, is at best shortsighted, ethnocentric, and suspect. In the absence of cross-cultural developmental research, our psychology would be simply incorrect” (Bornstein, 1991, p. 18).

The current investigation is designed to examine and describe the nature of metacognitive guidance afforded by Australian and immigrant Indian mothers to their male and female preschool children in a collaborative problem-solving context. Specifically, the study aims to explore the presence of cultural and gender specificity in mothers’ guidance of their children’s metacognitive learning in home contexts as well as the interplay of culture and gender on maternal metacognitive guidance. In addition to an analysis of variations in metacognitive guidance, an attempt is also made to explore commonalities in maternal guidance across cultural and gender groups. The following conceptual map illustrates schematically the major variables and the sample considered in this investigation.
The values of cross-cultural investigations for testing the generality of human behaviours are undeniable. In the words of Bornstein, “in the absence of cross-cultural research, psychology would be simply incorrect” (1991, p.18). However, cross-cultural investigations are laden with many methodological issues related to sampling of cultures, procedures of data collection, and data analysis. To develop a methodology for elucidating cultural influences on human behaviours is a challenge for cross-cultural researchers.

In the light of the above, this chapter details the research design and the methodological approaches utilised to explore the presence of cultural and gender specificity, along with universals in adult guidance of children’s metacognitive learning. As stated before, there are several methodological issues pertaining to cultural studies in general, and specific to comparative studies of mother-child dyads’
interactions such as selection of observational contexts or behaviours. The various methodological issues that have been raised in the literature are summarised in this chapter and addressed in this thesis as per the indications of previous researchers (Van de Vijver & Leung, 1997; Zaslow & Rogoff, 1981).

6.2 Cultural groups and their background information

6.2.1 Selection of cultural groups

Anglo-Australian and immigrant Indian cultural communities were selected to investigate the universal and culture-specific aspects of maternal metacognitive regulation. The term “cultural communities” is used here to refer to the chosen cultures. As stated previously in Chapter 4, there are many difficulties associated with the conceptualisation of the term ‘culture’ as well as generalisation of results drawn from cultural groups. Rogoff et al. (1993) argued that the term “cultural communities” helps to avoid broad generalisation of observations made on a sample to an entire population in the selected nations. Hence, in this study, the term “cultural communities” is used instead of “cultures”. Generally a community is referred to “as a group of people having some common local organisation, values, and practices” (Rogoff et al., 1993, p.3) and accordingly, a cultural community can be defined as a “group of people who share common cultural values and have practices common to that cultural organisation”.

The selection of Australian and Indian cultural communities was based on several factors. Due to the increase in the number of Indian families settling in Australia, there is a need for understanding and research on immigrant Indian families’ cultural patterns of child development. Cultural understanding, familiarity with the chosen cultural groups, and accessibility to samples in both the cultural communities are the other factors considered in sampling of cultural groups. Selection of cultures on the basis of cultural understanding and familiarity with the cultural groups has been advocated by cross-cultural researchers (Rogoff et al., 1993) as shared cultural understanding helps to draw clear interpretations of results in cross-cultural studies.
As mentioned by Kakar (1994), "when the words, behaviours, inhibitions, desires, and sensitivities of the observed are intimately resonant with the observer's own, he can spot clues that might appear insignificant or incomprehensible to a neutral or alien observer" (p.3). In this connection, it should be emphasised that the proficiency of the investigator with the languages of the two groups was a key parameter considered in sample selection. Finally, the chosen sample of Indian and Australian families represents differences with regard to history, culture, language, family organisation, emphasis on education, and a range of other values/practices related to child development.

Western and Eastern cultures differ widely in their orientations toward family, self, and child rearing or development. Anglo cultures, including Australia tend to emphasise individual autonomy, freedom of choices, and achievement. Asian cultures, on the other hand, including Indian, emphasise collectivity and social cohesiveness in individuals rather than individuality (Luthar & Quinlan, 1993; Niles, 1998). Thus, a comparative study on Australian and Indian mothers' metacognitive guidance can help to understand the cultural variations in maternal metacognitive guidance that may have been related to their cultural goals of promoting independence and collaboration in their children's development respectively.

Social interactions are hypothesised to shape the individual's sense of self and development and are likely to be influenced by their immediate social or cultural contexts. Therefore, it is important to understand the social and cultural contexts in which everyday interactions take place. The importance of cultural understanding and knowledge of cultural contexts for interpretation of behaviours is also exemplified by many researchers. For instance, Bornstein (1991) believes that "comprehensive description of cultures is prerequisite to formal explanation of cultural phenomena" (p. 4). In the following section, the social/cultural contexts of Anglo-Australian and immigrant Indian families are outlined to provide a macroscopic view of child development in these contexts. The information presented under this section was derived from the cultural understanding of the investigator, available literature, and interviews with mothers of this study.
6.2.2 Background Information on immigrant Indian (Telugu) families

The history of Indian immigration to Australia dates back to the beginning of 19th Century and is divided into three phases (Bureau of Immigration, Multicultural and Population Research (1995). Initially, Indians from British India came to Australia as British convict labourers in the year 1800. Their re-settlement in Australia began in the year 1835, when a few Indians, who were brought as labourers were retained as employees with the abolition of slavery in the same year. The second phase of Indian immigration saw migration of ethnic Indians of Sikh and Muslim religious backgrounds from Punjab and some of them have worked as agricultural labourers. However, with the passing of the Immigration Restriction Act in 1901, further immigration of Indians to Australia came to a standstill for the next 50 years. The third phase of immigration resumed again in 1950, following Indian independence. A significant rise in Indian immigration was noticed around 1980s (Jayaraman, 1988, cited in Bureau of Immigration, Multicultural & Population Research, 1995). By the year 1988, nearly 0.41 percent of Australians were of Indian origin (Hugo & Maher, 1995, cited in Bureau of Immigration, Multicultural & Population Research, 1995).

Today, the Indian community in Australia is predominantly recognised as a professional group. According to the 1991 census, 59.4% of immigrant Indians had educational or trade qualifications compared with 38.8% of the general Australian population and 33.3% had post-secondary qualifications compared with 12.8% of all Australians (cited in Bureau of Immigration, Multicultural and Population Research, 1995). This is mirrored in Indians’ employment in professional, technical, and white collar occupations. Most Indian immigrants have settled in Sydney, NSW and in Melbourne, Victoria. Indian society in India is complex, comprising of people from various religions, languages, and castes. There are about 15 officially recognised language groups in India, with each language having a heritage dating back to several centuries. Hindi is the language spoken by a majority of Indians and thus is
recognised as a national language. Telugu is the second largest spoken language in India.

Immigrant Indians in Australia represent a variety of regional/language/religious backgrounds. The selected sample of the study comprises Telugu speaking, Hindu immigrants from Andhra Pradesh. The language “Telugu” belongs to the family of four South Indian languages (also known as Dravidian languages), the other three being Tamil, Malayalam, and Kannada. The earliest references to the word “Telugu” dates back to 1050 AD and there were even references to “Andhras” in epics like Mahabharata and Ramayana (Etukoori, 1996). The Andhra culture is one of the ancient cultures and Andhra society is one of the ancient societies in India. Andhra was the name of a tribe and it is believed that Andhras were nomads for centuries and arrived at the Banks of Yamuna river during the Mahabharata war (1500 BC) and later settled in different parts of the northern regions of Hyderabad and Orissa in about 200-250 BC (Etukoori, 1996).

In Sydney, there are approximately 400 Telugu speaking families. According to 1996 census, in NSW there were about 947 Telugu speaking individuals aged five years and above (Ethnic Affairs Commission, 1998). A majority of the families are nuclear, yet the value of “jointness” described by Kakar (1994), is constantly maintained through sharing of economic and/or social responsibilities with members in their home country, contacts, and overseas family visits, a pattern commonly noticed in other immigrant families (Hartley, 1995). Geographically, Telugu families are dispersed all over greater Sydney suburbs, with a majority concentrated in the south-west and north-west suburbs of Sydney.

A majority of parents in Telugu families have professional qualifications and are in white-collar jobs. The size of the family is small with an average of two children per household. With a smaller family size and limited extra curricular activities, Indian (Telugu) parents tend to provide exclusive attention to children. Strong bonding with family members in India and hence separation from family members in their home country leads to a sense of insecurity in immigrant families. To overcome the feelings
of insecurity, people make an effort to develop friendships and close networks with people of their own cultural heritage. Development of social networks and friendships are viewed as sources of cultural models for children as well as compensatory mechanisms for separation distress experienced by adults. Social networks serve to extend family support, a pattern observed to be common in immigrant Vietnamese communities as well (Nguyen & Ho, 1995).

The child rearing values and practices of Indian families are related to a broad constellation of variables, notably religion and caste. Hartley (1995) believes that at a structural level, there is a tie between religion and family life and many immigrant families rely on religious institutions not only for fulfilling their spiritual needs but also for fulfilling their social, psychological, and cultural needs. Religious beliefs impinge in general, on family structure, organisation of chores, and expectations and goals for individuals. Religion has a profound influence on family life and values associated with child rearing. Many immigrant families view religious observances and practices as integrating and connecting forces and therefore they place a greater value on maintaining their religious values and practices (Onley, 1990, cited in Hartley, 1995). However, there is limited or lack of adequate literature that depicts religious variations in child rearing practices of immigrant Indians.

The caste system in India constitutes a status hierarchy with the priestly caste at the pinnacle and the lower caste at the base. There is a low social and economic status attached to the lower caste and members of this caste remained educationally, socially, and economically disadvantaged for a long time. In India, even today, social/caste background is a major predictor of educational and economic opportunities as well as a constellation of child rearing values and interactions. Nonetheless, caste affiliation alone can not predict either the socio-economic status of families or their child rearing views. Other factors such as education, and acculturation are also influential especially when families are residing outside India. All of the selected families in this study belonged to the Hindu religion. Considering the limitations involved in using caste affiliation as a predictor of socio-economic
status of families, no attempt was made to distinguish the selected immigrant Indian families by their caste.

According to Hindu traditions, children are valued as a gift of God who need to be cared, protected, and indulged by adult members of the society. The dominant child rearing style is therefore a nurturing style with a heavy emphasis on adult attendance to children’s needs. As mentioned by Keats (1997), indulgent parenting results in a high need for affectionate relationship and self-centred demands in children.

Keats (1997), further describes a good Hindu child as one “who accepts loving authority, responds to the social situation by giving an affectionate response to care givers, who will show respect to elders, have good manners and be obedient. A good Hindu girl will be submissive, highly dutiful, and exhibit a deeply felt religious devotion” (p. 35-36).

The interactions and behaviours of Indian family members are determined and influenced to a large extent by the age and gender of its members. Traditionally, there is a greater preference for a male child. Parents indulge more in a male child’s life than in their female child’s life, with a reciprocal expectation that male children will look after them during their old age or in times of financial dependence.

The greater preference for a male child in Indian families can also be attributed to the social expectations laid on sons for perpetuating the family lineage. However, mothers in the present study mentioned that they were not particular about the gender of the first born child and certainly prefer to have children of both the genders. Cultural expectations for the development or behaviours of male and female children are generally varied, though not pronounced in their early years.

The traditional Indian norms of respecting adults and authority usually reflect in the daily interactions of immigrant Indian families. The hierarchical nature of the status of family members is also reflected in the accomplishment of daily chores by the different members as well as their interaction patterns. For example, children are taught
explicitly about the need to obey adults and other elders. Indian parents do not seem to place high emphasis on promoting independence and self reliance, especially in the early childhood years and mothers mentioned that they are always willing to do things for their children.

Indian parents lay a high emphasis on educational achievements of their children. Parents generally invest a lot of time and attention in their children’s educational or academic activities. This pattern appears to be in tune with the practices of many other Australian families. For example, Mak and Chan (1995) indicated that immigrant Chinese parents view education as providing opportunities for upward mobility, financial security, and raising the family honour and status and hence stress the importance of children’s educational achievements.

It is generally believed that immigration to a new country usually brings changes in child rearing values/practices of immigrant families (e.g., Kelly & Tseng, 1992). However, many immigrant families including Indian families, also strive to preserve their traditional/cultural practices through the daily routines, chores, and interactions as well as celebration of festivals and religious rituals. In the case of the Telugu community, children are encouraged to learn classical music or dance, their home language as well as to participate in various other cultural, social, and religious activities. Opportunities are provided for children’s social interaction, either through social visits or educational activities organised by the members of the local Telugu community during weekends. During interviews for the present study, mothers were frequently observed to encourage their children to use their home language in instances where they were seen conversing in English. One of the potential areas of conflict between parents and children is the maintenance of culture and home language. Conflicts over these matters seem to become very transparent once children reach their adolescent years.

The typical weekly routine for children who participated in the current study suggested that on an average, children attend child care/preschool for two to three days. On the other days, they were cared for by their mothers. During the
interviews, mothers expressed a need for greater involvement in children’s activities to protect them from various external, undesirable social influences. Mothers always felt a need to provide a model for inculcating culturally accepted values.

6.2.3 Background information on Anglo-Australian families

Even though the term “Australian” denotes a constellation of values and behaviours of diverse cultural communities, the present discussion on the Australian cultural/social contexts is limited to Anglo-Australian communities. According to McDonald (1995), the numerically dominant people in Australia are Anglo-Australians of Western and Northern European origins. A discussion on Anglo-Australian families thus requires an analysis of their historical roots or origins of settlement in Australia traced back to British colonisation.

According to the Australian Department of Immigration and Ethnic Affairs (1992), the earliest settlers in Australia were believed to have come from South-East Asia at least 40,000 years ago. These ancestors of Aboriginal Australians are believed to have been nomadic, moving as tribal groups through the millennia. By 35,000 B.C., Aboriginal groups were settled in western New South Wales. The inhabitants of New Guinea and adjoining islands are believed to be related to indigenous Australians. According to the 1996 census, nearly 2% of the total Australian population (17,892,423) were of indigenous heritage and over half of the indigenous people were settled in NSW and Queensland.

The European settlement in Australia was a consequence of the expeditions of English, along with Portuguese, Spanish, and Dutch merchants. The first reference to Europeans’ visits to Australia goes back to the 16th Century. The year 1770, marked the beginning of European settlement in the eastern part of the continent named as New Wales, which was renamed later as New South Wales. New beginnings for modern Australia were made on 26 January 1788 with the raising of the first union
flag at Sydney Cove. The settlement of British in Australia was increased through the shipping of convicts from England, Scotland, Wales, and Ireland (Australian Department of Immigration & Ethnic Affairs, 1992).

European settlement in the later decades was complemented by the immigration of people from other continents of the world. However, the immigration of people from countries other than Europe came to a virtual standstill with the creation of the White Australia Policy and Immigration Restriction Act in the year 1901. The immigration program was resurrected again during World War II, when a need for migration was realised through the necessity for building the national economy and population, leading to an increased migration of skilled people.

Australia today has a unique history and reputation as a multicultural country. The population of Australia is diverse with over 31 birth place countries identified in the 1996 census. Despite the diversity of cultural origins, even today, the majority of the Australia population is predominantly of Anglo-Australian background.

Australia has been identified as an individualistic country with an emphasis on individual rights as opposed to collective rights (Schwartz & Bilsky, 1987, 1990). In an archetypal form, Westernisation is defined as an extension of individual rights (McDonald, 1995). The concept of individualism is pervasive in various spheres of life and behaviour in western societies, resulting in concepts of freedom, democracy, and ownership. According to McDonald (1995), the four central themes in Australian families and societies of the 20th Century are autonomy or scope for self-direction, intimacy, aspirations for achievement, success and individual recognition, and social acceptance of individual choices or paths expressed in the form of individual needs.

Traditionally, Australian families are identified as nuclear families. The predominance of nuclear families in Western countries was believed to exist even before the onset of Industrial Revolution. According to Goldthorpe (1987, cited in McDonald, 1995), the reference to nuclear families dates back to the Christian revolution in the 4th century. The concept of nuclear families emphasises separation of young couples
from parents without any obligation placed on children to provide social/financial security to parents.

A majority of Australian population in the early 1900s resided in rural areas. Today however, most people live in urban areas. In the past, the roles of men and women were observed to be very distinct, akin to the role distinctions that existed in oriental Eastern societies. While women were expected to stay at home and cope with home making, according to Burdon (1994), “the Australian male sought friendship and companionship from his mates and it was not considered ‘manly’ for the Australian male to take an active role in household and child-care duties” (p.17). The distinction between the roles of the ‘male and female’ in Australian life, though narrowed down, still continue with women in a majority of cases assuming a major share of responsibility in child rearing and home making. Movements such as Feminism have had an impact on women in Western societies which have led to their greater economic and social independence. In dual parent families however, fathers are beginning to take an important role in children’s development or socialisation (Greenblatt & Ochiltree, 1993, cited in Burdon, 1994). Maternal paid employment is a significant factor that is responsible for increased involvement of fathers in children’s socialisation (Burdon, 1993).

Children have an important place in Western families. Parents recognise their individuality and special status. According to Weston and Milward, (1992, cited in McDonald, 1995), relations between parents and children are generally good, even between the problematic adolescents and their parents. The goal of child rearing is to promote independence in children and “traditionally, Australian parents want their children to become independent as adults” (Keats, 1997, p.51). The other important goal of child rearing in Western societies including Australia, is to encourage competency in children (Ochiltree, 1990). “Intelligence, academic learning, social skills, leadership, competitiveness, and sporting prowess” are the highly valued forms of competence than those involving “manual or domestic skills, the care of children or physical strength” (Ochiltree, 1990, p.20).
Opportunities for free exploration, high valuation of competence, and independence in children, clear division of gender roles, emphasis on acquiring practical skills, and prominence of mothers’ position in families are some of the notable features of Australian life and childhood (Burns & Goodnow, 1985).

Australian child rearing values and practices are dominated by egalitarian and individualistic orientations. Parents bring up their children without any expectations for reciprocal care during their old age and strive to maintain their own independence for as long as possible. Despite the fact that parents and children operate as individual beings, family cohesiveness and bonding is highly valued. Parents are the main sources of socialisation and children look up to parents for cultural values, norms, and behaviours.

The selected families in the Australian sample are two parent families. The typical weekly routine for the children of the study indicated that children attend child care/preschool for two to three days. On the other days, they were in the company of their mothers at home. During the interviews, Australian mothers expressed the sentiment of promoting independence and individual achievements in children. Most of the mothers mentioned that they would encourage their children to pursue extra curricular activities such as music, sport, swimming etc. and even programmed children’s weekly extra curricular activities. Mothers also emphasised valuing their children’s personal expressions and individual choices in their day-to-day routines that included pursuit of hobbies and interests. Mothers did not mention the academic preparation of children at home and expressed the sentiment that they want their children to be ‘happy and responsible citizens’.

6.3 Subjects, settings, and contexts of the study

6.3.1 Subjects

The subjects were 14 Australian and eight immigrant Indian (Telugu) mothers and their 4 year-old children from two parent nuclear families, living in the Western and
South Western suburbs of Sydney. Children of preschool age have been selected due to the importance of this age for promoting metacognitive development (Flavell et al., 1981; Weinberger & Bushnell, 1994).

In each cultural community, mothers and their children were selected through preschool centres attended by children. Letters were sent to mothers through early childhood centres, soliciting their voluntary participation with their children. Subjects were recruited after obtaining their written consent for participation. It was possible to recruit only eight Indian mother-child dyads, due to the non-availability of Indian Telugu mothers in Sydney with children of preschool age as well as hesitation of some mothers to participate in the observations. Recruiting families for observations in natural settings has been found to be a major issue in the present study due to the factors such as hesitation, lack of interest and time and fear of strangers, all of which interfere and impede the voluntary participation of people. The investigator was able to recruit only 22 mothers from a total of 40 child care centres contacted, over a five month recruiting period. The voluntary participation of subjects for naturalistic studies is in general reported to be very low (Freund, 1990; Moreno, 1991). For example, Freund (1990) reported that out of the 320 mothers contacted, only 38 agreed to participate in her study. Similar experiences were reported by Moreno (1991), where six out of the 80 families contacted agreed to participate in his study.

Despite the aforementioned difficulties in sample recruitment, comparability was established for the child sample on the dimensions of age, gender, and cognitive capacities of children (using the verbal ratings of teachers) which are reported to be significant intervening variables in adult guidance and cross-cultural investigations (Goodnow et al., 1984; Pomerleau et al., 1991). An equal number of 4-year-old boys and girls with similar cognitive abilities have participated in this study from each cultural group.

Nationality, education, and home language of the mother were initially considered in the selection of mothers. In some investigations, education of mothers is reported to
be a significant intervening variable that impacts on child development. The number of years of education is also considered by sociologists as an important predictor of occupational success and its use is justified as an indicator of socio-economic status (Bjorklund & Weiss, 1985). In spite of the fact that education predicts socio-economic status, it is questionable as to what extent mothers’ educational status alone can be a predictor of the socio-economic status of the family. Further, due to the existing differences in educational attainments of Australian and immigrant Indian mothers, comparability of the two samples on educational attainments is difficult and this can further limit the availability of the participants. Besides, there is empirical evidence to indicate that the strong predictor of adult guidance or child development is culture rather than socio-economic status (Chao, 1994; Hossain et al., 1997). The cultural background of families has been found to be a significant predictor of child development and education even among immigrant families who undergo the processes of acculturation and economic impoverishment in a new country (Fuligni, 1997). Considering the limitations and impracticality in controlling several socio-demographic variables in cultural investigations (Berg & Kugelmass, 1994), little emphasis was placed on matching mothers’ educational and socio-economic status in this investigation. But the sample of mothers was fairly comparable with respect to age and occupations.

In cross-cultural investigations, it is generally assumed that culture is an antecedent to the variations in psychological behaviours. However, there are also other sociological and psychological factors that impinge on human behaviour and an interplay between culture and other variables is possible. Regardless of this, it is difficult to control either the effects of intervening variables on the phenomena under investigation or to isolate the effects of culture on selected aspect under study. Further, manipulation of independent variables in cultural studies is impracticable, impossible or ethically unacceptable (Bornstein, 1991).

Another important issue that many cross-cultural researchers grappled with is the separability of culture with language. While there are few arguments in favour of separating these two, many researchers agree on the view that they are two sides of
the same coin (Bornstein et al., 1992). Language and culture are considered together in the present study and Telugu speaking Indians are considered as having a similar cultural background to that of all other Indian language groups. Moreover, discussion of processes of child development in an Indian cultural milieu is heavily reliant on Hindu religious ideals and practices rather than regional, linguistic, social class, and caste components. In most of the Indian literature on child development, the terms Indian and Hindu are also used interchangeably due to the profound influence of Hindu religion on the lives of most of the Indians. Indian identity and Indianness is defined on the configuration of social roles, cultural values, caste, religious customs, and kinship relationships (Kakar, 1994) to the exclusion of language. Nonetheless, with regard to generalisation of results, it is believed that results drawn from Telugu immigrant families may not be generalised to the entire Indian language groups residing in Australia. Since the themes of cultural identity and cultural processes are complex for immigrant families, a national survey is required before any generalisations are drawn on the universal themes of Indian child rearing practices and development.

6.3.2 Demographic details of the sample

The ages of the Australian and Indian children ranged from 4.5 to 4.7 and 4.6 to 4.8 years respectively. Similarities were noted with respect to ordinal position also. A majority (80%) of both Australian and Indian children (82%) were the middle born in their families.

Variations were noted in the sizes of the Australian and Indian families. While the average number of children in the Australian households was above the national average (3.5), in Indian families, it was only two. The ages of Australian mothers ranged from 30-45 years with a majority (64%) of mothers in the age range of 30-35 years. In the Indian sample, on the other hand, the ages of mothers ranged from 25-40 years with a majority of mothers (65%) falling in the age range of 30-35 years. There were clear differences with regard to the educational attainments of Australian and Indian mothers. A majority of Indian mothers (88%) had postgraduate
qualifications in comparison with Australian mothers (14%), who had High School qualifications (86%).

About 60 percent of the participants from both Australian and Indian samples were employed outside their home. Although there were differences in terms of number of years of education and educational attainment, this did not seem to mirror in the employment status of mothers. A majority of both Australian mothers and Indian mothers were employed in secretarial/clerical/administrative sectors or in similar occupations. These data represent the typical under employment of women migrants in Australia as well as the gender inequalities in employment status.

There were wide differences in fathers’ employment and education levels. Almost all Indian fathers had professional qualifications and were employed in computer and engineering professions compared with Australian fathers who had trade/technical qualifications and were largely engaged in blue-collar occupations. Most of the Indian families were recent migrants to Sydney with the length of residence ranging from three to five years in most (75%) of the selected families.

6.3.3 Contexts/Settings of the study

The study was conducted in the homes of Australian and Indian families. Naturalistic settings were selected based on the notions that development is tied with sociocultural experiences and that observations in naturalistic settings reflect the participants’ natural behaviours in cultural activities. Naturalistic studies also enable researchers to better understand the subjects’ interpretations of the tasks to be accomplished, the relation of goals to culturally valued activities, and the relation of behaviours with social interactional or broader cultural contexts of development and learning (Zaslow & Rogoff, 1981) or to derive contextualised and meaningful data (Holden & Ritchie, 1988). The ecological validity of naturalistic studies is also believed to be high as compared with the studies of laboratory contexts. There is a lot of evidence to indicate that familiar contexts afford better opportunities for individuals to see their
transformations in learning over a period of time and also facilitate to capture more co-operation from children in collaborative activities (Xu, 1994).

Naturalistic studies, however are replete with the issues of controlling the environment or the variables and distinguishing the task from off or non-task behaviours. Cole, Hood, and McDermott (1978, cited in Zaslow & Rogoff, 1981) believe that any attempts of intervention or clarification will alter the ecological validity of the naturalistic situation.

Interaction studies have been traditionally carried out in naturalistic contexts where children and adult social members are engaged in interactions. The chosen methods for data collection in such contexts usually are observations of overt behaviours. Due to the reliance on direct and observable behaviours in natural contexts, it is believed that these studies are relatively free from methodological concerns associated with unfamiliar laboratory settings, intrusions etc.

It is important to select both the settings and the participants that are representative of the chosen cultures as there are cultural variations in the cast of characters with which children relate and interact (Zaslow & Rogoff, 1981). The resolution of issues related to matching of contexts or participants will however, depend on the research hypotheses.

In this study, mother-child dyads’ interaction has been selected to represent the social or cultural patterns of interactions and their contexts. Though the literature is inconclusive about the role of different social members in influencing young children’s development (see Chapter 3), it was assumed that the mother is particularly influential in transmitting the behaviours, skills, and adaptations important to early childhood development. Mothers are also viewed as the primary source of assistance for children in their various domains of life and as significant contributors in children’s development (Hossain et al., 1997; Tulananda, et al., 1994). It is also expected that mothers can adapt their behaviours and teaching styles to different situations more easily than fathers and thus are better able to sustain child’s interest and motivation.
(McGillicuddy-DeLisi, 1985). For these reasons, priority was given to the mother-child dyads' interactions in this study, although the importance of other members’ interaction in a cultural group is recognised.

### 6.3.4 Activity/Task materials of the study

The need for selecting culturally appropriate task materials and contexts is emphasised by many researchers (Berg & Kugelmass, 1994; Davidson & Freebody, 1988). The literature on adult guidance has indicated that puzzle-solving is the most widely used activity in studies of adult-child interaction. Puzzle-solving is a goal driven activity that represents a teaching and learning transaction (or zone of proximal development) and thus can elicit metacognitive regulation. It is also an activity, in which an analysis of metacognitive regulation in a socio-cultural context is possible. According to the notions of Vygotsky (1978), guidance is mediated by mental reflections and represents a socio-cultural context in which human functioning occurs. Besides, when a child participates in a collaborative activity with more mature members of the culture, that activity becomes a social activity which will be defined and regulated by mature members of that society in accordance with their socio-cultural expectations.

Joint puzzle-solving is further presumed to evoke cultural differences in the processes of its completion. This is because, according to the theory of activity, an action is associated with the goal, and an operation is associated with the conditions under which it is carried out. Accordingly, differences can be expected in the operational composition of an action depending on the contexts in which it is carried out. Though the goals are the same in puzzle-solving, depending on the cultural background of the participants, differences can be expected in processes of its guidance and operation. For these reasons, puzzle-solving activity was chosen for the comparative analysis of maternal guidance in the present study.

The chosen task of the present study was puzzle completion. However, the use of structured tasks in naturalistic studies is criticised in the literature on social interactions, with an assumption that structured tasks cannot capture and evoke the
thought processes people actually use in everyday situations. It is further believed that if structured tasks are used in cross-cultural studies, differences might originate in response to the characteristics of the task rather than cognitive processes used within a culture (Zaslow & Rogoff, 1981). In spite of this criticism, there is a heavy reliance on structured tasks in naturalistic social interaction studies based on the premise that cognitive activities are not directly observable but must be inferred from behaviours or verbal reports (Rogoff, 1988). Thus, selection of culturally appropriate activities is vital in cultural comparisons.

In order to avoid the difficulties associated with comparability and cultural appropriateness, animal jigsaw puzzles which are familiar to both Australian and Indian mother-child dyads, were selected. After piloting the use of puzzles in two child care centres, two brightly coloured animal jigsaw puzzles were chosen for the study purposes. The first puzzle was a relatively easy puzzle (12 pieces of size 7 1/4" x 7 1/4") and was selected to provide an experience in puzzle completion and familiarise mother-child dyads with the videotaping process. The second puzzle, also an animal jigsaw (60 pieces of size 11 1/2" x 11 1/2") was relatively difficult for 4-year-olds to do alone, thus necessitating help from mothers. It was therefore considered suitable to elicit metacognitive regulation and this was useful for children at their potential level of development.

6.4 Methods and procedures of data collection

6.4.1 Methods and methodological issues

The study was undertaken in naturalistic home settings of selected Australian and Indian families and involved interview and observation methods of data collection. Indian and Australian mothers were interviewed to elicit information on their views about adult guidance, children's learning and their expectations for children's development. Observations were conducted on the puzzle-solving interactions of Australian and Indian mother-child dyads were observed. As stated before, puzzle-
solving was chosen as a context due to its suitability for comparative analysis of metacognitive guidance.

Interviews are considered to be valuable for collecting first-hand information from respondents as well as for establishing rapport with the participants (Gay, 1992). However, their use has also been criticised for several reasons: Firstly, the “social desirability response set” (Dosanjh & Ghuman, 1996), which predisposes respondents to give answers that are desired by the interviewer. The second and the most criticised aspect of this form of data collection is the validity of information obtained. In the case of immigrant sample, the data collected through their verbal responses may not be representative of their traditional cultural beliefs due to the fact that some changes in immigrants’ values and beliefs are possible through acculturation. Notwithstanding this, collection of verbal data from immigrant sample is even more important to understand either because of the changes in their traditional beliefs or their efforts to maintain their traditional values.

The number of years of residence in the case of Indian families was less than five years in a majority (75%) of families. Based on the length of their stay in Sydney and their general desire to maintain cultural identity, it was presumed that the effects of acculturation would have been minimal on the beliefs of the selected Indian Telugu immigrant sample. No attempt was made to check on the validity and representativeness of immigrant mothers’ views about adult guidance and child development.

Collection of qualitative and ethnographic information is very important in cross-cultural studies, as lack of cultural understanding may lead to false and incorrect conclusions. As stated by Rogoff et al. (1993), a cross-cultural study “without attention to cultural variations in goals of development would be like attempting to learn a language without trying to understand the meaning it expresses” (p. 9). In the present study, information on descriptive, ethnographic details on child rearing, social contexts, and attitudes were collected through interviews with Australian and Indian mothers.
During interviews, mothers of the present study were told that there was no right or wrong answer for each of the questions and that their personal opinions were more valuable. The questions were also open-ended and encouraged mothers to reflect on and share their personal opinions freely.

Direct and naturalistic observation techniques were also used to complement the verbal information of mothers and for eliciting greater details on the interaction patterns in guided puzzle-solving contexts. Along with this, observations have also provided a micro approach to data collection. Observation is clearly a most useful technique of data collection in naturalistic studies of interaction. Amongst the various types of observations, the most popular and reliable method for recording behaviours in cross-cultural investigations is direct observation (Bornstein, 1991) and are valuable in maintaining the ecological validity of the data. The importance of direct observations in cross-cultural research is highlighted in the cross-cultural literature on children’s problem-solving (Weisz, Chaiyasit, Weiss, Eastman, & Jackson, 1995).

Observational techniques though valuable, are replete with problems relating to training of observers, reliability in observations, prior selection of behaviours to be observed, and confounding of natural behaviours by the observer’s presence. For instance, Graves and Glick (1978, cited in Zaslow & Rogoff, 1981) indicated differences in mothers’ interaction in response to their awareness of being observed. The mothers in their study were found to double their speech and be more responsive to children’s demands when they realised that they were being observed than when they thought they were not being observed. Consciousness over being observed appears to be one of the main issues to be dealt in observational studies.

There are also a range of other issues related to undertaking observations across cultures amongst which interpretation of observational context is an important and valid issue. Observation of babies and toddlers by strangers is believed to be endowed with an ‘evil eye’ in South Indian families (Sanagavarapu, 1985). The observer may also produce fear and thus the presence of an observer might distort the naturalness in the behaviours or events observed. On the contrary, observations may also help to
evoke interest in people to be observed. The available evidence on indigenous Indian samples indicates that Indian parents seem to be relaxed when being observed and delighted over their participation in observational studies (Roopnarine et al., 1990).

Assessment of the impact of an observer's presence on behaviour of participants is difficult to accomplish due to the sensitivities involved in asking questions related to their feelings of being observed. Further, the reliability of verbal data collected on feelings of observees is also questionable. According to Zaslow and Rogoff (1981), an observer's presence on subject's behaviour can be diminished by establishing rapport with the participants before carrying out observations. They further believed that it was important in any cross-cultural research to assess and report the apparent impact of observer presence on behaviour and to take that into account while interpreting the results.

The need to choose socially appropriate timings of the day for observations as well as to limit the duration of the observation are also indicted. For example, Ainsworth (1977, cited in Zaslow & Rogoff, 1981) has reported Ganda mothers preferring afternoons as the suitable time for observations, a time allocated to leisure and entertainment of visitors.

Perhaps, the most significant issue in any cross-cultural interactional investigation is the selection, recording, and interpretation of behaviours. The importance of choice and interpretation of behaviours for observation is illustrated in various studies. For instance, gazing into the eyes of an adult is an inappropriate and unaccented behaviour for children in some cultures. Even within cultures, identical behaviours have multiple purposes and can be interpreted in different ways according to the immediate interactional context. For example, an eye contact between a mother and her child in an instructional setting may mean either praise or acceptance (Zaslow & Rogoff, 1981). Depending on how data are collected and interpreted, the meaning can be either retained or lost. The overriding emphasis in data collection and interpretation should not be on reliable recording alone, to the exclusion of meaningful information from the immediate context.
Another important issue to be addressed in any cross-cultural study of interaction is the selection of specific behaviours of observation. Using a range of behaviours appropriate to one culture does not assure that one is taking into account the full range of social behaviours in the second culture. For example, “face-to-face looking and talking” may be considered as social interaction in one culture while mere physical presence is an indicator of social interaction in other culture (Zaslow & Rogoff, 1981).

Finally, as outlined by Zaslow and Rogoff (1981), relating sampled behaviour to a broader context is an issue that calls for a coordination between ethnographic and quantitative data. It is necessary to obtain sufficient information about the cultural contexts of participants of a study for deriving a culturally coherent interpretation of the behaviours being observed, determining the equivalence of the situations that are being compared cross-culturally, and for determining the extent to which sampled behaviour generalises to other settings within each culture as “ethnographic ignorance can lure the researcher into false conclusions” (LeVine, 1970, p.569, cited in Zaslow & Rogoff, 1981). To summarise, ethnographic understanding is essential to overcome many methodological problems associated with cross-cultural investigations and interpretations.

Although to achieve and sustain control over issues of methodology still poses difficulties for cross-cultural researchers, many have succeeded in achieving a greater control over the issues related to observation with the help of electronic recording technologies such as videotaping. Videorecording helps to preserve data which makes it possible to test and apply a variety of independent coding systems as well as to retrieve data any time. Further, it enables researchers to observe interactions over and again and to form a consensual interpretation from the behaviours observed. According to Phillips (1994), videotaped data are essential for epistemic probability. Although the problems of observer effect cannot be solved by videotaping, subjects’ consciousness over being observed can be alleviated to some extent by giving subjects an option to either review their decision or refuse permission to researchers to use data.
The literature on interaction studies highlights the significance of videotaping as a useful tool of data collection in observation studies. Further, as explained earlier, videotaping helps to maintain the authenticity in interactions and facilitates data retrieval. On that account, in the present study it was decided to videotape interactions in home settings.

6.4.2 Procedures and steps of data collection

After ensuring mothers’ willingness to participate in the study both in writing and verbally, appointments were made to meet at their homes and at convenient times. While making appointments for observations, mothers again received explanations of the study purposes and procedures. Interestingly, most of the Australian mothers preferred to meet the researcher during mornings, and Indian mothers chose either late afternoons or evenings. The variations in choice of timings could be due to the variations in the availability of leisure hours for working mothers.

a) Interviews with mothers

Data collection was achieved in two steps in the present study. The first step involved an interview with mothers seeking details on values and attitudes toward child rearing, maternal guidance, and task interpretations. The broad topics of interview included aspects such as socio-demographic information, children’s daily routine, attitudes to maternal guidance of children’s learning, child rearing goals and values of development, and interpretations related to the puzzle-solving task. Information on task interpretation of mothers is believed to be essential in the interpretation of cultural observations. Further, the potential role of task interpretation in predicting the performance and behaviours of participants of a study is also emphasised by various researchers (Renshaw & Gardner, 1990; Rogoff et al., 1984; Wertsch et al., 1984). A copy of the interview schedule is given in Appendix 1.
All the questions were open-ended and mothers were given sufficient time to think, reflect, and answer the questions. The pattern of questioning was also changed to suit the individual needs of mothers and interviews were conducted in an informal and friendly manner. Most of the mothers expressed their happiness to share their views and some mothers even sought guidance on issues related to child rearing from the investigator. Thus, apart from the collection of information, interviews also enabled establishment of a rapport with mothers. Development of rapport with subjects is believed to enhance the naturalness of the participants in interaction and assist in alleviating feelings of consciousness over being observed by a stranger. While mothers were participating in the interview, children were encouraged to trial the easy puzzle.

b) Observation of mother-child dyads’ puzzle-solving interactions

The second part of data collection involved videotaping mother-child dyads’ interaction on puzzle-solving. Each mother-child dyad was observed individually at her home. After establishing rapport with mothers and their children, mothers were asked to help their children on the difficult puzzle. The interaction session was videotaped with a camera visible to the participants. Children were asked to sit in front of the empty puzzle frame and the puzzle pieces were kept randomly near children. Before children began to solve the puzzle, mothers were shown the completed version of the puzzle and were given clear instructions on the purposes of the study. Mothers were asked to be natural and participate freely in the activity in a manner similar to their every day situations. No limit was placed on the amount of time mother-child dyads would like to stay on the task. The interactions were videotaped using a portable Sony camera. The videotaping of observations began with the interactions of participants on the difficult puzzle and ended with their voluntary withdrawal from puzzle-solving. On an average, the duration of each observation for Australian mother-child dyad ranged from 30-40 minutes, while for
Indian mother-child dyad, it was less than 30 minutes. On completion of the data collection, each Australian and Indian child was rewarded.

It has been realised through the processes of data collection that naturalistic studies are endowed with many difficulties. Some of the difficulties experienced in this process were related to changing visit times on several occasions to suit the convenience of mothers, long distances of travel, and cancellations on the spot due to children’s unwillingness to participate. Apart from these, videotaping procedures were also found to be cumbersome. Training on videotaping, either formally or intensive pilot training could be useful, especially for novice users of a video camera.

Overall, the participants in each cultural community showed extreme enthusiasm to participate in the study. In the Indian context, children were readily displayed for observations in their special costumes. In spite of difficulties encountered in data collection, the process was a rewarding experience due to the willingness shown and co-operation given by the subjects of the study.

6.5 Data processing

The videotaped data were transformed from a portable Camcorder to a VHS tape. The data were prepared for coding and analysis using several ways. Initially, the recorded mother-child dyad’s interactions on the difficult puzzle were edited. A total of 10 minutes of mother-child dyads’ interaction on the main puzzle was considered for analysis with a postulation that there would be more execution of metacognitive thinking and regulation in the initial stages of puzzle-solving and before the procedures for task completion were established. Later, verbal dialogues of the mother-child dyads’ interaction from the videotapes were transcribed. The utterances of each mother-child dyads’ interaction in the first ten minutes of their interaction were transcribed word for word. Finally, data were prepared by translating Telugu mother-child dyads’ interaction into English.
Translation has been reported as one of the key methodological issues in cross-cultural investigations due to the difficulties associated with the interpretation of meaning for the same words in different cultures or deriving meanings for different words in different languages (Brislin, 1976, cited in Triandis & Brislin, 1984). Decentering techniques (Werner & Campbell, 1970, cited in Triandis & Brislin, 1984) were indicated as helpful in overcoming the difficulties associated with translation and therefore reliability in translation was achieved. Applying the decentering technique on a sub sample of interaction (15% of sample), the contents of interaction were first translated from Telugu to English and later from English to Telugu language. This process has helped to check on the discrepancies and difficulties in translation. After ensuring quality control in translation through the decentering procedures and achieving confidence in translation, all the dialogues of Telugu mother-child dyads' interaction were translated into English. In the final phase of preparation of data for coding, non-verbal behaviours were added to the 22 transcripts with the help of video tapes.

6.6 Coding of Observations

6.6.1 Unit of analysis

Following indications in literature (Freund, 1990; Wertsch, 1979; Wertsch et al., 1980), an episode was chosen as an unit of analysis in this study. An episode was defined as “the segment of interaction centred around one piece of the puzzle. It included the mother’s and the child’s speech and actions concerned with identifying the piece to be used (by consulting the model), selecting the piece from the pieces pile, and inserting it into the copy” (Wertsch et al., 1980). The boundaries of episodes are often marked by praise utterances such as “Good,” followed by planning initiations such as “Now” (Wertsch & Hickman, 1987, cited in Elbers et al., 1992). According to Wertsch et al.’s definition, identification of a piece, location, and its placement are three major sub-steps in puzzle-solving.
Although episode is used predominantly as an unit of analysis in studies of adult guidance, its use in interaction studies is under debate. For example, Elbers et al. (1992) believe that the step sequence of puzzle completion applies only to situations where children are dependent on adults’ support, lack strategic knowledge and skills, and are willing to take adult instructions. They further criticise the use of episode as a unit of analysis due to its biased focus on adult initiation and reiterate that in any adult-child interaction, it is the dyad that is the problem solver, not the adult or the child.

In the present study nonetheless, the selection of episode as an unit of analysis was justified due to its focus on other or adult regulation. Apart from this, the selected children were novices with respect to the chosen puzzle, and the puzzle was also difficult to solve unassisted and therefore required adult initiation and guidance. Selection of episode in this study although implied the dominant role of adult in interaction, children however did participate actively in interactions.

Even though the application of episode as a unit of coding is justified in the present study, some difficulties emerged in using episode as unit of analysis, notably with regard to drawing the episode boundaries. Drawing of clear cut boundaries for episodes was obscure, particularly when the puzzle-solving processes did not correspond with the sequential order of the three sub-steps in puzzle-solving. Further, when discontinuities were found in the sub-steps or when the sub-steps were not present explicitly, marking of boundaries was difficult. These problems were resolved by coding the interaction that fell in the arena of the piece selection (sometimes tracking the steps back and forth several times) and its placement, with little emphasis on the sequentiality or ordering of the steps. This resulted sometimes in the inclusion of dialogues in the episode that were not essentially related to the episode or of a non-task nature. These were later screened and dialogues that were relevant to the task/episode were only chosen for coding.
6.6.2 Selected behaviours for coding and analysis

The analysis of interaction in the current investigation was approached from a cultural model of development proposed by Vygotsky (1978) and Wertsch (1979), which views adult guidance as a process that is based on and mirrors the thinking of children. Coding and analysis was predominantly focussed on other-regulation based on the notions of "social feedback" (Ivic, 1992, cited in Ignjatovic-Savic's et al., 1988) which view adults as external amplifiers or constituents of the children's mind.

Although the emphasis was on coding of adult regulation, children’s contributions and participation in interaction were also assessed. As most of the children's utterances were either responses to adult instructions or broken utterances, their speech was not considered for analysis of metacognition. This however, does not mean that children lacked strategic or metacognitive awareness. The chosen puzzle perhaps did not provide much scope to elicit their self regulated/metacognitive skills.

To a large extent, the focus in interaction studies has been on analysis of verbal interaction behaviours. More recently, the need to include non-verbal aspects of communication and guidance has been emphasised (Rogoff et al., 1993). Realising the importance of inclusion of non-verbal aspects of interaction or communication in analysis of adult guidance as well as their potential for strategic assistance, both verbal and non-verbal aspects of interaction/other-regulation were considered for coding. As outlined in Chapter 5, the behaviours selected for coding/analysis pertain to metacognitive stratégic guidance, task orientation, sustaining children’s mindfulness, and task regulation.

The transcribed interactions of 22 mother-child dyads’ were divided into episodes in the first instance, using videotapes. An observational checklist was prepared with a list of pre-defined adult and child categories/behaviours for coding purposes (Appendix 2). Only the dominant or frequently occurring adult or child behaviours were tallied for each episode and for each dyad with the help of checklist. In the coding of mothers’ interaction, a large number of behaviours, both verbal and non-
verbal were considered. In the coding of children’s interaction, only behaviours related to initiation, communication, and self-regulation were considered. In the total constellation of interactions, there were very few episodes of self-regulation and hence were not considered for further statistical analysis.

The transcriptions of mothers’ interactions were coded to determine their metacognitive and strategic support. Specifically, mothers’ interactions were coded for the presence of metacognitive content, initiation, strategic assistance, sustaining mindfulness, and linguistic guidance. The non-verbal behaviours of mothers were coded for the presence of strategic guidance and other-regulation using videotapes.

### 6.6.3 Coding categories and their descriptions

This section will detail descriptions or operational definitions of the coding categories used in the present study. The coding categories in the checklist (see Appendix 2) represent a conjectural structure, corresponding with the level of operations and task performance components of the theory of activity outlined in Chapter 4. Metacognitive and communicative coding categories were adopted from the categories enumerated in previous studies (Elliott, 1991; Freund, 1990; Moss, 1990; Rogoff et al., 1993; Wertsch, 1979), other categories such as task initiation and strategic assistance were newly added. The brief descriptions of coding categories of the checklist are given in Appendix 3. Below are the details on the coding categories and their descriptions.

#### a) Task initiation

Initiation refers to the control move made by a speaker in communication. \textit{Task initiation} is operationally defined as the communicative or physical move of a participant that leads to the search of a puzzle piece in an episode. The \textit{Task initiator} is the person whose explicit verbal or non-verbal behaviours lead to a goal-directed interaction or a search of a puzzle piece.
b) Maternal metacognitive guidance

Planning, monitoring, prediction, and evaluation are the components of metacognition considered in the present investigation.

1. Plans

Planning helps to understand the task requirements and provides a global view to task accomplishment. Goal setting enables breaking down the task into manageable steps. Mothers’ verbalisations that specify a sequence of activities (e.g., Let’s start from here) or a frame of reference to future actions (e.g., We might fix this here later) are coded under planning/goal category.

The qualitative aspects considered for coding were:
- Goal identification/statement: either through statement or directives (e.g., Let’s begin here or tell me where to begin? or next piece is a house piece.)
- Questioning the child on action to be taken (e.g., Look at this and tell me where to begin?)
- Clarification of task demands: through rule statement (e.g., We have to fix corners first), explanation of purposes (e.g., We have started here so we need a piece that goes here.)
- Arranging the environment that activates a plan (e.g., Separating a piece out.)
- Making the child aware of facts relevant to goal (e.g., Cuing or labelling.)

2. Monitoring

Monitoring of task procedures enables review of the progress toward a goal. Verbalisations of mothers that relate to detection/statement of errors, that question the appropriateness of the moves, simple negations, and non-verbal actions such as matching the piece or head nods are considered under this category. References to
monitoring included verbalisations such as, “That piece doesn’t go there,” or “this is a wrong piece here”.

The qualitative aspects considered for coding were:
- Detection/statement of errors (e.g., I think this is not right.)
- Questioning the appropriateness of the move (e.g., Is that right?)
- Simple negations (e.g., Yes or no)
- Non-verbal forms (e.g., Head nods indicating that the move is wrong, or physical intervention.)

3. Prediction

Maternal verbalisation related to taking guesses or prediction of outcomes were coded under this category (e.g., I think if we keep this piece here, it might fit).

4. Evaluation

Evaluation provides information that helps the child to develop an awareness of successful or unsuccessful efforts. Verbalisations of mothers that assess the task procedures, review the steps or actions and suggest alternative strategies were coded under the category of evaluation (e.g., Which piece do you think is better?).

c) Strategic guidance forms: Verbal

Strategic guidance is an important and essential form of scaffolding which helps children to progress easily from novice functioning to expert or mature functioning. Strategic assistance in verbal forms encompasses actions such as explanations, directive assistance, asking questions, and modelling of the procedures and solutions of problem-solving.
1. Direct modes of assistance

In guided learning activities, directive forms of assistance can be very helpful, particularly with respect to providing models for thinking as well as for sustaining the motivation and mindfulness of learners. Activities such as direct guidance (e.g., You have to look for pieces down the bottom first) will enable the child to understand the crucial aspects of task, enhance their knowledge of task completion and offer metacognitive support. Explanations (e.g., I don’t think this goes there because …) might assist the child in drawing clear associations between actions and consequences. Demonstration and modelling help to represent the appropriate procedures of task completion and strategies as well as metacognitive thinking. The direct modes of assistance considered for coding were:

- Direct guidance
- Explanations
- Demonstration/modelling

2. Indirect modes of assistance

Indirect forms of assistance encourage children’s thinking and reflection processes and in turn metacognitive responsibility. Actions such as cuing (e.g., grass is at the bottom), questioning (e.g., Where do you think this will go?), and labelling (e.g., That’s a rooster) will encourage children to identify the logical associations, understand about matching properties and efficient steps of task completion, and help to clarify their thinking. The indirect modes of verbal assistance considered for coding were:

- Cuing
- Questioning
- Labelling
d) **Strategic guidance forms: Non-verbal**

Non-verbal behaviours are believed to have a lot of strategic potential. Non-verbal means include *gestures* that can be understood by common knowledge and can be either conventional or non-conventional. For example, nods, shrugs, and points are conventional gestures and are understood with local meaning (Rogoff et al., 1993). Stylised gestures on the other hand are non-conventional. *Gazing, touching, pulling, knuckling (light tapping with knuckles), nudging* etc. that had a message and are aimed at assisting the child in task completion were considered for coding.

1. **Direct forms of assistance:** are those that offer directive assistance (e.g., Giving a piece to a child).
2. **Indirect forms of assistance:** are those that encourage the child to pursue the actions on his/her own with initial adult prompting (e.g., Gestures or gazes at model or a pile of pieces that encourage the child to search for a specific piece).

**e) Sustaining mindfulness**

The modes of mindfulness activities considered in the study were *attention management, praise, minimisation of frustration, and management of child behaviours.*

1. **Attention Management:** Verbal/non-verbal behaviours that emphasise the need to focus on task (e.g., Calling names or name-calling followed by patting, requests to have a look etc.).

The various *qualitative categories* used for coding were:
- Attention to crucial aspects of the task: picture/model/piece location
- Attention to the processes of an ongoing event
- General verbal and non-specific prompting
2. **Praise:** Verbal utterances that offer positive feedback on child, child’s efforts and child’s actions (e.g., You are wonderful or that was a good attempt) or non-verbal actions (e.g., Patting on the back). The categories chosen were:

- Praising the child
- Praising the outcomes
- Praising the efforts

3. **Minimise frustration:** Verbal assurances that alleviate the frustration and motivate the child (e.g., This is not that difficult. See, you can do it) and non-verbal actions that were aimed to minimise the child’s’ frustration (e.g., Cuddling and kissing in times of frustration) were coded under this category.

4. **Behaviour management:** Verbal/non-verbal behaviours that control the non-task behaviours and actions of the child (e.g., That’s not funny or asking the child to control his/her emotions) were grouped under this category.

**f) Adult Regulation**

Categorisation of adult regulation was based on the physical and cognitive contributions of mothers in each episode. As indicated before, successful completion of puzzle-solving requires execution of three strategic steps viz., identification of a piece, selection of a place, and placement of a piece. The sequence of these steps may vary, depending on the strategic approaches taken by the participants. Based on the contribution of mothers with respect to completion of each of those steps, Freund (1990) has categorised other-regulation into two types: *responsible* and *regulated*. According to Freund, if a mother physically performed the component, she is termed as ‘responsible’. On the contrary, if she points to, names, directs, cues, or questions, she is considered as ‘regulated’.

While Freund (1990) had coded regulation for each of the sub-steps, in the present study, episode was considered as a unit for coding. From piloting, it was realised that coding of regulation for each sub-step of episode was cumbersome and difficult,
especially when the sub-steps were indistinguishable. Such an approach would also be laborious and generate a large bulk of data at the end of coding without much advantage. Consequently, in the present study, coding of adult or self-regulation was confined to each successful episode and the predominance of components was considered as a basis in deciding the categorisation of adult or self-regulation in each episode.

Along with the categories of “responsible” (MR) and “regulated” (MRC), a third new category of “regulated and responsible” (MRR) was included in the present study after observing that within each episode, mothers take responsibility for some aspects and regulate children’s actions on other steps. The inclusion of the MRR category was found to be helpful especially when there was an absence of predominance of either responsible or regulated components.

It is also possible for a child to self-regulate his or her performance in each episode. An episode was considered self-regulated if the child fixed a puzzle piece without any direction or guidance from his or her mother. Thus problem-solving interactions of mothers were coded for one of three mutually exclusive task control categories: mother responsible (MR), mother regulation of the child (MRC), and mother both responsible and regulated (MRR) and children’s interactions were coded for child self-regulation (CSR). The different types of regulation from hereafter, were referred to by their acronyms.

g) Communication/speech styles

The speech styles of both mothers and children were categorised into the following types:

Directives: Utterances that suggest action (e.g., Keep the piece there!).

Questions: Verbalisations that stimulate thinking and request information from the listener (e.g., Where do you think that goes?).
Explanations: Utterances that indicate properties or provide information without any reference to actions (e.g., That’s correct I think or this rooster has a beak and a tail!).

Responses: Utterances that follow questions.

Repetitions: Utterances repeated by one speaker after another speaker (e.g., M: Chicks; C: Chicks).

Requests: Utterances that elicit a responsive action from the listener (e.g., Will you have a look into this please!).

Utterances: Simple utterances (um or Yeah!).

Combination: Statements that can’t be grouped into a specific category.

Apart from the above categories, a few other qualitative aspects of interaction were also considered for complementing the quantitative coding of adult regulation and are as follows:

h) Task orientation of mothers

Task orientation is operationally defined as the verbalisations or non-verbal actions of mothers related to introduction of the task. The various aspects considered under this category were:

♦ Preparing the child using a familiar context (e.g., This is like what you had for Christmas!).

♦ Creating a mnemonic structure (e.g., Do you remember you used to do puzzles with your brother?).

♦ Providing information on the task (e.g., This a big and difficult puzzle so you have to concentrate.).

♦ Translating the task to real life contexts (e.g., Shall we fix all the baby chicks and send them to their mummy?).

♦ Arranging the physical environment (e.g., placement of puzzle pieces).
i) Task performance

Task performance is operationally defined as the rate of accomplishment, measured by the number of episodes successfully completed by each mother-child dyad.

j) Task interpretation

Task interpretation is defined as the approach or view taken for task completion by mothers. It is classified into categories of teaching or process emphasis and product or task completion objectives and interpreted from the responses of mothers to an interview question.

6.7 Inter-observer reliability

As mentioned before, an episode was the unit of analysis chosen for coding. The quantitative categories of maternal guidance considered for coding were task initiation, metacognitive guidance (plans, prediction, monitoring, and evaluation), forms of strategic guidance (verbal/non-verbal; direct/indirect), metacognitive regulation (MR, MRR, and MRC), and speech styles. The components of children's interaction considered for coding were task initiation, self-regulation, and speech. After the initial coding by the researcher, an independent coder coded a sample of 31 episodes (15%) drawn randomly from a total of 201 episodes to establish reliability in coding. Inter-rater reliability were taken for all categories in the selected episodes (n=31) excepting minimising frustration and behavioural management component of maternal interaction due to their infrequent occurrence in interaction.

Both the researcher and independent coder agreed on dividing the interaction into units of episodes in 97% of the cases and on identification of task initiation/initiator in 100% of the cases. There was a higher percentage of agreement between the researcher and the independent coder with respect to categorisation of interactions into various arenas of metacognition as well. The independent coder agreed with the
researcher's coding in 100% of the cases on tallying planning interactions, in 87% of the cases on identifying the monitoring component, in 95% of the cases on locating prediction component, and in 71% of cases on isolating the evaluation component of maternal interaction with the researcher.

Further, the two coders agreed in 100% of the cases on identification of the categories of other (MR, MRC, and MRR) and self-regulation, indirect forms of verbal strategic assistance, non-verbal strategic assistance, and praise components of maternal regulation. With respect to identification of attention direction component of interaction and categorising interactions into direct verbal forms of strategic assistance, the percentages of agreement between the coders were 95% and 78% respectively.

On categorisation of speech into directives, the coders agreed in 75% of cases and with regard to categorisation of speech into questions and explanations, coders agreed in 100% of cases. On the allocation of children's speech into different categories also there was high agreement with the coder and researcher agreeing in 85% of the cases on classifying responses, in 90% of the cases on isolating the questions component of interaction and in 100% of the cases on grouping statements.

### 6.8 Data analysis

In the analysis of data, both quantitative and qualitative approaches were considered. Statistical analyses were conducted on the data from observations of collaborative guidance. As mentioned before, the presence of dominant or frequently occurring behaviours or categories were tallied using the observational checklist for each episode and for each mother-child dyad. The statistical significance of the differences in Australian and Indian mothers' metacognitive guidance provided to their male and female children and the interaction between culture and gender variables in maternal metacognitive guidance were established using chi-square analyses, computed through computer based statistical package for social sciences program (SPSS-X).
The quantitative results were supplemented extensively with qualitative information derived from transcripts, videotapes, and interviews to provide a holistic picture on Australian and Indian mothers’ guidance of their preschoolers’ metacognitive learning.

6.9 Summary

This chapter details the methodologies employed in the present investigation and the methodological issues related to cross-cultural observations of mother-child interaction. Further, it also details on the ways by which the various issues pertaining to cross-cultural data collection procedures and analyses are addressed in this study. As indicated previously in this chapter, improvement of methodology of cross-cultural studies is a challenging issue for cultural researchers. Similarly, deriving an appropriate methodology for cross-cultural investigations is also a challenging task, especially in the light of difficulties associated with the conceptualisation of the term ‘culture’ as well as achieving comparability between samples across cultures. Nonetheless, in the present research, an attempt is made to overcome the many methodological problems related to conceptualisation, selection of sample etc. through the selection of appropriate data collection methods and procedures as well as the selection of research questions encompassed in Vygotsky’s theory of social interaction. The following chapter presents the results of the cultural and gender comparison and the interplay of culture on gender variables in maternal metacognitive guidance.
Chapter 7

Results

Vygotsky's (1978) socio-cultural theory proposes that the development of metacognitive abilities originates in cultural contexts and are transferred to children through adult and peer guidance. While Vygotsky's theory situates metacognitive abilities and adult guidance in cultural contexts, little is known about cultural specificity in adult guidance of children's metacognitive development that can provide valuable insights into cultural variations in children's metacognitive abilities. Based on the socio-cultural theoretical constructs of Vygotsky (1978), it is argued in the present thesis that there will be cultural specificity in adult guidance of preschoolers' metacognitive development.

An attempt was made in this investigation to explore cultural differences in Australian and Indian mothers' metacognitive guidance of male and female pre-schoolers' puzzle-solving as well as their views of metacognitive/adult guidance and child development. Further, based on the notions of universality of metacognitive guidance, cultural similarities in maternal metacognitive guidance were also elucidated.

This chapter presents the results from (i) interviews with Australian and Indian mothers and (ii) observations of Australian and Indian mothers' guidance of their male and female children's puzzle-solving. The findings from interviews on mothers' views of children's learning, goals of development, adult guidance, and task motives are outlined
in Section 7.2. The observations from the videotaped interactions analysed for the patterns of metacognitive guidance and strategic assistance are detailed in Section 7.3. As per the indications of Popham & Sirotnik (1992), the row percentages of frequencies for all categories of metacognitive guidance are presented in tables together with observed and expected frequencies and were used in interpreting the Chi-square results.

While the rule of thumb generally accepted in Chi-square analyses is that expected frequencies be at least five for the results to be considered valid (e.g., Popham & Sirotnik, 1992), the expected frequencies were noted to be less than five in about 50% of cells in some cases (Tables 7.5; 7.6; 7.7; 7.10). Hence, these results need to be interpreted cautiously. To overcome the limitations in Chi-square analyses of metacognitive guidance (in some instances) and to provide a macroscopic view on the cultural patterns of metacognitive guidance and the cultural views of mothers on adult guidance and child development, quantitative data are supplemented with qualitative data from transcripts of Australian and Indian mother-child dyads’ interactions.

The presentation of results in this chapter reflects a sequence akin to the levels of activity theory (goals, motives, and methods of operation) discussed in previous chapters. While the results of the interview provide information on task motives and goals, the findings from the videotaped interactions cover aspects of goal accomplishment and corresponding methods of operation.

### 7.2 Cultural conceptions of adult guidance, child development, and task motives

As was stated in the previous chapter, Australian and Indian mothers were asked to respond to a range of questions related to children’s learning, adult guidance, goals of child development, expectations in terms of children’s educational and career goals, interpretations of puzzle-solving activity, and the preferred modes of guidance in children’s puzzle-solving. Table 7.1 outlines the maternal responses from interviews.
Table 7.1
Australian and Indian mothers’ views of child development, adult guidance, and task motives

<table>
<thead>
<tr>
<th>Categories</th>
<th>Australian mothers n = 14</th>
<th>Indian mothers n = 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puzzle completion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take responsibility</td>
<td>3 (21%)</td>
<td>8 (100%)</td>
</tr>
<tr>
<td>Delegate responsibility</td>
<td>11 (79%)</td>
<td>0</td>
</tr>
<tr>
<td>Responsibility for learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>3 (21%)</td>
<td>4 (50%)</td>
</tr>
<tr>
<td>Children</td>
<td>9 (64%)</td>
<td>0</td>
</tr>
<tr>
<td>Both</td>
<td>2 (14%)</td>
<td>4 (50%)</td>
</tr>
<tr>
<td>Preferred guidance methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation</td>
<td>0</td>
<td>1 (13%)</td>
</tr>
<tr>
<td>Demonstration</td>
<td>2 (14%)</td>
<td>5 (63%)</td>
</tr>
<tr>
<td>Imitation</td>
<td>2 (14%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td>Hands on/trial and error</td>
<td>10 (71%)</td>
<td>1 (13%)</td>
</tr>
<tr>
<td>Task orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product emphasis</td>
<td>8 (57%)</td>
<td>2 (25%)</td>
</tr>
<tr>
<td>Process emphasis</td>
<td>5 (36%)</td>
<td>6 (75%)</td>
</tr>
<tr>
<td>Both</td>
<td>1 (7%)</td>
<td>0</td>
</tr>
<tr>
<td>Goals of child development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>10 (71%)</td>
<td>2 (25%)</td>
</tr>
<tr>
<td>Discipline</td>
<td>0</td>
<td>1 (13%)</td>
</tr>
<tr>
<td>Academic</td>
<td>3 (21%)</td>
<td>5 (63%)</td>
</tr>
<tr>
<td>Physical</td>
<td>1 (7%)</td>
<td>0</td>
</tr>
<tr>
<td>Holistic</td>
<td>1 (7%)</td>
<td>0</td>
</tr>
<tr>
<td>Career goals</td>
<td>2 (14%)</td>
<td>5 (63%)</td>
</tr>
</tbody>
</table>
It was evident from Table 7.1, that mothers in the two cultural groups had different views on adult support in puzzle-solving, interpretations of the task, developmental goals, and the preferred methods for guidance. For example, all the Indian mothers overwhelmingly preferred to take the major responsibility in their children’s puzzle-solving in order to model and demonstrate relevant strategies and solutions to their children. Most of the Australian mothers on the other hand, expressed that they would like to delegate the responsibility to their children.

Indian mothers’ views on assuming primary responsibility were clearly reflected in their choice of ‘demonstration’ as the preferred method of guidance. More than half of the Indian mothers preferred the demonstration method of guidance and a small number of mothers preferred observation and imitation methods. Australian mothers, on the other hand, interpreted “support” as providing guidance to their children in the event of difficulty or upon request by the children, preferring primarily ‘autonomous’ modes of guidance that would lead to independent puzzle-solving.

Generally, Australian mothers perceived support as providing the environment, feedback, motivation, and love. Congruent with these beliefs is the preference of many Australian mothers for “hands on” or exploratory methods that would encourage self-responsibility in children. In their interviews, Australian mothers mentioned that “they would like to see initially that the child begins something and offer support in times of need. But most of the time they let children do things on their own”. Little emphasis was placed on learning through imitation. To quote the words of an Australian mother, “Just like monkey say ... monkey do ... I don’t think imitation does any good for children” (Australian mother: code no: 1).

Nine Australian mothers believed that the responsibility for puzzle-solving lies with children. In contrast, none of the Indian mothers believed that their children have exclusive responsibility. While half of the Indian mothers believed that they need to take principal responsibility, the other half believed in joint responsibility of both children and adults in task completion.
The results also indicated differences in Australian and Indian mothers’ interpretation of the puzzle-solving task. Six Indian mothers viewed task completion in a teaching context. To quote an Indian mother’s response to the question on task interpretation, “It doesn’t matter how long it takes and whether he completes it or not. But I will use this opportunity to teach a few concepts” (Indian mother: code no: 6). Against this, more than half of the Australian mothers emphasised a product approach and believed that this approach would enable children to derive a sense of accomplishment (e.g., He will be happy to see the puzzle completed). Thus, mothers in the two cultural groups had different interpretations for puzzle-solving tasks, with Australian mothers emphasising the product and Indian mothers the process approach for puzzle-solving.

In addition to the information on values and approaches to metacognitive guidance and task completion, information was also collected on maternal views of child development and attitudes to children’s education and learning. Cultural differences were apparent with respect to goals of child development and education as well. Five Indian mothers emphasised intellectual or academic achievement in reading, writing and arithmetic as an important area of development for preschool children. Most of the Indian children attended preschools and some parents mentioned to complement their preschool learning with informal teaching of reading, writing and arithmetic skills at home. In contrast, only three Australian mothers stressed the academic area of development as a valued goal for preschool education. Almost all of the Australian children in the study were also participating in some form of preschool education but none of their mothers mentioned any kind of academic preparation at home.

Contrary to the views of Indian mothers, many Australian mothers viewed social development as a major goal for their children. They valued the importance of developing friendships, social manners, independence, and communication skills. Overall, mothers in both the cultural groups did not rank discipline as an area of child development. It is worth mentioning that none of the Australian mothers considered discipline as an area of child development and only one Indian mother named discipline as a major goal of development for preschool children.
Mothers' views of children's future careers were also examined to understand their values associated with children's education and learning. More than half of the Indian mothers articulated clear career goals for their children. Overwhelmingly, Indian mothers believed in valuing education that would ensure their children's future prosperity. Preferred career choices were in the medical, computing, law, and engineering professions. Few Indian mothers also mentioned that career choices were one of the topics of conversation with their young children. In the Indian sample, gender differences were noted in the preferred careers for male and female children. Almost all Indian mothers mentioned family obligations as important for their daughters and therefore would not bother much about their girls' careers. In contrast, nearly all Australian mothers expressed the opinion that children should do whatever they like "as long as they are happy" and that they would expect them to become "responsible citizens". They visualised many opportunities for their children, and preferred to have minimum intervention in their children's education and career decisions.

In conclusion, it was evident from the results in this section that Australian and Indian mothers held different conceptions regarding adult guidance, goals of child development, and task interpretations. The findings on maternal views seem to suggest that Indian mothers prefer to take responsibility in their children's puzzle-solving and perceived that they have a major responsibility in their children's learning and development. Whereas, Australian mothers appear to value promoting individual responsibility in children's puzzle-solving and to view their role as providing support and encouragement. The question relating to cultural specificity in maternal views of adult guidance and child development seems to be answered in the affirmative through the findings presented in this section. The extent to which these differences might mirror in the interaction and guidance patterns of Australian and Indian mother-child dyads' puzzle-solving is examined in the next section.
7.3 Puzzle-solving interactions of mother-child dyads

The videotaped interactions of mother-child dyads’ puzzle-solving were analysed for the presence of cultural and gender specificity, culture and gender interaction effects as well as for cultural similarities in each of the selected independent variables of: 1) task performance, 2) task initiation, 3) adult regulation and division of task responsibilities, 4) metacognitive support/modelling, 5) use of linguistic styles in regulation, 6) children’s communication, 7) strategic guidance, and 8) methods of sustaining children’s mindfulness. Results are outlined below:

7.3.1 Task performance of mother-child dyads

As mentioned before in Chapter 6, task performance is operationally defined as the rate of accomplishment and measured by the number of episodes completed by mother-child dyads. The Australian and the Indian mothers were both asked to help their children solve the same puzzle. Though the goals set were the same for Australian and Indian mother-child dyads, differences were apparent in their rates and modes of goal accomplishment.

In total, there were 201 episodes completed by the 14 Australian and 8 Indian mother-child dyads during the puzzle-solving task. A minimum number of two and a maximum of 23 episodes were completed by the 22 dyads, each covering 10 minutes of interaction, with a mean of 6.7 and standard deviation of 5.0.

Australian mother-child dyads succeeded in joining the puzzle pieces in a higher frequency of episodes (158) compared with Indian mother-child dyads (43). The percentages of completed episodes in mother-child dyads’ interactions across cultural groups is depicted in Figure 7.1. The cultural variations in the rate of goal accomplishment were statistically significant \( \chi^2 (1, N=201) = 65.79, p<0.001 \).
Figure 7.1 Percentages of completed episodes in Australian and Indian mother-child dyads’ puzzle-solving

The comparison of mother-male and mother-female child dyads’ task achievements revealed substantial differences, with mother-male child dyads fixing the puzzle pieces in a greater number of episodes (132) than mother-female child dyads (69). Figure 7.2 shows the percentages of completed episodes in mother-male and mother-male child dyads’ interaction. The differences in mother-male and mother-female child’s task achievement, as measured by the number of completed episodes were significant $[\chi^2(1, N=201) = 19.80, p<0.001]$.

Figure 7.2 Percentages of completed episodes in mother-male and mother-female child dyads’ puzzle-solving

The observations on interplay of culture and gender with respect to task performance in mother-child dyads’ interactions indicated variations in the task performances of mother-male and mother-female child dyads in the two cultural groups. Australian mother-male child dyads completed a higher number of episodes (103) than Indian mother-child dyads (29). Similarly, Australian mother-female child dyads succeeded
completing more number of episodes (55) than Indian mother-female child dyads (14). The interaction between culture and gender with respect to task performance of both mother-male \( \chi^2(1, N=132) = 64.51, p<0.001 \) and mother-female child dyads was statistically significant \( \chi^2(1, N=69) = 36.55, p<0.001 \).

7.3.2 Task initiation in interactions

As argued before, task initiation patterns of mother-child dyads in different cultural groups are likely to vary depending on the cultural values associated with adult-child roles and communication patterns. For example, Anglo mothers have been observed to encourage children's initiation in puzzle-solving, consistent with their cultural values of promoting independence in children (Messinger & Freedman, 1992). Yet, due to the asymmetry in cognitive capacities and hierarchies in adult-child roles in general, it was anticipated that the mother may take a greater control in task processes in both the cultural groups. This assumption was affirmed by the greater amount of mother initiation in mother-child dyads’ task interactions. In a total of 201 episodes, mothers initiated 162 episodes and children initiated 39 episodes. The details on task initiation patterns of mother-child dyads are given in Table 7.2.

The cultural comparison of mother-child dyads’ initiation in Table 7.2 indicated greater amounts of maternal initiation and control in Indian mothers’ guidance of their children’s puzzle-solving (95%). In congruence with the findings on Indian mothers’ initiation, Indian children’s initiation in puzzle-solving was less compared to the initiation of Australian children. Australian children displayed initiation in task processes more frequently (23%) than did the Indian children (5%). The cultural differences in the rates of mother-child dyads’ initiation were statistically significant \( \chi^2(1, N=201) = 7.61, p<0.01 \). These findings suggest that Indian mothers display more initiation and control in their children’s puzzle-solving than Australian mothers and that Australian children display more initiation in task processes than Indian children.
Maternal task initiation was also analysed qualitatively with respect to the various forms of task orientation mentioned in Chapter 6 (e.g., providing information on task; creating a mnemonic structure). An examination of the forms of task orientation has indicated both cultural commonalities and cultural variations. While mothers in both the cultural groups prepared their children for puzzle-solving by providing information on the task, there were considerable differences in the nature of task preparation. The variations in the forms of maternal initiation were more prominent in the first episode where mother-child dyads were establishing the task procedures. Most of the Australian mothers initiated their puzzle-solving interactions with goal statements using verbal and non-verbal forms of communication. For example, a mother’s visual cuing of the model might have been accompanied by verbalisations about the processes of puzzle-solving. Some of the phrases that exemplify the emphasis on goal structure are “Look at the pieces in the model” (AM code no: 2M) or “How do we start the puzzle?” (AM code no: 5F) or “What to do first”? Have a look at the picture and find the corner pieces” (AM code no: 14M).

In contrast, most of the Indian mothers initiated the task processes with descriptions of the task and its nature. In their conversations, they placed a greater emphasis on creating a social structure or collaboration in puzzle-solving [e.g., This is a difficult puzzle. We will do it together (IM code no: 1F) or this is difficult for mum to do alone. Don’t you want to help mummy on this? (IM code no: 2M)]. In a few other instances, Indian mothers introduced puzzle-solving task as a play activity [e.g., Do you know how to play the game of puzzle? (IM code no: 8M)]. The use of other forms of task orientation such as creating mnemonic structure or translating the task to real life situations was not frequent in both the cultural groups.

There were also similarities in maternal task orientation across cultural groups. Both Indian and Australian mothers arranged the physical environment for puzzle-solving in a similar manner. For instance, Indian mothers were observed to prepare the physical environment by arranging the pieces to the right hand side and model to the left hand side of their children. They also provided a non-restrictive environment to their children by saying that “it does not matter how long they take to complete the puzzle”.
Australian mothers also structured the physical environment by arranging the location of pieces and model at appropriate locations and in a manner similar to Indian mothers. But, Australian mothers did not specify the length of time children could expend on the puzzle-solving. In brief, there were cultural similarities in mother-child dyads' organisation of physical environment for puzzle-solving, along with cultural differences in their approaches to puzzle-solving.

Table 7.2
Frequencies and percentages of task initiation in mother-child dyads' puzzle-solving

<table>
<thead>
<tr>
<th></th>
<th>Mothers' initiation</th>
<th>Children's initiation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian</td>
<td>121 (127.3) 77%</td>
<td>37 (30.4) 23%</td>
<td>158</td>
</tr>
<tr>
<td>Indian</td>
<td>41 (34.7) 95%</td>
<td>2 (8.4) 5%</td>
<td>43</td>
</tr>
<tr>
<td>Mother-male child</td>
<td>101 (106.4) 76%</td>
<td>31 (25.6) 24%</td>
<td>132</td>
</tr>
<tr>
<td>dyads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother-female child</td>
<td>61 (55.6) 88%</td>
<td>8 (13.4) 12%</td>
<td>69</td>
</tr>
<tr>
<td>dyads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother-male child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dyads</td>
<td>Australian</td>
<td>73 (78.8) 71%</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>28 (22.2) 97%</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother-female child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dyads</td>
<td>Australian</td>
<td>48 (48.6) 87%</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>13 (12.4) 93%</td>
<td>14</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses.

The comparison of task initiation patterns of mother-male and mother-female child dyads in the above table revealed few differences in the percentages of episodes with mothers' or children's initiation in both mother-male and mother-female child dyads’
interactions. The differences in initiation patterns between mother-male and mother-female child dyads’ were however, not statistically significant [$\chi^2 (1, N=201) = 4.09$, $p<0.06$].

In spite of the similarities in mother-male and mother-female child dyads’ initiation, a significant interaction was noticed between culture and gender variables with respect to the initiation patterns of mother-child dyads (Table 7.2). The percentage of episodes with maternal initiation was more (97%) in Indian mothers’ guidance of their male children, compared with the 71% of episodes with maternal initiation in Australian mothers’ guidance of their male children. The findings on Australian mothers’ initiation were supported conversely by the greater initiation of Australian male children in puzzle-solving episodes (29%) compared with the initiation of Indian male children in puzzle-solving (3%). The differences in Australian mother-male and Indian mother-male child dyads’ initiation were highly significant [$\chi^2 (1, N=132) = 8.30$, $p<0.008$]. In contrast to the differences in the mother-male child dyads’ initiation, there were few differences in mother-female child dyads’ initiation across cultural groups (Table 7.2). The interaction between culture and gender in initiation patterns of Australian mother-female and Indian mother-female dyads was not statistically significant [$\chi^2 (1, N=69) = 0.33$, $p<0.90$].

In brief, the results on mother-child dyads’ initiation revealed significant cultural differences in Australian and Indian mother-child dyads’ initiation patterns and the interaction between culture and gender was also found to be significant with respect to task initiation. Overall, Indian mothers took greater initiation and control in their children’s puzzle-solving, more so in their interactions with their male children and Australian male children displayed more initiation in puzzle-solving interactions than Indian male or female children. But, there were similarities in task initiations of mother-male and mother-female child dyads’ puzzle-solving.
7.3.3 Adult regulation and division of task responsibilities

In order to determine the metacognitive and physical contributions of mothers and children in each episode, mother-child dyads’ interaction was broadly categorised into adult and children’s self-regulation. As stated in Chapter 6, adult regulation was further categorised into three sub-categories of mother responsible (MR), mother regulated (MRC) and both responsible and regulated (MRR), with each category of regulation reflecting differences in sharing of metacognitive and physical responsibilities between mothers and children.

The categorisation of interaction into forms of regulation in the total sample demonstrated higher percentages of adult regulated episodes (95%) than self-regulated episodes (5%). It is worth mentioning that none of the Indian children displayed self-regulation in collaborative puzzle-solving. Sharing of task responsibilities (MRR) emerged as the dominant form of adult regulation in collaborative puzzle-solving. The percentage distribution of forms of maternal regulation in the total sample is shown in Figure 7.3.

![Figure 7.3 Percentages of forms of adult regulation in the total sample](image)

The results on the analyses related to cultural and gender specificity and the interaction between culture and gender in task or adult regulation are summarised in Table 7.3.
Table 7.3
Frequencies and percentages of forms of adult regulation

<table>
<thead>
<tr>
<th></th>
<th>MR</th>
<th>MRR</th>
<th>MRC</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian</td>
<td>41 (38.7) 28%</td>
<td>67 (76.7) 45%</td>
<td>40 (32.5) 27%</td>
<td>148</td>
</tr>
<tr>
<td>Indian</td>
<td>9 (11.3) 21%</td>
<td>32 (22.3) 74%</td>
<td>2 (9.6) 5%</td>
<td>43</td>
</tr>
<tr>
<td>Mother-male child dyads</td>
<td>35 (32.5) 28%</td>
<td>63 (64.2) 52%</td>
<td>26 (27.2) 20%</td>
<td>124</td>
</tr>
<tr>
<td>Mother-female child dyads</td>
<td>15 (17.5) 22%</td>
<td>36 (34.7) 24%</td>
<td>16 (14.7) 24%</td>
<td>67</td>
</tr>
<tr>
<td>Mother-male child dyads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>32 (26.8) 34%</td>
<td>37 (48.3) 39%</td>
<td>26 (19.9) 27%</td>
<td>95</td>
</tr>
<tr>
<td>Indian</td>
<td>3 (8.2) 10%</td>
<td>26 (14.7) 90%</td>
<td>0 (6.0) 0%</td>
<td>29</td>
</tr>
<tr>
<td>Mother-female child dyads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>9 (11.8) 17%</td>
<td>30 (28.5) 57%</td>
<td>14 (12.7) 26%</td>
<td>53</td>
</tr>
<tr>
<td>Indian</td>
<td>6 (3.2) 43%</td>
<td>6 (7.5) 43%</td>
<td>2 (3.3) 14%</td>
<td>14</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses.

The findings on cultural comparison of task regulation revealed substantial differences in the nature of adult regulation and division of metacognitive and physical responsibilities between mothers and children (Table 7.3). Indian mothers shared their children's task responsibilities (metacognitive and/or physical) in a higher percentage of episodes (74%). The regulation of children's task actions towards independent puzzle-solving was less frequent in Indian mothers' guidance (5%).

Even in Australian mothers' guidance, sharing of task responsibilities was the most frequently occurring form of adult regulation (45%). However, along with sharing the
metacognitive and/or physical responsibilities with their children, Australian mothers also delegated responsibility to their children in more than a quarter of episodes. The cultural differences in adult regulation or division of task responsibilities were statistically significant \[ \chi^2 (2, N=191) = 13.63, p< 0.001 \].

The analysis of transcripts of Australian and Indian mother-child dyads’ interactions for maternal regulation gave interesting insights into the cultural approaches and means of maternal or metacognitive regulation. Australian mother-child dyads determined their task responsibilities in the first episode itself, through explicitly stated rules and localised conventions (e.g., mummy will find the pieces for you and you try to put them together, Yeah? All right!: AM code no: 4M). The analysis of sequence of forms of regulation adopted by Australian mothers indicated that most of the first episodes (60%) in Australian mother-child dyads’ interactions were MRR episodes, where sharing of task responsibilities between mothers and children is central. The later episodes in interactions were of MRC nature, where mothers encouraged their children to take metacognitive responsibility (MRC) or assisted by undertaking total responsibility (MR).

Australian mothers guided their children’s puzzle-solving towards independent actions, progressively and in cognitively comfortable levels. Overall, mothers assumed a greater share of metacognitive responsibilities in finding the pieces and in its related sub-tasks of planning or strategic moves. Children were delegated the tasks of finding suitable locations for puzzle pieces or fixing the pieces.

Australian mothers’ guidance reflected an implicit approach, where use of intended effect acts was extensive. In nearly 80 out of 158 episodes, mothers guided their children’s task processes using intended effect acts such as dropping the right piece near children or singling out a piece from the pile of pieces. Sometimes mothers kept correct pieces in their hands and children would automatically pick those pieces from mother’s hands.
The following interaction represents the nature of division of responsibilities in Australian mother-child dyads as well as the implicit nature of guidance. In this example, a mother assumes a major share of metacognitive responsibilities of planning, monitoring etc. The mother also encourages her child’s metacognitive learning by encouraging him to locate the piece and teaching the child about the significance of consulting the model.

M: “Still we got to do the bottom”. (M picks few bottom pieces and keeps them near the child)

C: (Child looks at those pieces and picks one and asks) “Where does this go?”

M: “That’s part of the other house”. (and keeps the correct piece near the child)

C: “I don’t know where the other house is?” (looks at M)

M: “Where do you think the other house is Over here” (taps on place) and says to the child, “You have a look over here.” (gazes at the model)

C: Looks at the model, picks the piece kept near him and with non-verbal cues from mother, fixes the piece in its location.

Australian mother-child dyads’ interactions: Transcript no: 4M
In Indian mothers’ guidance, on the contrary, there was no explicit agreement between mothers and children over the division of task responsibilities. The use of intended effect acts was also less in Indian mothers’ guidance compared to their use in Australian mothers’ guidance. Indian mothers’ guidance emulated an explicit and modelling approach to metacognitive guidance where physical demonstration or modelling of puzzle-solving steps was obvious. In a majority of first episodes (63%) in interaction, mothers took total responsibility (MR) in task processes (e.g., finding the right piece and joining with other pieces) and facilitated their children’s metacognitive learning through modelling. The following example indicates the nature of division of task responsibilities as well as the use of demonstration and modelling techniques in Indian mothers’ guidance in MR episodes.

M: “You come over here … (looks at child)
look for this corner.” (points to location in the model)
M picks one and says, “Look this piece here … (shows the piece to child)
see whether this is the right one”. (matches with the model, checks on the
location on the model and later gives it to child and says, “come here
nanna” (endearment). This time mother holds the child’s hand, moves it to
the model and matches the piece with the model once again by holding the
child’s hand and says, “Yes.”
C: looking at the model
M: “You have to keep it in this corner.” (M fixes in the correct location)

Indian mother-child dyads’ interactions: Transcript no: 6M

Indian mothers also encouraged children’s metacognitive learning through indirect forms of guidance such as cuing, pointing, and labelling. Mothers explained to their children the significance of cross-checking with the model and considering the physical attributes of pieces such as colour or shape quite extensively, a pattern observed similarly in Australian mothers’ guidance as well. The following interaction demonstrates Indian mothers’ use of indirect forms of guidance in MRR episodes.
M: "Look for some more pieces. Look at these!"
(Points to pieces sorted by mother before.)
C: Picks one and says, "Black" and continues to fix it.
M: "No, no, that's black piece, isn't it? That goes along this side." (Points to location) "Look! this side it is blue all along!"
M: "It has to be blue this side. Where is the blue piece in this pile?" (Points to pile of pieces.) "Find a blue piece from this." (Points to pile of pieces again.)
C: Gazes at mother and says "Okay" And picks blue piece.
M: "Oh! Lovely!"
Indian mother-child dyads' interactions: Transcript no: 6M

In brief, the qualitative analysis of interaction for adult regulation outlined both similarities and differences. The similarities are that mothers in both the cultures "apprenticed" their children’s metacognitive learning by undertaking a greater amount of metacognitive responsibilities and control than did children. Differences
apparent in the frequencies of maternal regulation and approaches used for maternal metacognitive regulation.

A comparison of the maternal regulation of male and female children’s puzzle-solving indicated very few variations in the amounts of adult regulation and the nature of division of task responsibilities between mothers and their children (Table 7.3). For instance, mothers shared responsibilities (MRC) in similar percentages of episodes in their male (52%) and female children’s puzzle-solving (54%). There were also no significant differences in the percentages of episodes with respect to either taking complete responsibility (MR) or encouraging individual responsibility in children (MRC) in both mother-male and mother-female child dyads’ puzzle-solving. The variations in maternal regulation as a factor of the gender of the child were not statistically significant [$\chi^2 (2, N=191) = 0.80$, $p<0.66$].

Even though the forms of maternal or task regulation did not vary as a function of the gender of the child, there was an interaction between culture and gender variables with respect to maternal forms of metacognitive regulation (Table 7.3). Indian mothers shared task responsibilities with their male children in a higher percentage of episodes (90%). Another important finding, as can be seen in Table 7.3, was that none of the Indian mothers regulated their male children’s puzzle-solving actions towards independent regulation (MRC).

Australian mothers on the other hand, encouraged their male children’s task actions towards self-regulation (MRC) in 27% of episodes. They also provided both physical and metacognitive support (MR) in about 35% of episodes. In the rest of the episodes (39%), they shared physical and metacognitive task responsibilities with their children. The results of a Chi-square test indicated significant interaction effects with Indian mothers providing more support to their male children through sharing of task responsibilities [$\chi^2 (2, N=124) = 23.46$, $p<0.001$]. The examination of results for relationships between the forms of task regulation and interactions with female children in Australian and Indian mothers’ guidance revealed few differences in mothers’
guidance patterns (Table 7.3), though were statistically not significant \( \chi^2 (2, N=67) = 4.38, p<0.13 \).

### 7.3.4 Metacognitive guidance and modelling

In order to explore the presence of variations and similarities in maternal metacognitive guidance, the verbal content of mothers' interaction was analysed quantitatively with respect to various categories of planning, monitoring, prediction, and evaluation. Monitoring of on-going task activities was found to be the predominantly occurring activity in the other-regulation of children's puzzle-solving (66%), in comparison with planning (61%), prediction (40%), and evaluation processes (12%).

The results on the analysis of metacognitive components of maternal regulation are shown in Table 7.4. The examination of frequencies and percentages in Table 7.4 indicated substantial variations in metacognitive components in Australian and Indian mothers' guidance. On the whole, Indian mothers provided metacognitive support to their children more frequently compared with Australian mothers.

The variations in maternal metacognitive guidance as a function of cultural background of mothers were statistically significant with respect to planning \( \chi^2 (1, N=122) = 31.35, p<0.001 \), monitoring \( \chi^2 (1, N=132) = 12.50, p<0.001 \), prediction \( \chi^2 (1, N=76) = 9.67, p<0.01 \), and evaluation components \( \chi^2 (1, N=24) = 27.01, p<0.001 \). The results on cultural comparisons of metacognitive guidance thus suggest frequent metacognitive support and modelling in Indian mothers' guidance.

Along with quantitative differences, there were also qualitative differences in the nature of metacognitive guidance and modelling in two cultural groups. The analysis of transcripts of mother-child dyads' interaction for metacognitive components is limited to planning and monitoring components due to their predominant occurrence in the present investigation. The following paragraphs illustrate the nature of planning and monitoring guidance across cultural groups.
Most of the Indian mothers modelled planning strategies in the form of clarification of task demands and rule statements (e.g., We have to fix corners first and later in the middle) or goal identification (e.g., Find some flower pieces) and used verbal cuing or labelling techniques (e.g., Find some shed. It has to be in grey colour). By contrast, a majority of Australian mothers modelled planning strategies using intended effect acts. For example, mothers pushed pieces towards children or singled out the correct pieces from the pile of puzzle pieces or kept the pieces required in children’s vicinity in given contexts. Mothers’ rearrangement of the physical environment automatically led to children’s goal setting and sub-goals of finding the locations and joining the pieces. Overall, the use of non-verbal and implicit means for regulating children’s metacognitive learning was found to be dominant in Australian mothers’ metacognitive guidance. Australian mothers also used goal statements to model planning strategies to their children in few instances (e.g., Do you want to start with corners or rooster?” or How do we start puzzle?).

There were differences with regard to qualitative forms of monitoring guidance as well in two cultural groups. Indian mothers modelled monitoring strategies to their children in the forms of error detention (e.g., This is wrong) and cross-checking with model. The use of other methods such as physical intervention (e.g., taking the wrong piece out from child’s hand) was also noted in few episodes in Indian mothers’ guidance. Identification of wrong moves in puzzle-solving was accompanied by corrective and supporting behaviours such as explanations on the appropriateness of moves, clarifications on wrong moves and physical corrections or guidance.

Examples of the strategies used in Indian mothers’ monitoring guidance are illustrated below:
Example 1

M: "Does it fit? May be ... (gaze at the model) but, the house is only this small. (points to location) You started from here. This house is only this much ... (measures the distance with fingers) and the house (on model) is that much ... (physical demonstration). We should try another piece to fit in this gap (pointing) between this (pointing) and that one (pointing)."

Indian mother-child dyads’ interactions: Transcript no: 8M

Example 2

M: Says to child, "I think this is wrong," and takes out the piece and matches with the shape on the model. Then hands over the same piece to the child and encourages the child to repeat the same process, by holding his hand and placing his hand on the model for cross checking the suitability of that piece for that location.

Indian mother-child dyads’ interactions: Transcript no: 6M

In Australian mothers’ guidance on the other hand, simple negations were the most frequently used strategies for metacognitive monitoring. Physical interventions (e.g., pulling the piece away) and head nods (e.g., either for approval or disapproval of task moves) were the other strategies utilised for monitoring task processes towards solutions. As was the case with other findings, the observations on metacognitive guidance depicted significant differences in maternal modelling of metacognitive guidance across cultural groups.

The findings on maternal metacognitive guidance afforded to male and female children are shown in Table 7.4. As per the tabulated results, mothers varied their monitoring support to their male and female children. But with respect to other forms of metacognitive support (e.g., planning, prediction, and evaluation), there were few variations in frequencies or percentages of metacognitive support provided to male and female children.
The differences in maternal metacognitive guidance provided to male and female children were non-significant for planning \[ \chi^2 (1, N=122) = 0.39, p<0.70 \], prediction \[ \chi^2 (1, N=76) = 2.53, p<0.20 \], and evaluation components \[ \chi^2 (1, N=24) = 0.01, p<0.90 \]. By contrast, the variations in maternal guidance were statistically significant for monitoring \[ \chi^2 (1, N=132) = 4.38, p<0.05 \]. In brief, there were similarities in maternal planning, prediction, and evaluation modelling provided to male and female children. But, there were variations in monitoring guidance provided by mothers to their sons and daughters.

The results on the interaction between maternal metacognitive regulation and gender presented in Table 7.4 indicated variations in mothers' metacognitive guidance provided to male and female children in two cultural groups. Indian mothers modelled planning, monitoring, prediction, and evaluation strategies to their male children in a higher percentage of episodes compared with Australian mothers. The association between cultural background of mothers and interactions with male children was statistically significant for planning \[ \chi^2 (1, N=78) = 21.56, p<0.001 \], monitoring \[ \chi^2 (1, N=80) = 16.41, p<0.001 \], prediction \[ \chi^2 (1, N=45) = 16.35, p<0.001 \], and evaluation \[ \chi^2 (1, N=16) = 19.31, p<0.001 \] components. This indicates that Indian mothers provided metacognitive support to their sons more frequently than did Australian mothers.

The results in Table 7.4 also revealed variations in mothers' metacognitive guidance afforded to their daughters in two cultural groups. The differences appear to arise in the amounts of planning and evaluation support provided to female children with Indian mothers modelling metacognitive strategies in a higher percentage of episodes. There were few variations in mothers' guidance with respect to prediction and monitoring components of guidance. The association between culture and gender in maternal metacognitive guidance of daughters was significant with respect to planning \[ \chi^2 (1, N=44) = 9.98, p<0.01 \] and evaluation \[ \chi^2 (1, N=8) = 19.11, p<0.001 \] components. But with respect to other forms of metacognitive regulation, the differences were
statistically non-significant, implying similarities in maternal monitoring and prediction guidance in interactions with female children.

Table 7.4
Frequencies and percentages of components of maternal metacognitive guidance

<table>
<thead>
<tr>
<th></th>
<th>Planning</th>
<th>Monitoring</th>
<th>Prediction</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian</td>
<td>80 (95.9) 51%</td>
<td>94 (103.8) 60%</td>
<td>51 (59.7) 32%</td>
<td>8 (18.9) 5%</td>
</tr>
<tr>
<td>Indian</td>
<td>42 (26.1) 98%</td>
<td>38 (28.2) 88%</td>
<td>25 (16.3) 58%</td>
<td>16 (5.1) 37%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Planning</th>
<th>Monitoring</th>
<th>Prediction</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother-male</td>
<td>78 (80.1) 59%</td>
<td>80 (86.7) 60%</td>
<td>45 (49.9) 34%</td>
<td>16 (15.8) 12%</td>
</tr>
<tr>
<td>child dyads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother-female</td>
<td>44 (41.9) 64%</td>
<td>52 (45.3) 75%</td>
<td>31 (26.1) 45%</td>
<td>8 (8.2) 12%</td>
</tr>
<tr>
<td>child dyads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother-male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>child dyads</td>
<td>Australian</td>
<td>50 (60.9) 49%</td>
<td>53 (62.4) 51%</td>
<td>26 (35.1) 25%</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>28 (17.1) 97%</td>
<td>27 (17.6) 93%</td>
<td>19 (9.9) 67%</td>
</tr>
<tr>
<td></td>
<td>14 (8.9) 100%</td>
<td>11 (10.6) 79%</td>
<td>6 (6.3) 43%</td>
<td>5 (1.6) 36%</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses.

7.3.5 Use of speech in maternal guidance

As mentioned in Chapter 5, language mediates adult guidance and is cultural in origin. Based on the premise that differential use of speech will reflect the cultural patterns of maternal guidance as well as the division of metacognitive responsibilities in collaborative puzzle-solving interactions, the content of other-regulation in Australian and Indian mother-child dyads' interaction was analysed with respect to various speech styles. The results indicated that explanations (33%) and questions (28%) were the
commonly used means of linguistic regulation in mother-child dyads' interactions in comparison to the use of other speech categories. The use of responses and requests in mothers' speech was observed to be meagre or absent (Table 7.5).

Table 7.5
Frequencies and percentages of maternal speech styles across cultural groups

<table>
<thead>
<tr>
<th></th>
<th>Australian</th>
<th>Indian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directives</td>
<td>22 (34.8)</td>
<td>23 (10.2)</td>
<td>45</td>
</tr>
<tr>
<td>Questions</td>
<td>40 (44.0)</td>
<td>17 (13.0)</td>
<td>57</td>
</tr>
<tr>
<td>Explanations</td>
<td>63 (50.9)</td>
<td>3 (15.0)</td>
<td>66</td>
</tr>
<tr>
<td>Responses</td>
<td>4 (3.0)</td>
<td>0 (0.9)</td>
<td>4</td>
</tr>
<tr>
<td>Utterances</td>
<td>4 (3.0)</td>
<td>0 (0.9)</td>
<td>4</td>
</tr>
<tr>
<td>Combination</td>
<td>13 (10.0)</td>
<td>0 (3.0)</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>146</td>
<td>43</td>
<td>189</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses. As the expected frequencies are less than 5 in some cases, these results need to be interpreted cautiously.

As indicated in Table 7.5, there were differences in the use of speech styles in Australian and Indian mothers' guidance. Australian mothers employed explanations for the purposes of metacognitive guidance in 43% of episodes. Indian mothers in contrast, used directions in 53% of episodes for the same purposes. One of the unexpected findings was the frequent use of questions in Indian mothers' guidance (40%). Also noteworthy were the findings that Indian mothers did not apply other forms of speech (e.g., responses or utterances) in their guidance and 6% of episodes (12) in Australian mothers' interactions were silent episodes. The cultural differences in the forms of linguistic mediation were highly significant with Australian mothers relying on explanations for mediating their children's puzzle-solving and Indian mothers applying directions for the same objective \[ \chi^2 (5, N=189) = 40.84, p<0.001 \].
The analysis of transcripts outlined the significance of linguistic acts for achieving a common definition of situation between mothers and children and for metacognitive guidance. Australian mothers used explanations to provide metacognitive and strategic knowledge on puzzle-solving. For instance, mothers taught children explicitly about the need to consult the model and also raised their children’s awareness of the need for understanding physical attributes of pieces. In the following transcript, a mother helps her child understand the connections between the perceptual attributes of pieces and strategic actions (straight pieces go to corners). The importance of explanations for metacognitive guidance is depicted through the following interaction:

M: “Have a guess! (shows the piece to child)

Do you think it is a straight edge piece? Do You? (looks at child)

See it has got a hole on it at the side. It’s not really a straight line across. So it has got a bump there. Look! Look! (pointing) Bump there in the middle and a bump in the middle where … Look! Look! (pointing) When you have got a straight edge piece here, (points to location) see this piece. See how the whole bit is straight. No bumps or holes in the middle. Then the whole bit is straight. See that. So that is straight.

The other bit is not a straight edge. Isn’t it?

All the straight bits go to corners. See!" (shows the model)

Australian mother-child dyads’ interactions: Transcript no: 7F
The use of speech for achieving situation definition was also clearly indicated in Australian mothers' regulation of children's puzzle-solving. Further, encouragement of individual opinions and choices in Australian mothers' guidance necessitated negotiations between them and their children over task actions. Mothers had to negotiate with children on many occasions to derive a common definition for a particular action or situation. The discourse between an Australian mother-child presented below typifies the general processes of achieving situation definition and negotiations involved in Australian mother-child dyads' interactions.

M: "How do we start the puzzle you think?" (gazes at child)
C: "I think inside." (referring to the location)
M: "Inside?" (asks with exclamation)
C: "Yeah!" (head nod)
M: "Do you think we can fit inside?" (sorting the pieces)
C: "Yeah! We can!" (gazes at pieces)
M: "Start off with bottom?" (gazes at child)
C: "No." (head nod)
M: "Then you tell me how are we going to start in the middle?" (taps on location)
C: "Just put them in the box." (brings the box closer)
M: "Well, let's see what we can do, and says, Do you think this plan works?"
C: Says "Yes" and continues to fix. (C struggles to fix)
M: "Okay! How about we first find the pieces and then decide what to do?"
C: Agrees to mother's proposal and says, "Yes"!

Australian mother-child dyads' interactions: Transcript no: 12F

In the above illustration, the mother initially had a plan of commencing puzzle-solving with corner pieces. The child on the other hand, approached the task with a different goal. After realising the strategic limitations of the child's proposal, the mother entered into negotiations with her child. By utilising various negotiation strategies such as postponement of child's proposal, provision of feedback on appropriateness of
a goal, and proposal of an alternate plan, the mother was able to convince the child and achieve a common definition/goal for puzzle-solving. The use of language for negotiating a new definition of goal and to achieve a higher level of intersubjectivity between mother and child was clearly manifested in the same example.

While Australian mothers utilised explanations in their linguistic mediation, Indian mothers by contrast, used directives in their interactions for achieving the same goals for which the speech was intended in Australian mothers’ guidance (e.g., imparting metacognitive knowledge, demonstrating metacognitive modes of thinking or physical steps of puzzle-solving, and achieving situation definition). The following example illustrates the use of directives in Indian mothers’ metacognitive guidance:

| M: | “See here! (Points to location) We will start from here. Okay! (repeats pointing). We have to find corners (gazes at pieces and model). Pick a corner piece.” |
| C: | Picks one and says, “Here it is!” |
| M: | Looks at the piece, picks it from the child’s hand, matches with the shape on the model and says, “This is a corner,” and repeats “this is same as this”. Gives the piece back to child and says “We have to match it!” |
| | Gives the piece back to child and says, “Keep it here Okay!” (points to location) |

Indian mother-child dyads’ interactions: Transcript no: 5F

In the above example, the Indian mother approached the puzzle-solving with her proposal and provided clear directions to the child on the task processes. The child participated in puzzle-solving with compliant responses. The use of language for enhancing the child’s metacognitive knowledge and understanding of the strategic steps in puzzle-solving (e.g., cross checking with model) was obvious from the above interaction. The use of directives in Indian mother-child dyads’ interaction appear to limit the necessity for negotiations between mothers and children. Out of 43 episodes in Indian mother-child dyads’ interaction, there were only two episodes with instances of negotiations over the puzzle-solving steps or actions.
Mothers' speech in both the cultural groups reflected their cultural practices and values. The cultural specific practices of turn-taking and giving individual choices were very much evident in the speech of Australian mothers (e.g., I finished this. Now it is your turn or Where do you want to start first or You want to look for some more pieces with straight edges. Do you? You can do that first. If you want to. AM code no: 6F).

Further, there were similarities with respect to the use of deictics in mothers' guidance. Mothers in both the cultural groups used simple deictics extensively for achieving situation definition between themselves and their children (e.g., this one or that one) than common bound references or context bound references. The following interaction from an Indian mother's guidance illustrates the general use of deictics in metacognitive guidance:
<table>
<thead>
<tr>
<th>M:</th>
<th>“We have to keep it here (points to place). See this, (points to piece) this is same as this (matches with the model). First keep it here (points to place to keep it ready for use). Okay!”</th>
</tr>
</thead>
<tbody>
<tr>
<td>C:</td>
<td>Picks a piece and asks mother, “This one?”</td>
</tr>
<tr>
<td>M:</td>
<td>“What’s that? (gazes at child and piece and says), Okay! Keep it.” Then looks at the child and asks, “Where are the corner pieces?” Looks around, picks a piece and says, “See this piece., it has extensions and is not a corner piece. So find pieces like this!” (shows another corner piece).</td>
</tr>
</tbody>
</table>

Indian mother-child dyads’ interactions: Transcript no: 5F

In the above example, the mother commences her guidance with simple diecticts (e.g., ‘this one‘ or ‘that one”), combined with non-verbal gestures. After ensuring that the child was able to comprehend the task procedures and task requirements, she introduces referential perspectives into the guidance and provides elaborated information on spatial attributions of pieces.

The other similarities in linguistic mediation are that mothers in both the cultural groups used multimodal forms of guidance and combined verbal forms of guidance (e.g., labelling) extensively with non-verbal forms of guidance (e.g., pointing). The multimodal forms of guidance enable children to decipher verbal utterances easily through non-verbal gestures and might facilitate children’s metacognitive learning. The use of multimodal patterns of guidance across cultural groups reveals mothers’ sensitivity and awareness to children’s developing competence and the need for developmentally appropriate adult support in what Rogoff et al. (1993) calls children’s apprenticeship training. To sum up, the qualitative data on speech styles revealed both cultural similarities and differences in maternal verbal mediation of preschoolers’ metacognitive learning.

The results of Chi-square analyses for exploring the variations in maternal linguistic mediation as a factor of the gender of the child are shown in Table 7.6. Mothers of male children used explanations more frequently than did the mothers of female children. In contrast, mothers of female children used questions more often in their guidance than
did the mothers of male children. Nevertheless, the gender differences in the forms of linguistic mediation were statistically not significant [$\chi^2(5, N=189) = 5.02, p<0.41]$.

Table 7.6
Frequencies and percentages of maternal speech styles across gender groups

<table>
<thead>
<tr>
<th></th>
<th>Mother-male child dyads</th>
<th>Mother- female child dyads</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directives</td>
<td>29 (30.0) 23%</td>
<td>16 (15.0) 25%</td>
<td>45</td>
</tr>
<tr>
<td>Questions</td>
<td>34 (38.0) 27%</td>
<td>23 (19.0) 7%</td>
<td>57</td>
</tr>
<tr>
<td>Explanations</td>
<td>50 (44.0) 40%</td>
<td>16 (22.0) 25%</td>
<td>66</td>
</tr>
<tr>
<td>Responses</td>
<td>3 (2.66) 2%</td>
<td>1 (1.33) 2%</td>
<td>4</td>
</tr>
<tr>
<td>Utterances</td>
<td>3 (2.66) 2%</td>
<td>1 (1.33) 2%</td>
<td>4</td>
</tr>
<tr>
<td>Combination</td>
<td>7 (8.66) 6%</td>
<td>6 (4.33) 10%</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>63</td>
<td>189</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses. As the expected frequencies are less than 5 in some cases, these results need to be interpreted cautiously.

The results on the interaction effects of culture and gender with respect to maternal use of speech styles are depicted in Table 7.7. Mothers’ verbal guidance in both the cultural groups varied as a factor of a child’s gender. Australian mothers provided explanatory guidance to their male children in a higher percentage of episodes (52%). Indian mothers on the other hand, provided directive guidance to their male children in a higher percentage of episodes (55%). Unexpectedly, the use of questions was also more in Indian mothers’ guidance of male children compared with their use in Australian mothers’ guidance of boys. Another notable finding was that none of the Indian mothers used explanations as a means of guidance in their interactions with male children. The interaction between culture and gender was highly significant in maternal metacognitive guidance provided to male children [$\chi^2(5, N=126) = 40.20, p<0.001$]. Mothers’ guidance in both the cultural groups appear to vary in their interactions with female children as well. As shown in Table 7.7, Australian mothers appear to
encourage metacognitive responsibilities in their female children through the use of questions in nearly 40% of episodes. Indian mothers in contrast, seem to encourage metacognitive dependency in their female children through the use of directives in 50% of episodes. Nonetheless, the interaction effects of culture and gender in maternal linguistic mediation of female children's puzzle-solving were not statistically significant \( \chi^2 (5, N= 63) = 6.99, p<0.15 \).

Table 7.7
Frequencies and percentages of maternal speech styles across culture and gender groups

<table>
<thead>
<tr>
<th></th>
<th>Mother-male child dyads</th>
<th>Mother-female child dyads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Australian</td>
<td>Indian</td>
</tr>
<tr>
<td>Directives</td>
<td>13 (22.3) 13%</td>
<td>16 (6.7) 55%</td>
</tr>
<tr>
<td>Questions</td>
<td>21 (26.2) 27%</td>
<td>13 (7.8) 45%</td>
</tr>
<tr>
<td>Explanations</td>
<td>50 (38.5) 52%</td>
<td>0 (11.5) 0</td>
</tr>
<tr>
<td>Responses</td>
<td>3 (2.3) 3%</td>
<td>0 (0.7) 0</td>
</tr>
<tr>
<td>Utterances</td>
<td>3 (2.3) 3%</td>
<td>0 (0.7) 0</td>
</tr>
<tr>
<td>Combination</td>
<td>7 (5.3) 7%</td>
<td>0 (1.7) 0</td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>29</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses. As the expected frequencies are less than 5 in some cases, these results need to be interpreted cautiously.

In brief, the Chi-square results on speech styles revealed significant cultural differences in maternal linguistic mediation of children's metacognitive learning. As a whole, the findings on speech styles seem to suggest that Indian mothers regulate children’s puzzle-solving using directive approaches and Australian mothers on the other hand, employ egalitarian based explanatory guidance in collaborative puzzle-solving interactions. In contrast, there were similarities in maternal linguistic mediation of boys
and girls' puzzle-solving. Further, the interaction between culture and gender in maternal use of speech styles was non-significant.

7.3.6 Children's communication in interaction

Verbal communication of children was analysed with respect to the amount of speech and speech styles. However, as indicated before, children's speech was not examined further for the presence of metacognitive strategies as the focus of the study was on maternal-regulation. Besides, children did not speak extensively during the interaction sessions which was evident in the lesser amount of their speech in interactions compared with the amount of maternal speech in interactions. For instance, the mean number of words in children's communication was less ($\bar{x}=14$) compared with the mean number of words in mothers' verbal communication ($\bar{x}=138$). The utterances of children were either broken, unclear or predominantly responses (60%) further making them difficult to analyse for metacognitive content.

There were cultural differences in the speech styles employed by children with Indian children giving responses in a higher percentage of episodes (75%) than did Australian children (34%). The results of Chi-square test showed significant cultural differences in children's speech styles [$\chi^2 (7, N=125) = 33.24, p<0.001$]. In contrast, there were similarities in speech styles of boys and girls [$\chi^2 (7, N=125) = 11.92, p<0.07$].

Further, the results revealed a significant interaction between cultural group and gender of the child [$\chi^2 (5, N=84) = 26.23, p<0.001$], with Indian male children giving responses in a higher percentage of episodes (82%) than did Australian children (27%). But the speech styles of girls in two cultural groups were similar [$\chi^2 (7, N=41) = 10.12, p<0.08$).
7.3.7 Means of strategic guidance

A question was raised in this thesis as to whether there are similarities or variations in the forms of maternal strategic assistance provided to children in their puzzle-solving. As mentioned in Chapter 6, both the verbal and the non-verbal forms of guidance, along with their sub-categories of direct and indirect modes were considered for analysis in this study. As per the definitions given in Chapter 6, verbal strategic assistance encompasses actions of asking questions or labelling or other verbalisations that contain strategies and solutions for puzzle-solving. The direct forms of verbal assistance refer to maternal verbalisations that suggest solutions (e.g., giving directions or instructions) and the indirect forms of verbal assistance refer to maternal verbalisations that require children's critical thinking to derive a solution (e.g., labelling or questioning).

The non-verbal forms of maternal assistance on the other hand, refer to the use of gestures or gazes that have strategic potential. Direct forms of non-verbal help are those that offer direct assistance (e.g., giving a piece to child) and indirect forms of assistance are those that encourage children's actions and thinking in deriving strategies and solutions (e.g., gestures or gazes at model). In the following pages, the results on strategic assistance are presented under two sections: a) verbal and b) non-verbal forms.

a) Verbal forms of strategic assistance

There were 167 episodes with instances of verbal strategic guidance in the total sample and mothers were observed to provide both direct and indirect forms of verbal assistance in a similar percentage of episodes. Mothers provided direct forms of strategic assistance in 48% of episodes and in the rest of the episodes (52%), they provided indirect forms of verbal strategic guidance to their children. The results on verbal forms of strategic guidance are shown in Table 7.8.
Table 7.8
Frequencies and percentages of verbal forms of strategic guidance

<table>
<thead>
<tr>
<th></th>
<th>Forms of verbal guidance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct (in parentheses)</td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>59 (59.4) 48%</td>
<td>124</td>
</tr>
<tr>
<td>Indian</td>
<td>21 (20.6) 49%</td>
<td>43</td>
</tr>
<tr>
<td>Mother-male child dyads</td>
<td>52 (51.3) 49%</td>
<td>107</td>
</tr>
<tr>
<td>Mother-female child dyads</td>
<td>28 (28.7) 48%</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Indirect (in parentheses)</td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>65 (64.6) 52%</td>
<td></td>
</tr>
<tr>
<td>Indian</td>
<td>22 (22.4) 51%</td>
<td></td>
</tr>
<tr>
<td>Mother-male child dyads</td>
<td>55 (55.7) 51%</td>
<td></td>
</tr>
<tr>
<td>Mother-female child dyads</td>
<td>32 (31.3) 53%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses.

The results on the maternal modes of verbal strategic assistance across cultural groups presented in Table 7.8 showed similarities in the forms and frequencies of verbal strategic guidance across cultures. Both Australian and Indian mothers used direct and indirect forms of verbal strategic assistance in nearly equal proportions of episodes. Indian mothers guided their children’s puzzle-solving using direct forms of strategic help (e.g., giving instructions) in 49% of episodes and indirect forms of help (e.g., verbal cues or question) in 51% of episodes. Australian mothers provided direct forms of verbal help in 48% of episodes and indirect forms of verbal help in 52% of episodes. The differences in the forms of mothers’ verbal strategic help across cultures were not statistically significant [$\chi^2 (1, N=167) = 0.20, p<1.00]$. 
Even though the quantitative results indicated similarities in frequencies of verbal strategic guidance afforded by mothers in two cultural groups, there were considerable differences in the qualitative forms of their verbal strategic guidance. Australian mothers relied more on verbal cuing in their strategic guidance. Indian mothers used labelling for the same objective and the use of terminology, such as rectangle, square, and triangle was also observed to be more frequent in Indian mothers' guidance.

The following example shows the use of common referential perspectives or cuing in an Australian mother's guidance:

<table>
<thead>
<tr>
<th>M:</th>
<th>“I think I can see a piece.” (looks in the direction of pieces)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C:</td>
<td>“Where?” (gazes at mother)</td>
</tr>
<tr>
<td>M:</td>
<td>“Right near your hand!”</td>
</tr>
<tr>
<td>C:</td>
<td>Picks some piece.</td>
</tr>
<tr>
<td>M:</td>
<td>“No, (head nod) it wasn’t near your hand.”</td>
</tr>
<tr>
<td>C:</td>
<td>Child picks another piece.</td>
</tr>
<tr>
<td>M:</td>
<td>“No, next to it!”</td>
</tr>
<tr>
<td>C:</td>
<td>“Where?”</td>
</tr>
<tr>
<td>M:</td>
<td>“Just that piece you can see near . . .”</td>
</tr>
<tr>
<td>C:</td>
<td>“Here?” (points in the direction of right hand)</td>
</tr>
<tr>
<td>M:</td>
<td>“Next to it!”</td>
</tr>
<tr>
<td>C:</td>
<td>Child picks the right piece.</td>
</tr>
<tr>
<td>M:</td>
<td>“That’s it. There you go!” (looks at child with praise)</td>
</tr>
</tbody>
</table>

Australian mother-child dyads’ interactions: Transcript no: 4M

In the above example, the mother regulated the child's task actions with the help of referential perspectives that involved spatial locations. In the example below, an Indian mother guides her child's metacognitive learning by using labelling, helping the child understand the physical attributes of pieces (e.g., colour), and introducing the concepts or schemas, thereby teaching the child about strategic steps.
M: “Look for the other piece, the flower piece! Keep the flower pieces aside. Look along this side (points to direction), flowers, rocks ...”(points to model)
C: Did not listen to mother.
M: “I will tell you what to do and you can do it fast. Okay! Come over here! (taps on her lap)
Look for brown pieces for rock ‘nanna’ (endearment) (gaze at model)
See here, gate, fence. Look for fence pieces.
This is the first one ... (points to location) second piece is a grey colour piece and is a fence piece and it should come on top ....”(points to location)
C: Looks at the pile of pieces.
M: Mother picks the correct one and about to fix it
C: “No, I’ll fix it!” (grabs the piece)
M: “No, second one!”
C: Fixes it correctly.
Indian mother-child dyads’ interactions: Transcript no: 6M

The Chi-square results on the strategic forms of verbal guidance afforded to male and female children presented in Table 7.8 showed very few differences in the percentages of episodes with either direct or indirect forms of guidance in mother-male and mother-female child dyads’ interactions. The differences in the modes and frequencies of verbal strategic assistance of mothers of male and female children were not statistically significant [$\chi^2 (1, N=167) = 0.57, p<0.93$].

The results on interaction effects of culture and gender in verbal strategic guidance in Table 7.8 also revealed similarities in maternal assistance as a factor of their interactions with male or female children. Chi-square analyses indicated no significant culture and gender interaction effects for the modes of verbal interaction in both mother-male [$\chi^2 (1, N=107) = 0.15, p<0.85$] and mother-female child dyads’ interaction [$\chi^2 (1, N=60) = 0.10, p<0.98$] across cultural groups.
b) Non-verbal forms of strategic assistance

As stated before, the non-verbal content of mothers’ communication was analysed with respect to its two sub-categories of direct (e.g., pushing the piece near a child) and indirect (e.g., directing the child’s attention to model) forms. There were 159 episodes with instances of non-verbal strategic assistance in mothers’ guidance. Direct forms of assistance emerged as the most frequently (69%) occurring forms of non-verbal strategic assistance than the indirect forms of assistance (31%). The results on non-verbal forms of maternal guidance are shown in Table 7.9.

The results on Australian and Indian mothers’ use of non-verbal forms of assistance presented in Table 7.9 revealed cultural variations in non-verbal modes of help offered to children in two cultural groups. Australian mothers provided direct forms of non-verbal assistance in a higher percentage of episodes (78%) than did Indian mothers (44%). Indian mothers on the other hand, provided indirect modes of assistance more frequently (56%) than did the Australian mothers (22%). The cultural differences with respect to non-verbal guidance patterns of mothers were statistically significant \[ \chi^2 (1, N=159) = 15.87, p<0.001 \]. The preference of Australian mothers for direct forms of non-verbal assistance than indirect forms of non-verbal assistance seems to imply that Australian mothers attempted to make task completion easier for their children more often than did Indian mothers.
Table 7.9
Frequencies and percentages of non-verbal forms of strategic guidance

<table>
<thead>
<tr>
<th></th>
<th>Forms of non-verbal guidance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect</td>
</tr>
<tr>
<td>Australian</td>
<td>93 (83.0) 78%</td>
<td>27 (37.0) 22%</td>
</tr>
<tr>
<td>Indian</td>
<td>17 (27.0) 44%</td>
<td>22 (12.0) 56%</td>
</tr>
<tr>
<td>Mother-male child</td>
<td>80 (72.6) 76%</td>
<td>25 (32.4) 24%</td>
</tr>
<tr>
<td>dyads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother-female child</td>
<td>30 (37.4) 56%</td>
<td>24 (16.6) 44%</td>
</tr>
<tr>
<td>dyads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother-male child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dyads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>66 (60.2) 84%</td>
<td>13 (18.8) 16%</td>
</tr>
<tr>
<td>Indian</td>
<td>14 (19.8) 54%</td>
<td>12 (6.2) 46%</td>
</tr>
<tr>
<td>Mother-female child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dyads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>27 (22.8) 66%</td>
<td>14 (18.2) 34%</td>
</tr>
<tr>
<td>Indian</td>
<td>3 (7.2) 23%</td>
<td>10 (5.8) 57%</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses.

Mothers’ non-verbal strategic guidance was also found to vary as a factor of the gender of the child (Table 7.9). Mothers of male children provided direct forms of non-verbal strategic assistance in a higher proportion of episodes (76%) than did the mothers of female children (56%). The results of the Chi-square analysis confirmed that mothers were more likely to provide direct forms of assistance to their boys in an apparent attempt to make task completion easier for them [$\chi^2 (1, N=159) = 15.87$, p<0.01].

Further, the results on the interaction between culture and gender in non-verbal modes of guidance in Table 7.9 revealed that mothers’ guidance across cultural groups varied by the gender of the child with whom they were interacting. Australian mothers
offered direct forms of assistance to their male children in a higher proportion of episodes (84%) than did the Indian mothers (54%). In contrast, Indian mothers offered indirect forms of help to their female children in a higher percentage of episodes (77%) than did the Australian mothers. The culture and gender interaction was significant with respect to the forms of non-verbal guidance provided to boys [$\chi^2 (1, N=105) = 9.51, p<0.001$] and girls across cultural groups [$\chi^2 (1, N=54) = 7.31, p<0.01$].

In summary, the Chi-square results on verbal forms of strategic guidance revealed cultural similarities in mothers’ verbal strategic guidance. The verbal strategic help provided by mothers to boys or girls in two groups was also noted to be similar. Further, the interaction between culture and gender with respect to the verbal forms of strategic guidance was non significant. The results on non-verbal guidance forms of guidance in contrast, revealed variations in maternal strategic guidance across cultural and gender groups, along with a significant interaction between culture and gender variables in non-verbal guidance. As per the results of non-verbal forms of guidance, Australian mothers offered strategic assistance more in direct forms to their male children and Indian mothers on the other hand, offered non-verbal assistance to their female children more in indirect forms.

### 7.3.8 Methods of sustaining children’s mindfulness

The various forms of mindful activities considered for coding were attention regulation, praise, minimising frustration, and management of behaviours. In a total of 162 episodes that comprised mindful activities, attention direction emanated as the most frequently occurring form of regulation (74%). The occurrence of other forms of regulation was found to be less frequent. Table 7.10 summarises the results on maternal regulation of children’s mindfulness.
Table 7.10
Frequencies and percentages of forms of mindfulness employed by mothers

<table>
<thead>
<tr>
<th></th>
<th>Attention direction</th>
<th>Praise</th>
<th>Minimise frustration</th>
<th>Behaviour management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian</td>
<td>87 (89.6) 72%</td>
<td>31 (27.6) 23%</td>
<td>2 (2.2) 2%</td>
<td>1 (1.5) 0.8%</td>
</tr>
<tr>
<td>Indian</td>
<td>33 (30.4) 81%</td>
<td>6 (9.3) 15%</td>
<td>1 (0.8) 2%</td>
<td>1 (0.5) 2%</td>
</tr>
<tr>
<td>Mother-male child dyads</td>
<td>76 (79.3) 71%</td>
<td>27 (24.4) 25%</td>
<td>2 (1.9) 2%</td>
<td>0 (1.3)</td>
</tr>
<tr>
<td>Mother-female child dyads</td>
<td>44 (40.7) 80%</td>
<td>10 (12.6) 18%</td>
<td>1 (1.0) 2%</td>
<td>0 (0.7)</td>
</tr>
<tr>
<td>Mother-male child dyads</td>
<td>53 (55.4) 68%</td>
<td>22 (19.7) 28%</td>
<td>2 (1.5) 3%</td>
<td>1 (1.5) 1%</td>
</tr>
<tr>
<td>Australian</td>
<td>23 (20.6) 89%</td>
<td>5 (7.3) 7%</td>
<td>0 (0.5) 1%</td>
<td>1 (1.5) 3%</td>
</tr>
<tr>
<td>Indian</td>
<td>34 (34.4) 79%</td>
<td>9 (7.8) 21%</td>
<td>0 (0.8) 0</td>
<td>0</td>
</tr>
<tr>
<td>Mother-female child dyads</td>
<td>10 (9.6) 83%</td>
<td>1 (2.2) 8%</td>
<td>1 (0.2) 8%</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Expected frequencies are in parentheses. As the expected frequencies are less than 5 in some cases, these results need to be interpreted cautiously.

As per the results on the cultural comparison of maternal regulation of children's volition in Table 7.10, regulation of attention was found to be frequent in both Indian (81%) and Australian (72%) mothers' guidance. But the use of other strategies such as praise or behaviour management for regulation of task processes was found to be less frequent in both the cultural groups. On the whole, the cultural differences in maternal modes of regulation of children's mindfulness were not statistically significant \[ \chi^2 (3, N=162) = 2.67, p<0.43 \].
Although there were similarities in maternal guidance of children’s mindfulness, across cultural groups, differences were apparent with respect to qualitative aspects of guidance of children’s mindfulness. Most of the Indian mothers regulated their children’s attention, using name calling, endearments (e.g., look nanna: an endearment for boys) and verbal prompting. The use of directives was pervasive in regulation of children’s attention as well. The contexts in which attention regulation occurred were demonstration of relevant steps/strategies (e.g., I have done here. You also have to try this way, see here! If you go this way we can fix them easily IM code no: 6M) or diversion of attention to details on spatial and perceptual attributes of the pieces (e.g., Sanjay! Look, here it is, a line. See the colour in this picture, look! Second piece is a grey colour piece and it should come on the top: IM code no: 8M).

Australian mothers by contrast, regulated their children’s attention using multimodal forms, where verbal forms of regulation were extensively accompanied by non-verbal gestures. Questioning was the preferred verbal means of attention regulation (e.g., See what’s up there? Can you see that bit there?) as opposed to the use of directives in Indian mothers’ regulation of children’s attention. But with respect to the functional uses of attention regulation, there were similarities. Attention direction in Australian mothers’ guidance was intended to achieve the objectives of focussing children’s attention on to the task, or crucial aspects of the task such as pieces, model or location (e.g., Here it is flat and goes along somewhere up on the top. Look! Look!), similarly observed in Indian mothers’ guidance. The following segment of interaction demonstrates the multimodal forms of attention regulation in Australian mothers’ guidance:

<table>
<thead>
<tr>
<th>M:</th>
<th>“See how the top of the house goes across the top?” (pointing to the model is followed by tracing the boundaries on the model with index finger movements). Australian mother-child dyads’ interactions: Transcript no: 9F</th>
</tr>
</thead>
</table>
Qualitative differences were evident with respect to praising as well. Australian mothers relied more on extrinsic rewarding by praising children’s successful actions as well as children. The commonly used praise expressions in Australian mother-child interaction were “Good girl or Good boy”, or “Well done!” or “that was good!” The following interaction exemplifies the observations on Australian mothers’ praise regulation:

M: “Where did you get this piece?”
(Asks with flabbergasted expression)
C: (Looks at the mother and says) “From the pieces!”
M: “Good girl! I think you know this better than mummy does”.
Australian mother-child dyads’ interactions: Transcript no: 5F

The commonly used praise statements in Indian mothers’ guidance were “Good” or “Very good”. None of the Indian mothers praised their children per se and mothers were observed to praise their children’s actions only. Indian mothers also used other motivational techniques (e.g., endearments, kissing, hugging or close physical contact). The following example from Indian mother-child dyads’ interaction supports the general observations on maternal praise regulation:

M: Looks at the child asks the child to come close to her (Kisses and hugs the child) and says “You are doing a good Job! Come on? How about this piece?”
Indian mother-child dyads’ interactions: Transcript no: 6M
The results on gender comparisons in Table 7.10 showed that attention direction constituted a greater proportion of episodes in both mother-male (71%) and mother-female child dyads' (80%) interaction. The variances in the proportion of episodes of mindful activities across gender groups were small. Mothers’ regulation of children’s mindful behaviours did not vary as a factor of the gender of the child [$\chi^2 (3, N=162) = 2.21, p<0.41$]. The results on interaction between culture and gender in sustaining children’s mindfulness shown in Table 7.10 revealed that mothers in both the cultural groups used similar strategies in sustaining their male [$\chi^2 (3, N=107) = 2.66, p<0.36$] or female children’s volitional control [$\chi^2 (2, N=55) = 4.42, p<0.13; \text{df}$].
In short, the Chi-square results in this section revealed similarities in maternal employment of mindful activities across cultural and gender groups, along with absence of significant interaction between culture and gender of child in maternal regulation of children’s mindfulness.

7.4 Summary

This chapter presents the results from interviews on mothers’ views of adult guidance and task motives and observations on Australian and Indian mothers’ metacognitive guidance of male and female children’s puzzle-solving. The main research questions addressed in this thesis refer to a) cultural specificity and universality in Australian and Indian mothers’ metacognitive guidance and their views of adult/metacognitive guidance and child development, b) variations in mothers’ metacognitive guidance as a function of the gender of the child, and c) the interplay between culture and gender of the child in maternal metacognitive guidance.

For the question relating to cultural specificity in maternal views of adult guidance, the interview results indicated variations in maternal views of child development and adult guidance. Australian mothers preferred to encourage individual responsibility in children and to provide supporting environment with minimum adult intervention. Indian mothers on the other hand, mentioned to take more responsibility in their children’s learning and development. Mothers’ views with respect to puzzle-solving were also different with Australian mothers mentioning to take a product approach and Indian mothers the process approach for puzzle-solving. The presence of “cultural specificity in maternal views, goals, and motives of adult guidance of metacognitive/child development” seems to be confirmed by these findings.

With respect to the question pertaining to cultural specificity in maternal metacognitive guidance, the results of Chi-square tests showed significant variations in Australian and Indian mother-child dyads’ interactions in aspects of task initiation, communication, division of task responsibilities, task performance, non-verbal strategic assistance, and
metacognitive guidance. The only aspects of guidance in which congruence in mothers' guidance was noted were verbal forms of strategic assistance and methods of sustaining children's mindfulness. Overall, Indian mothers have taken greater initiation and control, shared responsibilities with their children in a higher number of episodes, used directive and modelling approaches in their metacognitive guidance. Australian mothers in contrast, encouraged children's initiation and responsibilities in task actions in a higher percentage of episodes and employed explanatory and implicit approaches in their metacognitive guidance. From these findings it appears that the nature of metacognitive guidance in immigrant Indian cultural group imply encouragement of interdependency between mothers and children. Where as the Australian mothers' metacognitive guidance suggest development of individual responsibility in children. Significant cultural differences on many components of maternal guidance thus seem to validate "cultural specificity in Australian and Indian mothers' metacognitive guidance of preschoolers' puzzle-solving".

Further, in relation to the question on cultural similarities in maternal metacognitive guidance, it was noted that mothers in both the cultural groups shared children's task responsibilities, provided similar forms of verbal strategic guidance, regulated children's mindfulness in similar percentages of episodes, and displayed sensitivity to children's cognitive or metacognitive needs by providing verbal guidance in simple deictics (e.g., this one or that one). The presence of "cultural universality in patterns of maternal metacognitive guidance" is confirmed from these findings.

The presence of cultural similarities and cultural variations in maternal metacognitive guidance was evidence by the qualitative analyses as well. Furthermore, the analyses of transcripts provided insights into the cultural approaches and patterns of maternal metacognitive guidance, thus highlighting their significance in studies of mother-child interactions.

In respect of the question on variations in maternal metacognitive guidance of male and female children, the findings were unexpected. There were similarities in mothers' guidance of sons and daughters in all aspects of maternal metacognitive guidance,
excepting task performance and non-verbal components. The question relating to "gender specificity in mothers' guidance of male and female children's metacognitive learning" seems to be answered in the negative by these findings.

Responses to the question on the association between culture and gender variables in maternal metacognitive guidance showed statistically significant interaction between culture and gender in mother-male child dyads' puzzle-solving, with respect to categories of task performance, task initiation, metacognitive regulation of task processes, use of speech, non-verbal forms of strategic assistance and metacognitive guidance. On the whole, Indian mothers were noted to provide metacognitive/strategic guidance more frequently to their sons than did Australian mothers. In contrast, the association between culture and gender variables in metacognitive guidance of female children with respect to various components of guidance was non significant, excepting task performance and metacognitive guidance. The question on "interaction effects for culture and gender in metacognitive guided interactions of mother-male and mother-female child dyads in Australian and Indian cultural groups" therefore was answered both affirmatively and negatively.

The statistical significance of comparisons between Australian and Indian mothers' metacognitive guidance of male and female children and the interplay of culture and gender in maternal metacognitive guidance is shown in Table 7.11.
Table 7.11
Summary of Chi-square results on maternal metacognitive guidance

<table>
<thead>
<tr>
<th>Aspects of metacognitive guidance</th>
<th>Cultural comparison</th>
<th>Gender Comparison</th>
<th>Interaction effects Male</th>
<th>Interaction effects Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task performance</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Initiator of episodes</td>
<td>*</td>
<td>NS</td>
<td>*</td>
<td>NS</td>
</tr>
<tr>
<td>Forms of adult regulation</td>
<td>*</td>
<td>NS</td>
<td>*</td>
<td>NS</td>
</tr>
<tr>
<td>Speech styles</td>
<td>*</td>
<td>NS</td>
<td>*</td>
<td>NS</td>
</tr>
<tr>
<td>Verbal strategic guidance</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Non-verbal strategic guidance</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>NS</td>
</tr>
<tr>
<td>Sustaining Mindfulness</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Metacognitive support</td>
<td>*</td>
<td>NS</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

* indicates statistical significance; NS= not significant

The results of the present investigation on Australian and Indian mothers’ metacognitive guidance of pre-schoolers’ puzzle-solving are discussed and concluded in the following chapter against a background of socio-cultural perspectives of development, concepts of activity theory, and available empirical literature on adult/metacognitive guidance. The thesis is also concluded in the same chapter with implications, limitations of the study, and directions for future studies on cultural aspects of adult guidance.
Chapter 8
Discussion and conclusions

The recent research on social interaction has highlighted the significance of adult or peer guidance for children’s metacognitive learning and development. Underpinning this view is Vygotsky’s (1978) contentions that children’s development occurs in interactions with other capable members of the society or culture. In Vygotskian terms, children’s interaction within the zone of proximal development (teaching-learning transactions) provides the form and content for cultural guidance of children. While Vygotsky’s theory proposes that children’s development and adult or peer guidance are situated in cultural contexts, little is known about cultural specificity in metacognitive guided interactions.

Based on socio-cultural perspectives and need for cross-cultural studies in the area of metacognitive guidance, an attempt is made in this thesis to explore the presence of cultural variations and similarities in Australian and Indian mothers’ metacognitive guidance of preschoolers’ puzzle-solving in natural home settings. As per indications in the literature for variations in adult guidance as a function of the gender of the child, differences in maternal metacognitive guidance of male and female children are also investigated, along with an exploration of interaction between culture and gender in maternal metacognitive guidance.
This chapter presents discussion of the results on Australian and Indian mothers’ metacognitive guidance in male and female children’s puzzle-solving, in the light of socio-cultural and activity theories, cultural values of child development and adult guidance, and empirical literature on metacognitive/adult guidance. Also presented in this chapter are conclusions drawn from the discussion and implications of the present study. Finally, the scope for future investigations in the area of cultural contexts of metacognitive development is outlined.

As argued by Wertsch et al. (1984), understanding of interpsychological functioning (adult guidance) in collaborative puzzle-solving interactions requires analysis at the three levels of puzzle-solving (viz., activity/task motives, goal/task performance and methods of operation). The theory of activity (Leont'ev, 1979), therefore, provides a framework within which explanations for differential task performance, socio-cultural modes of task achievement, and interpretations related to task can be sought. This chapter begins with the discussion of results at the level of goal.

8.2 Discussion
8.2.1 Goal/Goal accomplishment

The overall goal of the dyads was to construct the puzzle in accordance with the model puzzle. Although the goals were the same for both Australian and Indian mother-male/female dyads, there were differences in their goal achievement (i.e., percentage of episodes completed). As was shown by the results in the previous chapter, Australian mother-child dyads completed a higher percentage of puzzle-solving episodes compared with Indian mother-child dyads. Similarly, the mother-male child dyads completed a higher percentage of puzzle-solving episodes than did the mother-female child dyads. A significant interaction between culture and gender was also indicated in respect of goal accomplishment. Overall, Australian mother-male child dyads completed a higher percentage of episodes as compared to Australian mother-female child dyads as well as Indian mother-male and mother-female child dyads. Applying the notions of activity theory to these findings, it can
argued that the variations in goal accomplishment could have been due to the variations in mothers’ metacognitive guidance. In the following section, the results are analysed and discussed at the level of operation for delineating the nature of variations in mothers’ metacognitive guidance in children’s puzzle-solving.

8.2.2 Methods of operation

As mentioned above, explanations for variations in goal accomplishment can be sought from the analysis of mothers’ guidance processes. This section, therefore, focuses on analysing the modes and methods of metacognitive guidance employed by Australian and Indian mothers in guiding their male and female children’s puzzle-solving in the light of the empirical literature on adult and metacognitive guidance. The discussion in this section is presented under the following three sub-headings based on results of a) cultural comparisons, b) gender comparisons, and c) culture and gender interactions in metacognitive guidance reported in Chapter 7.

a) Australian and Indian mothers’ metacognitive guidance

i) Cultural similarities

The cultural comparisons of maternal metacognitive guidance in this study revealed both similarities and differences in maternal metacognitive guidance of preschoolers’ puzzle-solving. There were similarities in Australian and Indian mothers’ metacognitive guidance with respect to adult control in task processes, strategic guidance, sustaining mindfulness, and use of multimodal instruction and deictics in speech. The nature of maternal metacognitive guidance reflected a pattern where mothers encouraged children to function in cognitively comfortable zones initially, and facilitated their metacognitive learning through what Rogoff (1990) has termed “cultural apprenticeship”. The findings on cultural similarities in the nature of metacognitive guidance observed in this study appear to affirm socio-cultural conceptions that the processes of internalisation originate from the social plane of functioning and that metacognitive guidance is universal across cultures.
The findings that mothers take greater control in interactions, introduce metacognitive content, and initiate more goal driven actions, and communications than their children seem to suggest a hierarchical status in mother-child dyads' puzzle-solving. The finding on greater maternal initiation and control in collaborative puzzle-solving than children's initiation in both cultural groups coincides with the findings of Ignjatovic-Savic et al. (1988), who also observed the predominance of Serbian mothers' initiation in the social communicative domain of interactions with children aged 6-to-18 months.

Although the present findings imply adult control, it is worth mentioning that mothers are not the sole initiators of episodes and interactions in puzzle-solving. Children were also noted to initiate a few episodes. The variations in mothers' and children's initiation appear to be related to the difficulty levels of the puzzle task. The puzzle chosen for the interaction study was difficult for preschool children to solve alone by themselves and hence would have resulted in greater adult control and assistance.

Cultural universality in mothers' collaboration and supportive intent was also revealed by the present findings. As noted in Chapter 7, both Australian and Indian mothers collaborated with children rather than leaving them to their own devices and shared their children's task responsibilities (metacognitive or physical) in puzzle-solving. These observations are consistent with the findings of Portes et al. (1994) and Radziszewska and Rogoff (1988), indicating that sharing of task responsibility is a common feature of collaborative problem-solving.

The findings on mothers' use of multimodal instruction (use of both verbal and non-verbal gestures) observed in this study reinforced previous findings (e.g., Rogoff et al., 1993) suggesting that mothers are sensitive to the cognitive needs of children. Similarly, mothers' attempts to help children interpret the task situation through the use of simple deictics (e.g., this one or that one) reflected their sensitivity to children's cognitive needs. Similar observations on adults' sensitivity to children's cognitive competencies and demands were reported by Freund (1990) and Plumert and Nichols-Whitehead (1996), who found that mothers varied their content verbalisations as a
function of task difficulty or age of child and used more direct prompts in their interactions with younger preschool children and in response to their preschool children’s scaffolding needs.

The significance of attention regulation in puzzle-solving interactions is suggested by the present findings, where regulation of attention was noted to be predominant in sustaining children’s interest on task processes in both the cultural groups. These results coincide with the observations of Junefelt and Tulviste (1993), who noted regulation of attention as a frequently occurring activity in American, Estonian, and Swedish mother-toddler dyads’ puzzle-solving.

In brief, similarities in some components of Australian and Indian mothers’ metacognitive guidance clearly indicated cultural universality of metacognitive guidance. These findings further suggest the significance of adult guidance for structuring and organising the metacognitive content and for motivating and supporting preschoolers’ metacognitive learning.

ii) Cultural differences

Along with cultural similarities, the current study indicated important cultural differences in maternal metacognitive guidance. As shown in previous Chapter, major culturally specific differences were noted in task initiation, division of task responsibilities, use of linguistic acts, non-verbal forms of strategic guidance, and metacognitive modelling. Thus, the assumption of cultural specificity in maternal metacognitive guidance proposed in this thesis appears to be supported by the variations in metacognitive guidance. These differences suggest considerable diversity in the processes of metacognitive development for Australian and Indian children if patterns demonstrated in puzzle-solving are translated to other learning contexts.

Specifically, comparisons of maternal metacognitive guidance indicated that Indian mothers were more regulating and controlling and employed a more explicit and directive approach in their metacognitive guidance. Australian mothers’ guidance, on
the contrary, reflected an egalitarian and implicit approach with reliance on
explanatory guidance and emphasis on encouragement of initiation and responsibility.

Indian mothers took more initiation in their children’s puzzle-solving and used more
directives in their guidance than did Australian mothers. Task orientation approaches
of mothers were also dissimilar, with Indian mothers initiating the task processes
with a social structure that emphasised collaboration (e.g., This is a difficult puzzle,
we will do it together) and Australian mothers orienting the task with a goal structure
with an emphasis on individual accomplishment and individual responsibility (e.g.,
This is for you to do or tell me how you begin?). These observations are akin to the
findings of Messinger and Freedman (1992) who reported greater interdependent task
interactions in Japanese mother-toddler dyads’ and greater autonomous task
engagement in American mother-toddler dyads’ puzzle-solving, two cultural groups
that have some similarities to Indian (Asian) and Australian (Western) cultural goals
of child development.

Consistent with the findings on task orientation approaches, Indian mothers assumed
a greater share of physical and metacognitive responsibilities in their interactions with
children than did their Australian counterparts. The variations in the nature of the
division of strategic functions in interactions of mother-child dyads were mainly
reflective of variations in maternal communicative moves employed for metacognitive
regulation. Australian mothers used explanations predominantly to regulate their
children’s task processes. Indian mothers, on the contrary, relied more on directives
in providing metacognitive assistance. Similar findings were reported in the literature
on the differential use of maternal linguistic acts across Asian and non-Asian cultural
groups and their functional values in adult-child interactions (Bornstein et al., 1992;
Camaioni et al., 1998; Fernald & Morikawa, 1993; Martini, 1996).

According to Wertsch (1978), differential use of speech indicates distinctions in
nature of metacognitive regulation and division of task responsibilities. Applying the
notions of Wertsch (1978) to the present study, it can be implied that the greater use
of directives in Indian mothers’ guidance relates directly to the greater amounts of
metacognitive responsibility assumed by them in their children's puzzle-solving. The observations on directive pattern of guidance and greater sharing of task responsibilities are clearly reflected in the statement of an Indian mother who mentioned that "children have small minds and therefore can't handle difficult tasks" (Indian mother code no: 3). Many Indian mothers believed that as adults they have mastered the skills and therefore have a responsibility to guide children in their puzzle-solving. They also believed in modelling solutions and strategies to children to sustain their on task interest and motivation.

Indian mothers used directives to provide declarative knowledge about the procedures of puzzle-solving, physical guidance, explicit strategic knowledge, and to regulate attention and motivation of children. The frequent use of directives in their guidance implied a proleptic nature of instruction, where mothers guided children to acquire the expert forms of problem-solving by providing directive assistance and a form of "cultural apprenticeship" as proposed by Wertsch and Stone (1979). This form of linguistic guidance in instructions, according to Rogoff and Gardner (1984), leads children into the level of expert functioning through a comfortable and slightly challenging route.

Australian mothers, by contrast, employed an explanatory approach to scaffolding that encouraged, challenged, and initiated children's metacognitive and physical responsibilities. The frequent use of explanations in Australian mothers' guidance suggested an intent of cognitive sharing and imparting of information to facilitate children's cognitive constructions about puzzle-solving. The variations in discourse styles of Australian and Indian mothers are similar to the differences in the meal time discourses of Japanese-American and Caucasian-American families, that reflected their respective cultural traditions of 'interdependence' and 'independence' (Martini, 1996).

The use of questions was noted be predominant in previous studies of adult/metacognitive guidance that involved white and middle class groups (e.g., Wertsch, 1979). The findings of the present study on speech styles are in contrast to the
general observations on use of questions, with Indian mothers employing directives and Australian mothers using explanations either in providing strategic instruction or extending children's prior knowledge or establishing a situation definition. The significance of directives and explanations in metacognitive guidance is thus suggested by the present cross-cultural findings.

The results also revealed variations in non-verbal forms of strategic guidance with Australian mothers guiding their children through direct forms of non-verbal assistance such as pointing gestures and intended effect acts more frequently than did Indian mothers. Use of direct forms of non-verbal guidance (e.g., pointing) is generally thought to enable achievement of the definition of situation between mothers and children and to help children to infer the task processes more easily than through the use of verbal referential perspectives (e.g., the "round thing" to refer to a wheel). Based on the evidence that task achievement is contingent on the application of metacognitive strategies (Purdie, 1995), the higher task performance of Australian mother-child dyads (as measured in the number of completed episodes) can be attributed to their use of non-verbal strategies.

The reasons for variations in selection of forms of non-verbal strategic guidance as argued by Olson (1970, cited in Wertsch, 1985) and Rommetveit (1979, cited in Wertsch, 1985) could be related to the conditions in which mothers operated, defined the speech situation, and their perceived benefits of non-verbal guidance.

The current findings identified two distinct forms of metacognitive guidance offered by Australian and Indian mothers. The frequent use of non-verbal and intended effect acts in Australian mothers' guidance suggests an implicit approach to metacognitive guidance that requires children to infer from the task processes and to undertake strategic responsibility (e.g., dropping a piece near the child for activating a plan). On the other hand, the frequent use of verbal forms in metacognitive guidance (e.g., rule statements or verbalisation of plans) and demonstrations in Indian mothers' guidance imply an explicit and modelling approach to metacognitive guidance. The findings on non-verbal nature of Australian mothers' guidance appear to be in contrast to the
findings of Rogoff and Mosier (1993), who indicated greater use of non-verbal means of communication in caregivers and children of the Mayan Indian community of San Pedro compared with their use in American caregivers and children.

An association between metacognitive verbalisations and strategies and superior task performance of individuals is generally reported (Artzt & Armour-Thomas, 1992; Mueller, 1997). However, the current findings on frequent metacognitive verbalisations along with fewer successful episodes in Indian mother-child dyads’ interactions suggest an absence of association between metacognitive verbalisations/strategies and task performance in contexts of interpsychological functioning, which could be attributed to mothers’ motive of facilitating children’s learning rather than task achievement. Besides, an absence of association between task performance and metacognitive verbalisations could have also been due to the selection of strategies and every strategy may not lead to solutions (Renshaw & Gardner, 1990). Indian mothers appear to have chosen the strategies of collecting the puzzle pieces at once and/or spending more time planning and devising the processes of task actions in their interactions rather than implementing the strategies. These findings seem to be supported by the work of Middlebrooks (1996), who suggested that metacognitive regulation does not necessarily predict or lead to higher problem-solving performance and that goal accomplishment is dependant on the selection and efficacy of chosen strategies.

While the quantitative results indicated similarities in Australian and Indian mothers’ strategy use for sustaining children’s mindfulness, cultural differences were obvious when more detailed qualitative analyses were conducted. Specifically, mothers’ preference for praise as a motivational technique varied. Australian mothers praised their children’s successful actions and the children themselves more than did the Indian mothers, consistent with their beliefs that praise enables development of self-esteem in children. Indian mothers were observed to praise their children’s efforts on only very few occasions. However, none of the Indian mothers praised their children per se. This lack of praise is due to a common cultural belief that praise reduces the life span of children and that children may lose focus of their long term goals, and be
satisfied with intermittent achievements. As mentioned by Allwood (1981, cited in Junefelt & Tulviste, 1993), the occurrence or non-occurrence of praise and its functional realisation is related to cultural ideologies, norms, and values. The present findings thus support the general observations on relation between use of praise as a motivational technique and cultural beliefs associated with its use.

The variations in Australian and Indian mothers’ methods of metacognitive guidance observed in this study are in agreement with the general findings of cross-cultural studies on adult-child interactions that reported cultural variations in the forms of maternal guidance, interventions, and interactions (Junefelt & Tulviste, 1993; Martini, 1996; Messinger & Freedman, 1992; Norimatsu, 1993; Rogoff et al., 1993; Trommsdorff & Friedlmeier, 1993; Wertsch et al., 1984).

On the whole, the present study showed that Australian mothers appear to take explanatory and implicit approaches that required children to make inferences of the task processes and to assume strategic and metacognitive responsibility. Indian mothers, on the other hand, took directive and controlling approaches that encouraged children’s metacognitive and physical interdependency. The cultural variations in metacognitive guidance thus imply two distinctive models of metacognitive guidance that appear to be rooted in mothers’ respective cultural goals of individualism and interdependency. The present results on cultural patterns of guidance are supportive of the notions that co-operation and collaboration are central to Asians (Niles, 1998; Okagaki & Sternberg, 1993) and that individuality and individual accomplishments are central to Western cultures (McDonald, 1995; Niles, 1998).

In summary, the analysis of results from cultural comparisons at the level of methods of operation showed the presence of both cultural specificity and cultural universality in maternal metacognitive guidance in respect of components of maternal metacognitive guidance examined in this study. These findings are consistent with the findings of Rogoff et al. (1993) who indicated similarities and differences in
practices of guided participation of Guatemalan, Mayan, and Indian tribal communities in India.

b) Maternal metacognitive guidance in male and female preschoolers’ puzzle-solving

Based on the notions that gender differences in children’s thinking and behaviour are a product of differential socialisation of boys and girls in various cultures, this study explored the nature of Australian and Indian mothers’ metacognitive guidance offered to their sons and daughters. In contrast to expectations that there would be considerable variations in guidance provided to girls and boys in two cultural groups, the present findings revealed similarities in Australian and Indian mothers’ guidance of their male and female children with respect to task initiation, task regulation, linguistic mediation, verbal strategic assistance, and sustaining mindfulness. These findings are in contrast to the observations of Hess and McDevitt (1984) who reported mothers using more directives with girls than boys and other findings on gender differentiated patterns in parental or mothers’ problem-solving interactions with their sons and daughters (e.g., Frankel & Bates, 1990; Lindahl & Heimann, 1997; Russell et al., 1998). As proposed by Kakar (1994), it appears from the present findings that differences in parental or maternal guidance as a function of a child’s gender may be less pronounced in the early childhood years than in the middle childhood years. The findings on commonalities in maternal metacognitive guidance afforded to male and female preschool children are supported by the findings of Junefelt and Tulviste (1993), who indicated similarities in American, Estonian, and Swedish mothers’ guidance of 2-year-old boys’ and girls’ puzzle-solving.

Along with similarities in mothers’ metacognitive guidance, variations were noted in maternal guidance of boys and girls with respect to non-verbal forms of strategic assistance and task performance. The findings on the higher percentage of puzzle-solving episodes in mother-male child dyads’ interaction compared with mother-female child dyads in this study, along with higher frequency of non-verbal guidance
afforded to male children suggest a relationship between task performance and strategic assistance. The variations in task performances of mother-male and mother-female child dyads in the present study could be attributed to variations in maternal strategic assistance, where male children received direct forms of non-verbal guidance more frequently than did female children.

The variations in mothers' guidance of boys and girls could be due to variations in expectations of mothers for boys' and girls' puzzle-solving. Similarly, mothers' judgements of male and female children's abilities and their experiences on puzzle-solving could have also contributed to variations in interactions. The current findings on gender based differences in metacognitive guidance are generally consistent with the results of Hess and McDevitt (1984) and Lindahl and Heimann (1997), who revealed similar gender-specific variations in mothers' interactions with boys and girls, with respect to use of directives and other aspects of interaction such as social proximity.

c) Culture and gender interaction in maternal metacognitive guidance

Consistent with the findings on gender specific variations in some components of metacognitive guidance, differences were indicated in Australian and Indian mothers' guidance of male children in Chapter 7. Indian mothers provided metacognitive support, directive guidance, and non-verbal strategic assistance more frequently to their male children than did the Australian mothers. In contrast, Australian mothers encouraged more initiation, responsibility, and independent problem-solving in their male children. The results on interaction between culture and gender in maternal metacognitive guidance endorsed the greater indulgence of Indian parents in their male children's development (e.g., Kakar, 1994; Keats, 1997). These findings indicate that culture can mediate or modify maternal interactions with boys and girls, thus revealing an interplay of culture and gender in mothers' guidance (Best et al., 1994).
One explanation for more frequent initiations and metacognitive and verbal guidance in Indian mothers' guidance of male children lies in their cultural values of child development, which are elaborated in the later sections in this chapter.

In contrast to Indian and Australian mothers' differential treatment of boys, there were similarities in maternal metacognitive guidance provided to female children. These findings validate the observations of Weitzman et al. (1985), who found significant differences in mother's language to their sons and daughters, in ways that would facilitate cognitive development more in boys. Weitzman et al. (1985) also affirmed the view that the differences in interactions persist even in parents who identify themselves as holding non-traditional views of sex roles.

While this study provided evidence about the variations in maternal metacognitive guidance in male and female children's puzzle-solving in two cultural contexts, according to the theory of activity and arguments of Wertsch et al. (1984), it is vital to analyse the variations in maternal metacognitive guidance from the perspectives of task motives/interpretations and cultural values related to child development and adult guidance of male and female children. Such an attempt will enable to understand the socio-cultural conceptions of metacognitive guidance and to draw clear interpretations and conclusions form the current findings. The following section presents the discussion pertaining to the level of activity in puzzle-solving, in other words, maternal motives and task interpretations related to puzzle-solving.

8.2.3 Level of activity

a) Task motives/Task interpretations

Even though mothers were given the same instructions with respect to adult guidance of puzzle-solving, the interviews with mothers revealed variations in their task interpretations. As indicated by the interview results in Chapter7, Indian mothers had the motive of teaching their children strategies and also taught their children mathematical concepts (e.g., triangle, square, rectangle, vertical and horizontal).
Thus the Indian mothers opted for a style of guidance that can be described as a "process approach" to puzzle-solving, where the intention of mothers was to encourage children's learning of strategies and mathematical concepts.

Australian mothers in their interviews mentioned that they wanted to see their children "solve" the puzzle. As indicated in Chapter 6, this can be termed "product approach" to problem-solving. Most Australian mothers oriented the task by delegating responsibility to children who were also told that they had to complete the task (e.g., This is for you to do or you need to finish this soon).

Mothers also appeared to interpret puzzle-solving and adult guidance as per their cultural expectations and goals of child development. Australian mothers said that they value encouragement of children's responsibility and initiation in puzzle-solving. This orientation is generally consistent with their cultural/socialisation goals of promoting independence in children. In contrast, Indian mothers indicated that they would assume a greater share of responsibility in their children's puzzle-solving, thus promoting interdependence. These findings on cultural differences in maternal views of adult guidance of puzzle-solving are similar to the results from studies by Okagaki and Stemberg (1993), and Pomerleau et al. (1991), who reported variations between mainstream and immigrant mothers' beliefs associated with child rearing goals and developmental time tables or emphases placed on development of skills in children, concordant with their cultural goals of development of autonomy or interdependence in children.

In the literature on collaborative puzzle-solving (e.g., Werstch et al., 1984), analysis of mother-child dyads' interactions at the level of activity was generally approached from the perspectives of task motives and task interpretations. However, in the present study, due to the cross-cultural nature of the sample, cultural values related to child development or adult guidance were also considered in the analysis at the level of activity. In the following section, results are discussed in the frame of cultural values associated with adult guidance/child development.
b) Cultural values and goals of child development/adult guidance

The concept of cultural apprenticeship in the frame of socialisation practices mediated by cultural traditions and norms is supported by the results presented in Chapter 7. For instance, the differential use of linguistic acts and contrasting guidance patterns in Australian and immigrant Indian mothers' guidance in this study, typically resonated their cultural values and beliefs about children. The directive speech of Indian mothers reflects interdependent orientations to guidance and role segregation between adults and children. In contrast, the explanatory discourses that characterised Australian mothers' interactions appear to convey the cultural preferences for expression of views and scope for individual expression. The variations in discourse orientations of Australian and Indian mothers are similar to the differences in meal time discourses of Japanese-American and Caucasian-American families, that reflected their cultural orientations of 'interdependence' and 'independence' respectively (Martini, 1996).

The use of directives in Indian mothers' guidance further implied the age based hierarchical approach to guidance. The finding that adults take greater control in interactions with children than children is supported by the observations of Kakar (1971, cited in Kakar, 1994), who also reported the prevalence of authority situations in teaching and learning contexts in Indian schools. Age and gender are the ordering principles of the hierarchical system of traditional Indian society and family. Formal superiority of people is established through the age differences and men and adults, in general, have greater authority than women and children. The principle of a hierarchical ordering of social dependencies is pervasive, even today, in every aspect of social interaction.

As mentioned by Kakar (1994), although relationships in Indian families are hierarchical, the mode of relationship among members is characterised by maternal forms of nurturing and personal attachments. To quote Kakar, "while children are
generally rewarded for being submissive and obedient, they are punished for independence either blatantly or subtly. The main emphasis in the early years of Indian childhood is avoidance of frustration and the enhancement of the pleasurable mutuality of mother and child, not encouragement of child’s individuation and autonomy” (p.103). Adults always function in a nurturing way and subordinates accept the directions of authority figures without questioning. The compliance is in return acknowledged through emotional rewards of love or approval.

The literature on cross-cultural communication indicated the use of directive forms of verbal assistance in guidance with novices or beginners (Greenfield, 1984). The directive style of discourse is also commonly associated with parents of working class families in Western societies as well as by adults in rural and traditional societies (Hoff-Ginsberg & Tadrif, 1995). Not withstanding the above, the use of directives in Indian mothers’ guidance can be interpreted as a reflection of the cultural ideology that characterises childhood as an age of dependency as well as a reflection of cultural values that emphasise interdependency between an expert and novice.

The explanations for greater control and directive approaches in Indian mothers’ metacognitive guidance are rooted in their views of guidance. Indian mothers perceived their children as dependant on adults and the notion of “support for learning” in children’s puzzle-solving was interpreted as “taking greater responsibility”. The sentiment of support and the reasons for assuming responsibility were clearly stated in the following statement of an Indian mother, who believed that “Children are the gift of God and as mothers, they have to take care of children properly.” Another mother mentioned that “children need to be cared for by mothers. This is because they have small minds and can’t handle difficult tasks by themselves. Therefore, adults should not leave children alone on difficult tasks ... as they might lose interest and can’t perform to their full potential. They need to be helped at each and every step by showing them how to achieve” (Indian mother-code no: 3).
Indian mothers mentioned that adult control in children’s puzzle-solving was essential for sustaining children’s interest on tasks as well as sharing children’s task responsibilities. As one Indian mother stated that “if children are allowed to experiment ... they may lose interest as it leads to no where ... and sometimes it is risky. Adults have mastered the skills and techniques, therefore they need to guide them as adults' help will enable children to pursue the task till the end”. The Indian mothers’ views and interactions reflected traditional Indian Hindu philosophical notions, according to which a child in the early childhood years is considered as a gift of God, to be welcomed, cared, and indulged (Kakar, 1994).

Indian mothers valued modelling as an important form of adult guidance. There was more emphasis on fostering children’s explicit thought processes combined with affective processes of guidance (e.g., emotional appeals and use of endearments). In the process of guidance, Indian mothers tended to rely on modelling techniques and encouraged their children to learn through repetition. The selection of demonstration as a method of guidance by Indian mothers seems to coincide with their willingness to assume a greater share of responsibilities in their children’s puzzle-solving, whether they be physical or metacognitive.

The considerable indulgence of Indian mothers in children’s problem-solving could have been a reflection of valuing an error free performance in learning. For instance, an Indian mother commented that “If children are shown how to do things correctly, it is more likely that they can learn without making mistakes” (Indian mother code no: 4). The importance of role models in children’s learning is reiterated in the statement of an Indian mother, who believed that “there is nothing wrong in imitating at this stage. Originality and creativity comes with age. Parents have to project a good model to children” (Indian mother, code no: 8).

Greater indulgence of Indian mothers in male rather than female children’s puzzle-solving actions, asserted cultural effects on guidance as well as variations in social contexts and processes of metacognitive development for Indian boys and Indian girls. Traditionally, there is a greater preference for boys in Indian families and a male child
is overprotected and nurtured in the early childhood years with unconditional love from mothers. The preference for a male child is exemplified in Epics like Mahabharat and Ramayana as well as folk songs and proverbs such as "treat a son like a raja (king) for the first five years, like a slave for the next ten years and like a friend thereafter" (cited in Kakar, 1994, p.127).

The birth of a son is believed to be essential for salvation from hell as well as for performing religious sacraments. Parental preference for a male child has emotional and financial bases and indulgence in male children is viewed as an economic investment in future or a form of social security in old age. Greater indulgence of parents in male children is reported to be similar in other Asian cultures (Nguyen & Ho, 1995; Soriano, 1995).

Similarly, Australian mothers’ views of encouraging individual responsibility and providing guidance upon requirement reflected their cultural beliefs and goals of child development that value development of individuality in children. These beliefs were clearly exemplified in the following statement of an Australian mother, who mentioned that “Children need encouragement. Independence needs to be promoted in them and that can be done by encouraging them to take up things on their own. Children can derive a sense of enjoyment and satisfaction if they do things on their own and on their own effort”. She further mentioned that “I want to encourage her to take up things on her own. I would like to see her begin on her own and intervene only when it is required” (Australian mother: code no: 7).

Australian mothers’ communication reflected an egalitarian style of guidance as well as cultural transmission of values such as choice, individuality, and encouragement of individual efforts. The use of explanations reflected a pattern of guidance that is conversational, child centred, less controlling, and more supportive of children’s initiations and on-going task activities. Mothers supported children’s mastery of metacognitive skills through sharing of information, transmitting knowledge in explanations, and expanding on children’s prior knowledge, a process that resonated child centred style of interaction. These findings are consistent with the observations
of Western communities reported in literature (Keats, 1997; McDonald, 1995; Niles, 1998), where interactions reflected development of initiation and individuality in children and encouragement of their participation as conversational partners.

Concomitant with variations in mothers’ beliefs of adult guidance and puzzle-solving, there were cultural differences with respect to the goals of children’s development. As per the results of interviews in preceding Chapter, Indian mothers emphasised development of academic skills and Australian mothers emphasised development of social skills as valued goals of child development in preschool years.

In their interviews, Indian mothers mentioned education and academic achievement as preferred goals of child development. They also regarded education as an investment in their children’s future and as a means to their happiness and economic prosperity. These views are consistent with reports in literature that documented immigrant families’ emphasis on formal education or academic achievement of their children (Chao, 1996; Fulgini, 1997).

With the experiences and realities of immigrant life and hurdles encountered to succeed and survive in a new country, many immigrant parents perhaps realise the significance of education for the betterment of their children’s lives and career opportunities and therefore place strong emphasis on their children’s academic achievements. Besides, in Indian culture, a high value is placed on education. According to Vedas (Indian/Hindu religious scriptures), *vidya* (knowledge or education) is considered as “the third eye for man” that leads to insight, progress, and salvation (Agaarwal, 1995).

In contrast to Indian mothers’ strong focus on development of academic skills in preschool children, Australian mothers emphasised development of social skills as valued goals of development for preschool children. The variations in Australian and Indian mothers’ goals of child development indicated in this investigation are consistent with the findings of other cross-cultural studies where immigrant parents emphasised educational achievements and goals for young children as opposed to
mainstream mothers’ or teachers’ major expectations of social skill development (Ebbeck & Glover, 1998; Goodnow, 1988; Papps et al., 1995; Pomerleau et al., 1991).

As discussed previously, the variations in mothers’ preference for praise as a motivational technique also reflected cultural values associated its use. The lack of praise of children in Indian mothers’ guidance is due to a common cultural belief that praise reduces the life span of children and that children may lose focus of their long term goals, and be satisfied with intermittent achievements. In Australian contexts on the other hand, use of praise is associated with promoting self-esteem in children, leading to its frequent use in adult interactions with young children.

Variations in maternal metacognitive guidance were also consistent with the cultural differences in mothers’ views of adult guidance and goals of child development. In their interviews, all Indian mothers contended that they would take responsibility in their children’s puzzle-solving and a majority of mothers believed that adults have a joint responsibility in their children’s learning. In a few instances, mothers explicitly mentioned to their children that “they will do the puzzle together”. Indian mothers’ emphasis on collaboration in task is an expression of cultural values that emphasise collectivity in societies and is consistent with previous emphases on collective goals for Indians (Niles, 1998; Singhal & Misra, 1989).

Australian mothers, in contrast, emphasised that they would delegate responsibility to children while interacting with them. They further mentioned that children should take a major responsibility in their problem-solving rather than themselves. Accordingly, along with sharing of task responsibilities during puzzle-solving, Australian mothers encouraged their children explicitly to take responsibilities in puzzle-solving (e.g., this is for you to do), which could be argued, reflects the cultural value of promoting independence and individual responsibility. These findings on differential interactions and guidance of Australian and Indian mothers reflected their cultural beliefs and values of child development and are synonymous with the observations of Trommsdorff and Friedliemeier (1993), who indicated that maternal
control of children’s behaviours and maternal responses to interactions are mediated by culturally based differences.

Mothers’ speech in the two cultural groups contained both socialisation and task specific information. Indian mothers introduced the values of perseverance and patience to their children. For example, when an Indian child lost interest in the task and said that “it takes a long time, and I can’t do it”, mother said to her child in the following manner: “Don’t say I can’t do it. We have to try. If we try we will get it. You should have patience. If you pursue patiently, then it’s easy and you will get there” (Indian mother code no: 7). The emphasis on perseverance appears to assume a more central role in Asian life than it does in Western cultures. In many Asian cultures, perseverance is traditionally valued (Weisz et al., 1995). In Indian culture, emphasis on effort and perseverance through an external/adult control is believed to help children to manage their self-control.

Mothers also taught children about social manners. For instance, an Indian mother asked her child “to sit properly” and not expose her thighs. Two Indian mothers also instructed children on specific postures in interactions (Padmasana), which are traditionally believed to improve the concentration of learners. Similarly, Australian mothers also emphasised good social manners, importance of social politeness, and rules of conversation in their interactions (e.g., encouraging children to say “thank you” or “excuse me”). This type of culturally specific signals in conversations are also reported by Robinson (1988), who noted that Australian mothers encouraged preschool children to say “excuse me” instead of saying “what”.

In brief, the analyses of interview results along with puzzle-solving interactions show that there were two predominantly culturally defined social environments for Australian and Indian children. The analysis of variations in Australian and mother-child dyads’ puzzle-solving strongly supported the assumption of cultural universality and specificity in adult or metacognitive guidance. While the preceding section indicated the cultural bases of metacognitive guidance, based on the indications in the literature for variations in maternal guidance as a factor of variables related to task
(Rome-Flanders et al., 1995), it is important to consider the influences of contextual factors related to metacognitive guidance such as mother-child dyads’ perceptions of task difficulty and their familiarity and experience on puzzle-solving. These are discussed below:

c) Other factors related to puzzle-solving

Although cultural factors were shown to influence and shape the nature of metacognitive guidance, mothers’ perceptions of task difficulty seem to be an important factor that can impact on their use of communication and in turn on their style of metacognitive guidance. Clearly, such perceptions may also have a cultural origin. For example, Indian mothers’ introduction of the puzzle task reflected an assumption that the task was a difficult task for preschool children, that children were not cognitively ready to handle the task independently, and that children were relatively inexperienced in puzzle-solving (e.g., she is too young for this task or this is difficult for you to do alone: Indian mother code no: 3), reflecting their cultural view that childhood is an age of dependence on adults.

Australian mothers’ introduction in contrast, reflected an assumption that the puzzle task was a familiar activity to children and that children have a basic understanding and competence in puzzle-solving. Some of the phrases that imply the assumptions of task experience are “How do you begin?” or “Tell me where do you think it is better to start”? Based on the variations in mothers’ perceptions of task difficulty and task interpretations, it can argued that the variations in maternal guidance and intervention could have been due to the in variations in mothers’ beliefs about children’s competencies and their perceptions of children’s readiness. There is some evidence in support of the hypothesis that maternal perceptions of children’s competencies will determine interactional outcomes in puzzle-solving and educational activities (Olthof, Goudena, & Groenendaal, 1995).
Mothers’ perceptions of puzzle-solving activity and the experiences of mother-child dyads’ on puzzle-solving also appear to be different. For example, Indian mothers seemed to emphasise academic preparation such as reading, writing, and mathematical tables as highly valued activities for children and spend more time helping children in their academic tasks rather than in activities such as play or puzzle-solving. The findings on Indian mothers’ emphasis on education as a valued goal of child development imply that Indian mother-child dyads may be spending less time on puzzle-solving compared with the time they may spend on academic activities. Although the experiences of Australian and Indian mother-child dyads’ on puzzle-solving and their familiarity with puzzle-solving were not examined, it was presumed that both Australian and Indian mother-child dyads would have been familiar and have had similar experiences with puzzle-solving, through their children’s attendance at preschool.

8.3 Summary and conclusions

In summary, from the discussion of results on cultural and gender comparisons as well as interaction effects of culture and gender in maternal metacognitive guidance it is evident that maternal metacognitive guidance is universal and that the processes of metacognitive guidance are also distinct in Australian and Indian cultural contexts.

The presence of cultural specificity in maternal metacognitive guidance was strongly endorsed by the variations in several components of metacognitive guidance. In contrast, the findings on maternal metacognitive guidance as a function of gender of child indicated similarities with respect to many components of metacognitive guidance, suggesting that differential socialisation of children’s cognitive learning may be less pronounced in early childhood period than in middle/late childhood periods. The findings on greater indulgence of Indian mothers in their male children’s puzzle-solving appear to be supported by the general observations that the socio-cultural environments for boys and girls are different in Indian culture (Kakar, 1994; Sinha, 1985).
Additionally, the present findings on mothers' speech styles brought to the fore the significance of directives and explanations for metacognitive guidance. The tenability of association between metacognitive verbalisations and task performance in contexts of interpsychological functioning has also been raised in the current discussion.

Consistent with the tenets of activity theory, this study revealed variations in all three levels of puzzles-solving (viz., Goal accomplishment, methods of metacognitive guidance in preschoolers’ puzzle-solving, and maternal task interpretations related to puzzle-solving). The cultural variations in Australian and Indian mothers’ task interpretations and views of adult guidance and child development documented in this study appear to be mirrored in their goal accomplishment and methods and modes of metacognitive guidance.

Congruent with their notions of adult guidance as “taking responsibility”, Indian mothers shared more task responsibilities with their children, assumed greater control and provided more directive and modelling guidance to their children, more so in their guidance of male children. Australian mothers also interpreted guidance in the light of their own cultural values and viewed it as providing guidance “upon requirement” and for encouraging self-responsibility. The Australian mothers’ interpretations of guidance as encouraging responsibility in puzzle solving appear to have reflected in their explanatory and implicit approaches to metacognitive guidance that required children’s inferences of task situations and task responsibilities. The analysis of results of Australian and Indian mother-male/female child dyads’ puzzle-solving in the frame of concepts of activity theory appear to suggest an association between task interpretations of mothers, maternal metacognitive guidance and task achievement of mother-child dyads and are similar to the results of Elbers et al. (1992) and Wertsch et al. (1984) where a relationship was confirmed between task interpretations and teaching strategies.

The analysis of results at all the three levels of puzzle-solving clearly unveiled the interface between cultural values and metacognitive guidance patterns. Overall, the metacognitive guidance of Australian mothers reflected a Western model of guidance
that values child centredness, individuality, independence and individual achievement. In contrast, the metacognitive guidance of Indian mothers reflected a nature of guidance that emphasises dependency or interdependence.

Although the effects of intervening variables such as task or task interpretations on maternal metacognitive guidance can not be denied, based on the social interaction notions of Vygotsky (1978) and methodological orientation rooted in socio-cultural theoretical concepts, it can be concluded from the present findings that maternal metacognitive guidance is embodied in cultural values and norms and that socio-cultural interactions are the mechanisms through which explanations for metacognitive development can be sought. In conclusion, the presence of cultural specificity in maternal metacognitive interactions supported the paradigm of cultural mediation of metacognitive development.

8.4 Implications

While the thesis addressed an importance issue of cultural specificity in maternal metacognitive guidance, questions can be asked as to what this study on Australian and Indian mothers’ guidance in home contexts means to early childhood educators and what are its theoretical implications in terms of advancement of knowledge? The theoretical contributions are that this study expanded the limited set of observations on adult guidance of metacognitive development carried out with monocultural groups. While the socio-cultural notions of Vygotsky (1978) postulate the cultural bases of metacognitive guidance and as the research on cross-cultural patterns of metacognitive guidance is lacking, this study attempted to explore the nature of cultural specificity in metacognitive guidance and opened a window into the cultural contexts of metacognitive guidance.

While the previous literature on adult guidance emphasised the importance of verbal interactions and use of questions in metacognitive guidance (e.g., Wertsch, 1979), the present findings have brought to the fore the significance of non-verbal and implicit
guidance as well as the importance of explanations and directives in metacognitive guidance. Above all, the significance of maternal facilitation of children’s metacognitive development is suggested by the current findings.

The results of the present investigation have important implications for early childhood education and practices. For instance, the findings on the implicit forms of assistance indicated that even simple reorganisation of physical learning environment in puzzle-solving can enable teachers to facilitate children’s metacognitive thinking. The findings on situatedness of metacognitive learning in adult guidance call for more teacher interventions in children’s learning to support and scaffold their cognitive or metacognitive learning. The importance of directives for advancing children’s cognitions into higher levels of functioning through a cognitively comfortable route (indicated by the present findings) highlight the need for teachers to disassociate their use with “working class behaviours” and to employ them in their guided or scaffolded interactions.

The findings that Indian mothers value development of interdependency and academic skills as important in early childhood years challenge the notions of cultural universality in common Western, especially Australian beliefs about child development and adult guidance. The results further indicate the need for early childhood educators to enhance their understanding of values, practices, and expectations for child development in different cultures. Such a knowledge and understanding of cultural expectations and practices of child development is vital to increase parental participation and to accommodate the needs of children of diverse cultural backgrounds in mainstream educational settings. In respect of accommodating the cultural or individual needs of Indian families, it is imperative that preschool educators provide learning experiences to Indian children that encourage development of early reading, writing, and investigating skills.

The applicability of Eurocentric traditions in classrooms that represent cultural diversity appears to be challenged by the current findings on Indian mothers’ views of child development and on their interaction processes during problem-solving. Indian
mothers’ focus on encouragement of children’s dependency/interdependency through providing directives, modelling etc. afforded considerable cognitive support in learning context. This focus on guidance combined with nurturance is in contrast to mainstream educational practices typical in early childhood settings that emphasise independence and individual explorations with physical materials.

There are several important consequences of variations in mothers’ views of child development and guidance practices for metacognitive development of children. For example, the greater indulgence of Indian parents in children’s activities encourages their dependency on others and a need to be cared for by others. The differences in the processes of metacognitive guidance in Australian and Indian cultural or home contexts may have consequences for differences in thinking and learning patterns of Indian and Australian children. For instance, Indian children who are shown models for thinking and construction of knowledge through directives may not take the initiation to explore and construct their own learning or knowledge in early childhood settings. So, where does this leave Indian children who are encouraged to depend on adults, who are rewarded more for compliance than initiation, and who rely on modelling and directions, in a mainstream educational environment where independence, exploration, and autonomous behaviours are encouraged?

The current findings suggested that Indian children and perhaps other children from cultural communities that value development of interdependency in children are more likely to benefit from interactional or interpersonal contexts where adults initiate the learning activities, structure and scaffold the learning processes, model the strategies, and afford considerable opportunity for accessing and abstracting cognitive or metacognitive knowledge and skills. In the context of providing culturally appropriate support to Indian children attending mainstream early childhood centres, this means providing educational experiences that offer more cognitive or physical support and interventions, modelling experiences, instructional or directional guidance for constructing children’s understanding or knowledge as well as affirmations that lead children gradually from compliance actions to individual initiations and explorations.
Being able to understand the cultural aspects of children's development and to develop strategies for dealing with aspects of cultural differences in meanings and values of families that can be described as 'cultural competence' is a significant attribute and skill for educators of the new century. In this respect, the present findings suggest a need to raise the knowledge of educators on cultural pluralism, to incorporate curriculum content on cultural pluralism in early childhood teacher training. A need for intensive teacher training on management of cultural diversities of children in early childhood sector is also suggested by the current findings.

As indicated by the present findings, adult guidance is rooted in cultural values and expectations for child development. The diversity in socialisation of children has implications for their thinking and learning or interaction behaviours. Each culture has many unique ways of thinking, which do not always match with the thinking or ways of a mainstream cultural group. In educational contexts, it is important that educators appreciate the cultural differences in thinking and behaviours and not see them as deficits. For instance, dependency of Indian children on adults in early childhood years can not be equated with developmental inappropriateness by the mainstream educators.

Children's development does not occur devoid of social interactions with other members of society and is not dependent on explorations with physical materials alone. The current findings on valuing of interdependency in Indian cultural group clearly challenge the notions of "developmentally appropriate programs" that emphasise individuality, initiation, and self-responsibility inherent in mainstream Australian early childhood practices. In order to accommodate the individual or cultural needs of children and families, it is essential that Australian early childhood educators draw on the cultural traditions and practices of culturally diverse families in their construction of curricula and their interactions with children.

As collaborative learning contexts facilitate children's understanding of social world, sustain their interest and lead them into their potential level of development, it is vital that educators adopt more of scaffolding and guidance approaches in early childhood
settings that promote collaborative interactions between educators and children. Importantly, early childhood educators must strive to accommodate the cultural needs of families, provide new opportunities to work with children of diverse cultural backgrounds, and consciously support advancement of children’s emerging cognitive or metacognitive abilities. Central to the implementation of any early childhood program is knowledge of cultural values of child development and cultural practices of familial interactions. Such an understanding enables educators to accommodate the needs of children and families of diverse backgrounds and to bridge the gap between the home and child care centre’s teaching-learning repertoire. This calls for more research studies, similar to this on cultural or home contexts of development in immigrant families, and particularly, for relevant teacher professional development.

8.5 Limitations and scope for future studies

The present investigation was limited to examining the presence of cultural specificity in maternal metacognitive guidance and therefore, analysis was limited to adult regulation or interpsychological plane of development only. However, there is a need for studies specifically to analyse the consequences of culturally specific socialisation, semiotic mediation, and interaction practices on both interpsychological and intrapsychological planes of individual development, for understanding the processes of internalisation of metacognitive development and the impact of social guidance on internalisation of development.

As indicated before in Chapter 7, the application of Chi-square tests was noted to be limited in some instances where expected frequencies less than 5 occurred. While the common methods of dealing with this situations are to apply Fisher’s exact test or combine the categories to create expected frequencies greater than 5, none of these methods could be applied in this study, due to the nominal nature of data and the other conditions where degrees of freedom is greater than 1. To overcome the limitations in applying Chi-square analyses, in the present study, the psychological orientation to analysis of metacognitive guidance was combined with qualitative descriptions on cultural patterns of scaffolding. A greater emphasis on qualitative
(vignette or phenomenological approaches) analysis rather than quantitative analysis in future studies would facilitate detailed descriptions on forms of cultural apprenticeship of metacognitive development. Such data would also provide clear insights into and detailed descriptions on home or cultural strategies and inform teachers about culturally appropriate metacognitive strategies.

The present investigation suggested an association between maternal views, metacognitive guidance styles, and task performance of mother-child dyads. In future studies, it will be important to explore and statistically establish the impact of maternal behaviours on aspects of metacognitive guidance and on the outcomes of maternal metacognitive guidance. Such an attempt will enable researchers to test the coherence between the beliefs and behaviours and to draw clear interpretations and conclusions in cultural studies of child development.

While the data provided evidence for cultural variations in maternal metacognitive guidance, a question arises as to the impact of other variables on metacognitive guidance (e.g., socio-economic status and acculturation). Although Australian and Indian mothers’ metacognitive guidance may vary as a function of socio-demographic factors, especially socio-economic status and acculturation, based on the indications that parental beliefs and practices of child development are more sensitive to cultural influences than the influences of other socio-demographic variables (e.g., Chao, 1996; Harwood et al., 1996) and that immigrant Indian families strive to maintain their cultural values (e.g., Dosanjh & Ghuman, 1998), their influences on maternal metacognitive guidance and maternal views of child development were not considered in this investigation.

Given that the Indian families in this study are recent immigrants and that multicultural policies of Australia emphasise maintenance of cultural identity and cultural practices, substantial changes in Indian families’ child rearing values and behaviours would not have been expected. This view was affirmed in the interview responses of Indian mothers, who mentioned that they value and hold on to their cultural traditions and practices. In future studies, however, it may be important to consider the relative
effects of both socio-economic and acculturation status in cross-cultural comparisons that involve immigrant samples, to further establish the influences of culture on adult guidance or any selected psychological phenomena.

The current investigation was undertaken with two cultural groups familiar to the investigator and has in fact, enabled the drawing of clear interpretations on cultural behaviours. Nevertheless, with respect to generalisation of the results to the wider community, the study is limited by the sample size and its exploratory approach. Similarly, in terms of generalisation of results drawn from puzzle-solving contexts to other contexts, it is important to remember that generalisation beyond the contexts and settings are to be demonstrated rather than assumed. Therefore, the results of the present investigation cannot be generalised to cultural groups or contexts other than those involved and the results should be interpreted in the light of the above mentioned limitations. Similar studies need to be undertaken with larger samples and a number of cultural groups before any conclusions are drawn on cultural universality or cultural specificity in metacognitive development.

8.6 Concluding remarks

The notion of socio-cultural basis of human development and learning is attracting the attention of educational researchers. A large body of research conducted within Vygotskian (1978) perspectives has indicated the need to understand the cultural constructions of children's development, mediated through adult or peer guidance. While a large amount of research on social interaction endorsed the significance of adult guidance on cognitive or metacognitive development, to date there has been little research directed towards understanding the cultural variations in adult/metacognitive guidance.

This thesis aimed to explore the presence of cultural specificity or cultural universality in maternal metacognitive guidance of preschoolers' puzzle-solving. The analysis of metacognitive interactions in Australian and Indian cultural groups generally
supported the notion that adult guidance is culturally defined and that mediated action is socio-culturally situated. The tenability of cultural specificity in maternal metacognitive guidance was indicated through the quantitative and qualitative analyses of maternal guidance in puzzle-solving interactions. The embeddedness of metacognitive interactions in cultural contexts was highlighted with mothers in the two cultural groups adopting different approaches and strategies for regulation in their respective frames of collectivism and individualism. For Indian mothers’ guidance, collaboration, indulgence, role segregation, and perseverance were the evident cultural themes; For Australian mothers’ guidance, collaboration, individual responsibility, choice, and achievement were the central cultural themes. The interweaving of social practices, cultural values, and norms in metacognitive guidance was also clearly outlined.

Along with variations in cultural shaping of interactions and cultural interpretations of guidance, universality in metacognitive interactions was also evidenced. The intention of mothers in two cultural groups was to support the mastery of children’s metacognitive learning by sharing cognitive and physical responsibilities and guiding children’s learning at a cognitively comfortable, and yet, challenging level.

While Australian families’ views and behaviours were largely consistent with the mainstream Australian educational goals and practices that emphasise individuality and achievement, the views and practices of immigrant Indian families were largely incongruent with mainstream developmental and educational practices. What does the variations in Indian mothers’ and Australian mothers’ child rearing or guidance goals and practices tell educators?

The implications are that educators need to understand, support, and accommodate the cultural beliefs and practices of families in developing and implementing educational curricula and practice. Teachers need to provide educational experiences that incorporate children’s language, cultural traditions, and practices as their home cultural traditions continue to impact on their learning. Such an attempt to provide culturally appropriate educational experiences will ultimately help children of diverse
cultural backgrounds to develop to their full potential in environments that are consistent with their traditional or home cultural environments. With respect to accommodating the individual needs of Indian parents and supporting the learning of Indian children, it is imperative that early childhood educators provide culturally appropriate guidance to Indian children that offers models for thinking, physical demonstration of strategies, cognitive and physical support and interventions for constructing children's understanding or knowledge, as well as learning experiences that support their academic preparation in family learning environments. The present study thus highlights the need for educators to recognise the situatedness of children's development in socio-cultural contexts, as it is the socio-cultural milieu that provides the form and context for children's development.

In conclusion, despite the above mentioned limitations in methodological approaches, the present study makes some important contributions to understanding of cultural specificity in maternal guidance of children's metacognitive learning and opened a window to cultural bases of metacognitive interactions and metacognitive guidance. In the light of the need for cross-cultural studies on metacognitive guidance indicated in the literature, this study attempted to empirically examine the proposition of cultural bases of metacognitive mediation and provided valuable insights into cultural contexts of metacognitive guidance, which in turn can provide explanations for cultural variations in metacognitive abilities of children. Finally, the emphasis placed on understanding cultural differences in this investigation is not intended either to stereotype the cultural patterns or emphasise variations alone. Rather, the approach was intended to help understand the heterogeneity in metacognitive learning environments and processes in Australian and Indian cultural groups.
References


References


Stratton, P. (1988). Parents' conceptualisation of children as the organiser of culturally structured environments. In J. Valsiner (Ed.), *Children's development within culturally structured environments* (pp. 5-29). Norwood: NJ.


Appendices

Appendix 1 (Interview schedule)

Code no:  
Details on Family  
Details on child

Name of mother---------------------  Sex  M/F
Age of mother---------------------  Health status
Cultural Background---------------  Attending child care  Y/N
Type of family  joint/nuclear/extended  If yes for how long?
Education of mother--------------
Occupational status of mother------Employed/ not
If Employed type of Occupation------
Education of father--------------
Occupation of father--------------
Ordinal position of the child------

• What is the daily routine of the child?

• What do you expect a child of 4-year-old to learn in preschool? (goals of development)

• What do you want your child to become?

• How do you support your child in his or her learning? For example your child is about to solve a new puzzle, do you expect him or her to solve independently or would you like to offer assistance? (approaches to puzzle completion)

• Do you agree with the statement that learners are more responsible for their learning? (Yes/ no: seek explanations)

• How do children learn best?
   By imitating adults or participation or exploration or other methods? Or

• Which methods of instruction/guidance are most suitable for children's learning and puzzle-solving? (learning or guidance methods)

• While guiding your child on his/her puzzle solving, did you focus on completing the puzzle, or use the opportunity to teach important aspects of puzzle-solving? (task motives)
Appendix 2 (Observational checklist)

OBSERVATION OF MOTHER-CHILD INTERACTION IN A PROBLEM SOLVING CONTEXT

Part A: Details on subjects and settings

Name of the Child ______________________
Code Number ______________________
Cultural background ______________________
Gender of the child ______________________
Place of Observation ______________________
Date of Observation ______________________

• Description of the setting:

• Important observational remarks: (on participation, intervention, styles and strategies used expressiveness, principal modes of teaching, non-verbal behaviours of mothers, and child's behaviour).
### Observational Checklist

<table>
<thead>
<tr>
<th>Culture</th>
<th>Gender</th>
<th>ID</th>
<th>Episode</th>
<th>Initiator</th>
<th>Metacognitive Content in Interaction</th>
<th>Amount of verbal Speech</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A. Goals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B. Monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C. Prediction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D. Evaluation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>E. Strategies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F. Sustaining</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Other-regulation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CSR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Styles</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Verbal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non-verbal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mindfulness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Communication</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Styles</td>
<td>C</td>
</tr>
</tbody>
</table>

**Total**

**Grand Total**
Appendix 3  (Coding categories)

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plans/goals</td>
<td>0</td>
<td>Absence of planning</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Expression of overall aims; determination of what is required in the activity at each step</td>
</tr>
<tr>
<td>Monitoring</td>
<td>0</td>
<td>Absence of monitoring</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Judgements on the appropriateness of the task actions/moves</td>
</tr>
<tr>
<td>Prediction</td>
<td>0</td>
<td>Absence of prediction</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Verbalisations related to assessing the consequences of future actions</td>
</tr>
<tr>
<td>Evaluation</td>
<td>0</td>
<td>Absence of evaluation</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Reviewing the process of solving/steps</td>
</tr>
<tr>
<td>Verbal strategic</td>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td>guidance</td>
<td>1</td>
<td>Direct: Demonstration; modeling; direct guidance or specifying what to do.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Indirect: Cuing (perceptual or functional); labelling; questioning</td>
</tr>
<tr>
<td>Non-verbal guidance</td>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Direct: Gestures or Gazes at specific piece; pointing to specific location; giving a piece; direct assistance through rearrangement of physical environment</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Indirect: Gestures or gazes at the model or a pile of pieces that encourage children’s search</td>
</tr>
<tr>
<td>Sustaining mindfulness</td>
<td>0</td>
<td>absent</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Attention direction (name calling; asking to focus on task)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Praise (the child; actions)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Minimise frustration (for encouraging participation)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Behaviour management (controlling inappropriate/aggressive behaviours</td>
</tr>
<tr>
<td>Speech styles</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Indicates of absence of any category</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Directives</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Questions</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Explanations</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Responses</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Simple utterances</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Requests</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Repetitions</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Combination</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other/adult regulation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absence of any category</td>
</tr>
<tr>
<td>1</td>
<td>MR (Mother responsible completely)</td>
</tr>
<tr>
<td>2</td>
<td>MRC (mother regulated child’s actions)</td>
</tr>
<tr>
<td>3</td>
<td>MRR (mother both responsible and regulated)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Child self-regulation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td>1</td>
<td>Child totally responsible in the episode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount of verbalisation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td>1</td>
<td>Mothers’ verbalisations (no of words)</td>
</tr>
<tr>
<td>2</td>
<td>Children’s verbalisations (no of words)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initiator of episodes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent</td>
</tr>
<tr>
<td>1</td>
<td>mother (lead/encouraged search of a piece/initiated task verbalisations)</td>
</tr>
<tr>
<td>2</td>
<td>Child</td>
</tr>
</tbody>
</table>
Cultural Specificity in Maternal Metacognitive Guidance of Preschoolers’ Puzzle-solving

by

P. Sanagavarapu
M.Sc., M.Phil.

A thesis
submitted for the Degree of
Doctor of Philosophy in Education

University of Western Sydney, Nepean
1999
PLEASE NOTE

The greatest amount of care has been taken while scanning this thesis,

and the best possible result has been obtained.
DECLARATION

I certify that the thesis entitled "Cultural specificity in maternal metacognitive guidance of preschoolers' puzzle-solving" is a record of research work done by me and that this thesis has not already been submitted for any degree and is not being submitted for any degree.

I certify that any help received in preparation of this thesis, and all sources used, have been acknowledged.

Signed

S. Prathyusha

Mrs. PRATHYUSHA SANAGAVARAPU
ACKNOWLEDGEMENTS

I would like to take this opportunity to thank all those people without whose help, support, and understanding this thesis would not have been completed.

Firstly, I would like to express my sincere appreciation and gratitude to my supervisor Dr. Alison Elliott, for her guidance, encouragement, and support in all phases of the study and the years of candidature.

My gratitude to Prof. Neil Baumgart, Dr. Jo Milne Home, and Dr. Joe Relich who acted as co-supervisors at various stages of my work for their valuable advice from time to time.

I am indebted to all the mothers and their children who participated in this study without whose assistance, it would not have been possible to explore the dynamics of cultural patterns of mother-child interactions in metacognitive guidance.

I also would like to express my appreciation to the University of Western Sydney, Nepean for granting me the Nepean Postgraduate Research Award which enabled me to pursue Ph.D studies, one of my long cherished professional goals.

It would be incomplete without acknowledging the support and friendship given by the staff at Faculty of Education, UWS, Nepean, notably, Ms. Alison Hine, Dr. Jillian Boyd, Dr. Mauvorna Collits, Prof. Trevor Cairney, Dr. Jean Ashton, and Mr. Andrew Martin.

My thanks are due to my employer, Ethnic Child Care, Family, and Community Services Cooperative for granting me study leave that enabled me to complete the thesis writing.
The encouragement and understanding provided by my family overseas (parents, siblings, and in laws), especially the motivation of my mother to undertake higher academic pursuits has always been a source of strength.

Thank you to all of my friends in Sydney for their encouragement and support.

Last but by no means least, my gratitude to my husband Dr. Ananda Mohan Sanagavarapu, for his love, encouragement, co-operation, mentoring, and for making it all worthwhile.
ABSTRACT

The notion of socio-cultural basis of children's development and learning has attracted the attention of educational researchers. Underpinning this view is Vygotsky's (1962, 1978) proposition that development of cognitive or metacognitive abilities originates in cultural contexts and is transferred to children through social guidance. While a large body of literature on adult or peer guidance has endorsed the significance of social guidance for metacognitive development, little is known about cultural specificity in adult guidance of metacognitive development across cultures. Based on the socio-cultural notion that mediated action cannot be separated from the milieu in which it occurs, cultural specificity in maternal metacognitive guidance of preschoolers' puzzle-solving is hypothesised in the present thesis.

An attempt is made in this thesis to corroborate the notions of cultural specificity and universality in maternal metacognitive guidance of preschoolers' puzzle-solving in Anglo-Australian (14) and immigrant Indian (Telugu speaking) cultural communities (8) in Western Sydney, Australia. Due to the interactive nature of culture with gender variable, variations in maternal metacognitive guidance as a function of the gender of the child and an interplay between culture and gender in maternal metacognitive guidance are also explored.

The procedures of data collection included videotaping of Australian and Indian mothers’ interactions with their 4-year-old male and female children on a puzzle-solving task in their natural home environments together with an interview with mothers to elicit their views on cultural goals of child development, adult guidance, and interpretations of puzzle-solving. The nature of Australian and Indian mothers’ metacognitive guidance in male and female preschoolers’ puzzle-solving was analysed with respect to the selected categories of adult/metacognitive guidance (viz., task initiation; task regulation; metacognitive guidance; strategic assistance in verbal and non-verbal forms; speech styles; forms of sustaining children's mindfulness), using Chi-square tests. The quantitative results from Chi-square analyses were
supplemented with qualitative data from transcripts and videotapes to provide a macroscopic view to the cultural patterns of maternal metacognitive guidance.

The analysis of metacognitive guidance in Australian and Indian cultural contexts generally supported the notions of cultural universality and cultural specificity in maternal metacognitive guidance. While similarities were noted in mothers’ collaboration, supportive intent, and verbal strategic guidance, important differences were revealed in task initiation, linguistic mediation, non-verbal strategic guidance and metacognitive modelling. The results highlighted the embeddedness of metacognitive guidance in cultural contexts with mothers in two cultural groups adopting different approaches and strategies for regulation in respective frames of interdependency (Indian) and independence (Australian).

The findings on maternal metacognitive guidance as a function of gender of the child indicated similarities in many components of metacognitive guidance, suggesting that differential guidance of male and female children’s metacognitive learning may be less pronounced in the preschool years compared with middle or late childhood years. Exploration of relation between culture and gender in maternal metacognitive guidance provided evidence of Indian mothers guiding and supporting their male children’s metacognitive estratégic learning more frequently than did the Australian mothers. The findings are discussed in the light of notions of socio-cultural and activity theories and with reference to cultural values and interpretations related to child development, adult guidance, and puzzle-solving.
# Table of contents

Abstract i  
Table of Contents iii  
List of Tables vii  
List of Figures viii  
Appendices ix  

## Chapter 1  
### Introduction to the study

1.1 Introduction 1  
1.2 Cultural diversity in Australian early childhood settings: Need for cross-cultural studies of child development 3  
1.3 The study and its methods: An overview 10  
1.4 Organisation of the thesis 12  
1.5 Summary 13  

## Chapter 2  
### Developmental origins of self-regulation: social interactions

2.1 Introduction 14  
2.2 Metacognition: Definitions 16  
2.3 Research on metacognition: An overview 18  
2.4 Self-regulation: The heart of problem-solving 23  
2.5 Developmental changes in problem-solving: Emergence of metacognitive abilities 25  
2.6 Self-regulatory development: Social interactions 32  
2.7 Metacognitive research in Vygotskian frameworks 37  
2.8 Summary 40  

## Chapter 3  
### Adult guidance: Processes and determinants

3.1 Introduction 41  
3.2 Theoretical constructs of adult guidance 42  
3.2.1 Internalization of metacognitive development 43  
3.2.2 Stages in internalization 46  
3.2.3 Processes of internalization 47  
3.3 Research on adult or other guidance 50  
3.3.1 Social support of children’s metacognitive development 51  
3.3.2 Whose guidance is beneficial for children’s metacognitive development? 55  
   a) Parents 55  
   b) Others 56  
   c) Teachers 57  
   d) Experts 57  


b) Peers 56
   c) Teachers 58
3.3.3 Variations in adult/parental guidance 59
   a) Factors related to adults/parents 59
   b) Factors related to children 63
   c) Factors related to task 66
3.4 Summary 68

Chapter 4
Cultural specificity in metacognitive guidance

4.1 Introduction 70
4.2 Research on cultural influences on child development/social guidance 72
   4.2.1 Culture: Definitions 73
   4.2.2 Cultural influences on child development: Processes 75
   4.2.3 Cultural specificity in parental beliefs of child development 77
   4.2.4 Cultural specificity in parental child rearing/interactions 80
   4.2.5 Cultural specificity in parental communication 83
4.3 Other determinants of child development/social guidance 87
   4.3.1 Gender of the child and the parent 88
   4.3.2 Socio-economic status of families 91
   4.3.3 Immigration/Acculturation 93
4.4 Cultural influences on child development/adult guidance: Theoretical underpinnings 94
4.5 Summary 98

Chapter 5
Research issues and questions

5.1 Introduction 100
5.2 Summary of research issues and questions 101
   5.2.1 Cultural specificity in metacognitive guidance 101
   5.2.2 Cultural universality in metacognitive guidance 105
   5.2.3 Maternal guidance of male and female children’s metacognitive learning 106
   5.2.4 Interaction between cultural group of the mother and the gender of the child 107
   5.2.5 Metacognitive guidance: Components, forms, and contexts 107
5.3 Summary 110
Chapter 6
Methodology

6.1 Introduction 112
6.2 Cultural groups and their background information 114
  6.2.1 Selection of cultural groups 114
  6.2.2 Background information on immigrant Indian (Telugu) families 116
  6.2.3 Background information on Anglo-Australian families 121
6.3 Subjects, settings, and contexts of the study 124
  6.3.1 Subjects 124
  6.3.2 Demographic details of the sample 127
  6.3.3 Contexts/settings of the study 128
  6.3.4 Activity/Task materials of the study 130
6.4 Methods and procedures of data collection 131
  6.4.1 Methods and methodological issues 131
  6.4.2 Procedures and steps of data collection 136
    a) Interviews with mothers 136
    b) Observations of mother-child dyads’ puzzle-solving interactions 137
6.5 Data processing 138
6.6 Coding of observations 139
  6.6.1 Unit of analysis 139
  6.6.2 Selected behaviours for coding and analysis 141
  6.6.3 Coding categories and their descriptions 142
6.7 Inter-observer reliability 150
6.8 Data analysis 151
6.9 Summary 152

Chapter 7
Results

7.1 Introduction 153
7.2 Cultural conceptions of adult guidance, child development, and task motives 154
7.3 Puzzle-solving interactions of mother-child dyads 159
  7.3.1 Task performance of mother-child dyads 159
  7.3.2 Task initiation in interactions 161
  7.3.3 Adult regulation and division of task responsibilities 165
  7.3.4 Metacognitive guidance and modelling 172
  7.3.5 Use of speech in maternal guidance 176
  7.3.6 Children’s communication in interaction 185
  7.3.7 Means of strategic assistance 186
    a) Verbal forms of strategic assistance 186
    b) Non-verbal forms of strategic assistance 190
  7.3.8 Methods of sustaining children’s mindfulness 192
7.4 Summary 197
Chapter 8
Discussion and conclusions

8.1 Introduction 201
8.2 Discussion 202
8.2.1 Goal/Goal accomplishment 202
8.2.2 Methods of operation 203
   a) Australian and Indian mothers’ metacognitive guidance 203
   b) Maternal metacognitive guidance in male and female preschoolers’ puzzle-solving 211
   c) Culture and gender interaction in maternal metacognitive guidance 212
8.2.3 Level of activity 213
   a) Task motives/Task interpretations 213
   b) Cultural values and goals of child development/adult guidance 215
   c) Other factors related to puzzle-solving 222
8.3 Summary and conclusions 223
8.4 Implications 225
8.5 Limitations and scope for future studies 229
8.6 Concluding remarks 231

References 234

Appendices 257
List of Tables

7.1 Australian and Indian mothers’ views of child development, adult guidance, and task motives 155
7.2 Frequencies and percentages of task initiation in mother-child dyads’ puzzle-solving 163
7.3 Frequencies and percentages of forms of task/adult regulation 166
7.4 Frequencies and percentages of components of maternal metacognitive guidance 176
7.5 Frequencies and percentages of maternal speech styles across cultural groups 177
7.6 Frequencies and percentages of maternal speech styles across gender groups 183
7.7 Frequencies and percentages of maternal speech styles across culture and gender groups 184
7.8 Frequencies and percentages of verbal forms of strategic guidance 187
7.9 Frequencies and percentages of non-verbal forms of strategic guidance by culture and gender groups 191
7.10 Frequencies and percentages of forms of mindfulness employed by mothers 193
7.11 Summary of results on maternal metacognitive guidance 200
**List of Figures**

5.1 Conceptual framework of the investigation 111

6.1 Cognitive map depicting the sample and variables of the investigation 113

7.1 Percentages of completed episodes in Australian and Indian mother-child dyads’ puzzle-solving 160

7.2 Percentages of completed episodes in mother-male and mother-female child dyads’ puzzle-solving 160

7.3 Percentages of forms of adult regulation in the total sample 165
Appendices

Appendix 1  Interview Schedule  257
Appendix 2  Observational checklist  258
Appendix 3  Coding categories  260