EARLY LANGUAGE EXPERIENCE:
LEARNING FROM YOUNG CHILDREN WHO ARE BLIND

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Dedication:

My son Andrew died in 1997. This project is dedicated to his memory.
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Finally, I wish to thank my own family for their loyalty and patience.
Statement of Authentication

The work presented in this portfolio is, to the best of my knowledge and belief, original, except where acknowledged in the text. I hereby declare that I have not submitted this material either in full or in part, for a degree at this or any other institution.

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Julie Campbell
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Abstract

Children’s interaction with their caregivers is severely restricted by blindness, but evidence of effects on their early language development is controversial. This seems partly due to the difficulties inherent in studying this low-incidence disability and partly to conflicting views of early language development and the role of maternal input. The defined focus area of my research, reviewed in the overarching statement in this portfolio, is the investigation of early interaction and how blindness affects maternal input, emotional availability, and children’s early word use. The broader context of my work is early language development for all children.

At the centre of my studies are four mother-child dyads who were studied from the time the children were 18-19 months old and just beginning to use words, and then followed through until around the time of the children’s second birthday. The studies show that these mothers were no more directive than mothers whose children were sighted, but that they made few adaptations to their children’s particular needs for frequent and relevant information about the world around them. Information about the intentions, agency, and characteristics of others was also lacking. An assessment of emotional availability showed individual differences in maternal sensitivity and structuring of the children’s play, again indicating difficulties in adaptation to the specific needs resulting from blindness.

Although all children made lexical gains during the months of observation, their words were seldom used to initiate topics or share attention, highlighting the importance of a socio-pragmatic theoretical framework that assists understanding of the effects of a disability in the context of interaction. Theories that focus on the later development of linguistic structures overlook the way in which social interaction with caregivers exerts a powerful influence on early word learning and becomes an important focus for early childhood intervention.

This portfolio provides an overarching statement of issues and research findings from studies of maternal interaction with young children who are blind, within the context of issues in early language development and early intervention. To represent the scope of my work, the examples of my refereed publications include those that are research-based as well as those that are more generally related to
professional practice. This more general writing for teachers and caregivers provides an essential link between theory and practice. The studies of children with blindness inform, and have been informed by, current understanding of what is significant in early development for all children. Thus the significance of the work presented lies not only in the contribution to the research literature, but also in the potential for informing intervention practice and timely support for families.
Vision, language and relationships form a powerful triumvirate that governs our daily lives, not as independent forces but through complex interconnections. These interconnections are apparent from birth when parents gaze at their babies and talk to them. Both eye contact and voice become integral to first relationships, through which the sensitive caregiver and responsive baby learn to build on each other’s communicative behaviours (Stern, 1985; Trevarthen & Aitken, 2001).

Through such early emotion-based exchanges, babies learn about themselves and the world around them. Bruner and Sherwood (1983) suggest that “at the start, the child is not flying blind… saying something or understanding something about events in the world he [sic] already knows” (p.45). However, for children who are literally “flying blind”, their world is so perceptually different from that of their sighted parents, that sharing meaning about what words refer to is difficult (Campbell, 2005b. Appendix A). Unlike the lover in Shakespeare’s sonnet, these children cannot distinguish night from day, nor dream with visual images. Without the rich resources provided by vision, children who are blind are dependent on familiar voices to be the mirrors of their own emotional states as well as reflecting the emotional states of their caregivers (Campbell, 2006.Appendix B).

In these circumstances, the role of caregivers becomes that of interpreters of physical and social realities, with language as the bridge between the two worlds of blindness and vision (Webster & Roe, 1998). What caregivers say and how they say it in interaction provides the children with information about their world, as well as information about language itself. However, a problem identified in the literature, reviewed in Chapter 2, is that caregivers find it difficult to talk to children who are blind, thus limiting the frequency, relevance, and informativeness of the language that the children hear. The children, in turn, are limited in their ability to invite parental
responsiveness. The possible outcomes for children are language delay and long-term difficulties in relationships (Brown, Hobson, Lee & Stevenson, 1997; Preisler, 1997).

The question of whether or not these outcomes are caused by blindness is not easy to answer. There are two main reasons for this. The first lies in the definition and description of the population with the disability and how it affects development, and the second in the theoretical frameworks that propose possible explanations for the relationships between vision and language development. The challenge is to understand the relationship between what is unique to children who are blind and what is common in the experience of all children.

**Blindness and its effects on development**

Blindness in children is a low-incidence disability, with an estimated occurrence of 2-10 per 10,000 (Teplin, 1995). Legal blindness refers to visual acuity of 20/200 or less in the better eye with correction. When visual acuity is less than 20/200, other descriptors are used such as object perception only or, when acuity is even less, light perception only (Hatton, Bailey, Burchinal, & Ferrell, 1997; Teplin, 1995). Children with no light perception are totally blind. Although there are fewer children now whose blindness is caused by rubella, there are more survivors of premature delivery who are vulnerable to damage to the retina.1 Children, who are blind from birth, and with no other disabilities, have been reported to be slow to become mobile, independent, and to use language socially (Fraiberg, 1977; Warren, 1994; Webster & Roe, 1998).

The research literature, however, is sparse and thinly spread over the years making comparison of findings difficult (Perez-Pereira & Conti-Ramsden, 1999b). In a large-scale study of the early developmental growth curves of children with a range of vision impairment (Hatton et al, 1997), there were 27 children who were blind (defined as no vision to light perception only). Estimates of their developmental age at 30 months show delays of 10-12 months in all areas, with motor development showing the greatest delay and communicative delay the least. For these children there was considerable within-group variability, a pattern that distinguished them from children whose vision impairment was not as severe. However, because of the within-group variability,

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1 See Hatton, Bailey, Burchinal, & Ferrell (1997), for a detailed discussion of the etiology of blindness.
questions remain about which developmental effects are the consequence of blindness and which are due to other individual factors.

The results of the study by Hatton et al (1997) confirm the wide range of individual differences that are also found in small group and single case studies (for example, Andersen, Dunlea & Kekelis, 1993; Perez-Pereira & Conti-Ramsden, 1999a; Preisler, 1997). In these circumstances, there are difficulties in drawing general conclusions about the effects of blindness on early development (Campbell, 1994b, Appendix C). As noted in that review, individual patterns of development may be affected by disability, but still need to be interpreted with reference to current theories of typical development. Those theories, in turn, are both challenged and extended by understanding more about the lives of children with a disability (Cicchetti, 1984). This ongoing dialogue, between what is universal in the cultural contexts of childhood and what is determined by additional disability-related needs, is reflected in my teaching and writing for teachers and caregivers, for example Campbell, (1995a, Appendix D), Campbell, (1995b, Appendix E), Campbell, (2005a, Appendix F) and Campbell & Johnston, (2005, Appendix G).

In spite of the practical difficulties involved in the study of young children who are blind, the only way to find out more about their lives is to describe what we are able to observe (Richards & Galloway, 1994) and interpret the findings within a coherent theoretical framework. Specific questions about blindness and language development have been debated in the past by Noam Chomsky and Jean Piaget (Piatelli-Palmerini, 1980) because of their interest in the universal origins of language. Although their theories were fundamentally different, they both saw the experience of a child with blindness as supporting their particular view of early language development for all children. In what Braine (1994) refers to as the nativism-empiricism debate, questions about early experience and language development continue to be raised.

**Theoretical perspectives**

Theories of language development that fit within a socio-cultural context and emphasise how language is used in interaction, a social-pragmatic approach, have two main components (Snow, 1999; Tomasello, 2001). They are first, what the child brings in terms of communicative capacities and second, what the adult provides in terms of a
structured social world. There are also transactional effects that arise during development as child and adult influence each other’s contribution (Sameroff & Fiese, 2000), which are particularly important where a congenital disability limits normal developmental pathways. These theoretical perspectives provide a cohesive rationale for early intervention, and support for the processes of caregiver-child interaction (Barnard, 1997). As such, there would seem to be little doubt about their relevance in understanding the language experience of young children who are blind.

However, the acquisition of language by children who are blind has been proposed as evidence that visual experience is neither necessary nor sufficient for language to emerge; the child’s innate predispositions being all that is required (Landau, 1997). Landau bases the argument for the innate origin of language on a study of three children, two of whom had severe vision impairment and one of whom was blind. Landau and Gleitman (1985) argued that, compared to sighted children there were no differences in the semantic categories of the early words used by the children with vision impairment, and therefore there was no detriment to language development attributable to lack of vision. The children's subsequent use of sentences, colour names, and words such as “look” and “see”, was proposed as conclusive evidence that language was innate and domain specific, and not affected by constraints on early experience such as blindness.

The case of a child with blindness may attract theoretical linguists because of the natural example provided of how language might develop without the empirical evidence gained from vision (and the strongest case for this view would come from a child unable to use any sense modalities at all). Children who cannot see may still be able to use auditory, tactile and kinaesthetic information. The irony is that these perceptual resources depend on vision for maximum utility (Teplin, 1995). Coordinated behaviours that are significant in typical early development, such as visually guided reaching and turning to sound, are dependent on vision. They are not evident in the early development of children who are blind (Chen, 1999; Perez-Pereira & Conti-Ramsden, 1999b).

Landau (1997) acknowledges the delay in early word use and the difficulties of interaction, but the characteristics of caregiver input are only important in her view for providing the minimal number of sentences from which children can extract the rules of syntax. This narrowly linguistic stance diminishes the role of caregiver input and
emphasizes the linguistic outcomes for the child. It stands in strong contrast to the social-pragmatic view discussed above, in which the child brings communicative capacities and the adult provides the social experiences that enable those capacities to flourish. By arguing against any dependence on sensory perceptions, Landau’s proposal also isolates language development from the rest of children's innate capacities and experiences. Such isolation does not fit with a more complex and holistic view of development which takes place, not as “something disembodied, but within a rich matrix of body, emotion, belief, value, and physical world" (Wozniak & Fischer, 1993, p.xi.).

Since many children, like the children in Landau’s study, do eventually begin to use words and sentences, their early delay might be viewed as regrettable, but not important. This conclusion overlooks the way language and relationships are mutually nurtured in parent-child interaction. Delay in the transactional processes of communication, leading to what Warren and Yoder (1998) describe as a “developmental limbo”, has also been shown to have long term consequences for the social and emotional well being of young children who are blind (Brown, Hobson, Lee & Stevenson, 1997; Celeste, 2006; Recchia, 1997). Brown et al suggest that children who are blind are susceptible to developing autistic tendencies, but that given appropriate social experiences they might find ways of sharing meaning with others. Their conclusion points to the potential of early intervention.

In this discussion of theoretical frameworks, a theory about the innate origins of language (nativism) has been advanced, based on evidence from a study of children with blindness (Landau, 1994). Because such a theory entails minimizing the role of experience in language development, it offers little to support caregivers in their efforts to interact with their young children who are blind. The social-pragmatic approach, on the other hand, has a strong focus on what parents and children together bring to interaction and communication, providing a theoretical framework that can be integrated with early childhood intervention and family support.

There may seem to be little conflict between a theory about linguistic structures and a theory about early communicative experiences, because they relate to very different aspects of language development. However, the use of blindness as an exemplar for a theoretical position makes it imperative that the robust arguments advanced do not
dissuade providers of early intervention services from including children who are blind and their families from the earliest time possible.
Chapter 2: Research themes in the literature

The recognition of the importance of vision to the development and quality of caregiver-infant interactions has led to numerous studies on the early interaction of infants who are visually impaired (that is blind or have low vision) and their mothers.
Loots, Devise & Sermijn (2003 p.403)

In Chapter 1, the general finding was reported from the survey undertaken by Hatton, Bailey, Burchinal, and Ferrell (1997), that children who were blind were delayed in many areas of development, but that there were wide individual differences. The discussion of theoretical frameworks highlighted different ways of interpreting early language experience and the role of vision in language development. In this chapter questions about early language development and delay will be discussed further, drawing on a number of small group studies that have explored this aspect of early experience.

There is nothing about blindness per se which prevents the eventual acquisition of the sounds and structure of language, but restricted maternal input has been suggested as a possible explanation for the children’s delay in using words (Andersen, Dunlea & Kekelis, 1993; McConachie & Moore, 1994). Other reasons suggested are the children's limited ability to benefit from non-verbal communication in interaction. Many aspects of early interaction, such as understanding the intentions and references made by the speaker, are highly dependent on being able to see. Without vision, children do not point or reach out as ways of showing interest in the surroundings, making it difficult for caregivers to respond contingently. This is a possible reason for the children’s language delay, but, since all the mothers involved in the studies reported above knew about their children’s vision status, the unanswered question is why they did not adapt their interactions accordingly. A search for answers leads to the wider field of typical early language development, in which the implications of a specific disability can both confirm and challenge our understanding of what is typical.

From studies of children developing typically, Harris (1992) concludes that maternal reference to the child's current activity and engagement with objects plays a major part in early lexical development. Recent studies of how much caregiver talk takes place in interaction show that frequency of maternal input also makes a significant
contribution (Hart & Risley, 1999). A study which followed typically developing children as far as school entry showed that frequency was related to their cumulative vocabularies and continuing competence (Weizman & Snow, 2001), suggesting that this early experience of maternal talk in interaction affects more than just the learning of early words, but continues to have positive effects as the children move into school.

These are important findings for teachers and caregivers to know about and incorporate in the way they interact with young children (Campbell, 2005a, Appendix F). Findings such as these provide strong evidence that maternal input that is characterised by frequency, relevance and elaboration is associated with children's timely and competent language development. However, these are the very characteristics that appear to be missing from maternal input to children who are blind. Not only are these children limited in their access to the context of communication, but also their regular communicative partners seem to have difficulty in responding in the very ways that will give them the most help. Yoder, Warren, McCathren and Leew (1998) point to the particular importance of linguistic contingent responses to the child’s focus of attention for the facilitation of noun learning. Children who are blind are not inattentive, but the focus of their attention is harder to determine and may require specific responsive strategies to enable them to understand the reactions of others (Hobson, 1993).

**Interaction style and content**

There have also been studies of the style and content of maternal input for children who are blind. Kekelis and Andersen (1984) found that the parents in their study were highly directive and initiated a greater proportion of topics than their children, but Marfo (1990, 1992) suggests, on the basis of his studies of children with disabilities other than blindness, that directiveness may be a positive response, when interaction is compromised in some way. Girolometto (1995) raises interesting points about the stress for mothers when their children with disabilities are implicitly or explicitly compared to children whose developmental status is not in doubt. The anxiety for children to “perform” may well lead to an increase in maternal directiveness, but this does not answer the question of whether a directive maternal style is the cause of children’s language delay.
What we talk about to young children typically involves labels and descriptions of what they seem to be interested in, indicated by their eye-gaze and gesture (Bridges, 1986). Without this basis for sharing meaning, mothers of children who are blind seem to find it difficult to provide comparable non-visual information. Even with some adaptations, there are limitations to what is said and therefore limitations to what children with blindness understand about their world. Moore and McConachie (1994) compared maternal input to children with different degrees of visual impairment and found that less information about objects and attributes was provided for children who were blind than for children with some degree of vision. The children who needed more information were actually given less.

As well as receiving less information, it seems that the children were also spoken to less often, so that there were fewer descriptions and fewer utterances. Andersen, Dunlea, and Kekelis (1993) note that reduced frequency of maternal speech is a consistent feature in studies of children who are blind and conclude that they experience similarly limited maternal input to children with other developmental disabilities. Warren and Yoder (1998), commenting on the differences between the experiences of high achieving children and children with a disability, note that these limitations in quality and quantity occur despite the “best intentions of their caregivers” (p.371).

While the evidence from small group and case studies of maternal input to young children who are blind suggests that there may be problems that are common for children with a range of disabilities, it must be remembered that every disability has its own limitations, levels of individual difference, and parental awareness. The unconventional organization of reality imposed by blindness precludes the sharing of meaning in the ways that most parents expect. This, combined with the children’s dependence on what they are told about what they cannot see, creates very particular problems about sharing reference.

**Interaction and lexical development**

The delay in blind children’s lexical development has been linked to limitations in input, but explanations for the link have been hard to pinpoint and seem to be offered only in the context of typical rather than atypical development. There are links that can be identified between the use of gesture and first words in children who can see (Bates,
Bretherton, & Snyder, 1988; Messer, 1997), but explanations of how this might work for children who are blind are less forthcoming. A study of toddlers with language delay (but no other disabilities) suggests that maternal responsivity and contingency are the most important factors in facilitating children’s word use (Girolometto, Weitzman, Wiigs, & Pearce, 1999), but these are the two factors that seem to lie at the heart of what parents find difficult in interaction with children who are blind. The implication is that what parents say is dependent on what children invite them to say, and without those invitations parents say little and the children are provided with little to support their early word learning. More evidence is needed to confirm this conclusion.

Theories of reference that underlie lexical development also draw on recent studies of joint attention. Baldwin (1995) suggests that while joint attention provides the coordination necessary for language learning, there is an additional requirement. This is the child’s level of intersubjectivity or capacity to respond to the feelings of others (Trevarthen & Aitken, 2001), which includes awareness of what the caregiver is actually talking about, the referential intent (Tomasello, 2001). This is a particularly difficult area for children who cannot see and have few cues to parents’ intentions, agency, or internal states other than what they are directly told. Direct information of this kind requires an unconventional kind of dialogue that may be both culturally and individually challenging (Preisler, 1997).

**Interaction and emotional availability**

“Sensitive” mothers, as defined by Ainsworth (Ainsworth, Blehar, Waters, & Wall, 1978), are able to recognise and interpret their child's signals and respond to them appropriately, thus providing the kind of experiences in interaction that form the basis for the child's psychological growth. The capacity to share affective states is “the most pervasive and clinically germane feature of intersubjective relatedness” (Stern, 1985, p. 138). Through such relatedness the mother makes herself emotionally available to the child, and the child's responsiveness communicates awareness of the mother’s actions and intentions. Interactions between parent and child that are characterised by mutual engagement and affective reciprocity enhance the child's development, and those that are maladaptive place the child at risk for later emotional, cognitive and behavioural problems (Greenspan, 1992; Sameroff & Emde, 1989).
This aspect of the early experience of children who are blind has been studied extensively following the work of Fraiberg (1977), for example, Freeman et al (1989); Preisler, (1997); Recchia, (1997); Troster and Brambring, (1992); and in a study of autistic-like features in children who are blind (Brown, Hobson, Lee & Stevenson, 1997). While there have been important studies of constraints on emotional availability due to maternal depression (Murray, 1991), studies of interactions in which the child's emotional availability to the mother is in question due to a disability seem to be limited to children with hearing impairment (Jamieson, 1995; Pressman, Pipp-Siegel, Yoshinaga-Itano, & Deas, 1999). The findings here link children’s communicative development with maternal sensitivity, but there have been no studies involving children who are blind. There is a need to undertake an investigation of this aspect of the children’s early experience, to understand more about how the qualities of relationships form a part of the communicative context.

Through the research literature there have been findings, based on a social-pragmatic approach, that parental input that is responsive, frequent, and relevant, enables meanings to be shared and facilitates early word use for all children. Children who are blind also need these experiences, but their inability to respond in predictable ways seems to constrain parental interaction with them, thereby limiting the provision of experiences that they need.

Mothers’ language also carries information about their own psychological presence and internal states. Without visual cues or explicit references, children who are blind may find it difficult to comprehend the feelings and intentions of others, placing them at-risk socially and emotionally. Adaptation to these needs may require more than “intuitive parenting” (Meadow-Orlans & Spencer, 1996) and this suggests the need for support through early intervention.

The themes that have emerged from this review of the literature, suggest that more needs to be known about the roles of parents in interaction with children who are blind and learning to use words, the need for basic descriptions identified by Richards and Galloway (1994). What mothers talk about, in what way, and how often, are all questions of interest. Parents’ adaptability to the specific situation created by blindness, and sensitivity to information needs, is part of being emotionally available. Delay in the
children’s early word use is an indicator of some of the difficulties involved. The delays and difficulties experienced by these children in their second year have implications for both lexical development and for the transactional processes inherent in interactions, processes which lay the foundations for social and emotional well being. These are the themes that underlie my studies of maternal interaction with young children who are blind, and form the basis for my research.
Chapter 3: Research undertaken

Research into speech addressed to atypical children has generally been designed to answer questions relating to facilitating acquisition. Even though the motivation, therefore, is often with the ultimate aim of informing intervention, basic descriptive facts are still needed.


In the review of the literature in Chapter 2 several themes were identified in relation to the experience of young children who were blind in interaction with their caregivers. Maternal input to these children in the early stages of learning to use words was shown to be lacking in the key features found to assist children developing typically, namely frequency, relevance and elaboration. The explanations for these findings did not go beyond suggestions that the characteristics of maternal input were implicated in the children’s delay in early word use. More needs to be known about the processes of interaction that led to the difficulties reported. Did blindness affect child language, or did it in fact affect the nature of the interaction, and in so doing constrain the linguistic context and the children’s consequent lexical development? Although this remained the broad question, three specific research questions were formulated, based on empirical and theoretical issues identified in the literature:

1. Were mothers of children who were blind more directive than mothers of children who could see, thus limiting their children’s language development?
2. Did the mothers talk about the features of the play context; what, and how much did they say, and how responsive was this to the children’s information needs?
3. How did mothers make themselves emotionally available through the way they talked and did they talk about their own feelings and intentions?

My aim in investigating the area of early language development and blindness was to study a small group of children longitudinally, from the age of 18 months at around the time they might begin to use words. This period had been identified as important in terms of lexical development (Golinkoff, Hirsh-Pasek & Hollich, 1999; Hart & Risley, 1999) and social-emotional development (Preisler, 1997). I wanted to study
children who were blind, rather than having some levels of useable vision, in order to identify the effects of blindness. Apart from the studies reported by Preisler (1997), I was aware of no other longitudinal studies of mother-child interaction in which all the children were blind and at a similar level of early word learning.

With the support of a major agency, I met four families whose children were blind from birth. The names used for the children are not their real names. Matt and Amy were born prematurely, which led to Grade 5 retinopathy. Sam was born without eyes (anophthalmia) and Nicki was born with optic nerve hypoplasia (ONH). Although many children blind from birth are also at-risk for other disabilities, no such disabilities had been recorded for these four children during their regular developmental assessments. The two children born prematurely had no age correction applied to their developmental assessments after their first birthday.

I was able to video-record mother-child interactions in a twenty-minute play session at home, at intervals of five to six weeks for six months. Amy could only be visited twice, at 19 months and at 27 months, because of health problems. Recordings were made of the other three mother-child dyads until the children were close to their second birthdays. Table 1 shows the record of home visits and video-recording sessions undertaken. Matt and Amy were visited six times, while Sam received seven visits.
Table 1

Children’s ages at times of home visits for video recording of mother-child interaction

<table>
<thead>
<tr>
<th>Child</th>
<th>Cause of blindness</th>
<th>Age in months &amp; weeks at time of recording</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matt (m)</td>
<td>Retinopathy of prematurity</td>
<td>16.2&lt;br&gt;17.3&lt;br&gt;19.0*&lt;br&gt;20.3&lt;br&gt;22.0&lt;br&gt;23.3*</td>
</tr>
<tr>
<td>Amy (f)</td>
<td>Retinopathy of prematurity</td>
<td>19.1*&lt;br&gt;27.1*</td>
</tr>
<tr>
<td>Nicki (f)</td>
<td>Optic nerve hypoplasia</td>
<td>16.0&lt;br&gt;18.1*&lt;br&gt;19.1&lt;br&gt;20.3&lt;br&gt;22.1&lt;br&gt;23.3*</td>
</tr>
<tr>
<td>Sam (m)</td>
<td>Anophthalmia</td>
<td>16.0&lt;br&gt;18.1*&lt;br&gt;19.1&lt;br&gt;20.2&lt;br&gt;23.2&lt;br&gt;24.3*</td>
</tr>
</tbody>
</table>

* denotes recordings used for data analysis

The two data points chosen were those that were as close as possible to a six month time span, and equivalent in quality. In the cases of Nicki and Sam, the 18 month data was less affected by interruptions than the 19 month data. In all there were twenty-one video-recordings that were transcribed and coded using the CHAT format of the Child Language Data Exchange system (CHILDES) (MacWhinney, 2000). I attended a four-day workshop at Harvard University to learn how to use this system in 1991. Table 2 shows a sample page of the transcripts that formed the primary database for the three studies undertaken. The system devised for specific coding categories is explained with examples in Campbell, (2003, Appendix H) and Campbell, (2005b, Appendix A).
Table 2: Sample page of transcript of mother-child interaction.
Matthew, aged 19 months, and his mother are sitting on the floor ready to play with a selection of toys. In the CHAT format the symbol 0 indicates no response, xxx a vocalization, and % act an action.

*MOT: what’s the matter?
*MAT: xxx xxx.
% act: plays with truck.
*MOT: what have you got?
*MAT: ba ba.
*MOT: oh ba ba.
*MAT: 0.
% act: pushes truck, which makes a noise.
*MOT: brmm.
* MOT: push your truck.
*MOT: push brmm.
*MAT: mm?
% act: tips truck over, turns to mother.
*MOT: like this.
% act: pushes truck.
*MAT: 0.
% act: pushes truck.
*MOT: good sound there.
*MAT: 0.
% act: tips truck over again.
*MOT: 0.
% act: plays tune on music box.
*MAT: 0.
% act: claps his hands.
*MOT: here.
% act: places other toys within reach.
*MAT: 0.
% act: explores and finds a squeaky ball.
*MOT: look.
% act: plays a tune on the music box.
*MAT: 0.
% act: turns and picks up toy dog.
*MAT: doggie.
% act: returns to making ball squeak.
*MOT: want to play with this one?
%act: plays tune on music box.
*MAT: 0.
% act: touches music box briefly.
*MOT: you make it go.
*MOT: you want to do it?
*MAT: 0.
% act: returns to squeaky ball.
*MOT: I’ll swap this.
% act: removes ball and places music box in Matthew’s hands.
*MAT: 0.
% act: makes sounds on the music box.
*MOT: good.
Study 1. - Maternal directives to children who are blind. (Appendix H.)

In this study, published in 2003 in the Journal of Visual Impairment and Blindness, the question of maternal directiveness was investigated. Four mother-child dyads, in which the children, Matt, Amy, Sam and Nicki were blind, were compared to four in which the children, Liz, Jos, Ed and Jen were sighted. The sighted children and their mothers were recruited to match the age of the blind children and the status of the mothers. Details of these characteristics are provided in full in the published report of the study (Appendix H). All children were aged 18-19 months. Analysis of how the mothers directed attention and play found that the mothers of children who were blind were no more directive than were the mothers of children who were sighted. Both groups of mothers told their children what to do in their play with toys, but the obvious clues to how a toy might be used were not available to the children who were blind. Their mothers directed their actions, but provided surprisingly little descriptive information.

In Table 2 above, Matt is told to push the toy truck and make the music box go, but with no additional information. These examples of maternal utterances to a child who was blind can be contrasted with the following example of a mother talking to her child, Ed, who was sighted. (Both conversations took place at the start of the play session).

Mot: you’ve got the telephone there.

what’s that? (pointing to the keypad).

can you say “Hello Gran?”

hold it up and say “Hello Gran.”

Ed: 0.

%act: puts phone to ear

Mot: hello Gran.

Ed: xxx.

Mot: did you have a nice day?

%act: laughs.

Mot: what’s that? (pointing to antenna)

Ed: 0.

%act touches phone antenna.

Mot: does that pull out?
Ed: 0.

%act: pulls antenna up and down repeatedly.

The transcripts seem quite similar in terms of directiveness, but there are differences in the way information is provided. Ed’s mother names the toy, draws attention verbally and non-verbally to its features and use, and responds contingently to Ed’s actions. Matt’s mother comments on the sound of the truck and the music box, but she adds little detail or elaboration. Analysis of the transcripts of interactions between mothers and their children who were blind showed, as in the example above, the lack of adaptation to the children’s need to have specific information, as well as directions. This finding led to further investigation in Study 2, but with a change in the methodology.

In Study 1, the small group research design raised questions about the use of atypical and typical comparisons. Where the children have a diagnosed disability, mothers understandably respond to the implicit comparisons of children’s ability and tend to be anxious that their children perform as well as possible. This can be seen in the following example in the interaction between Nicki and her mother.

Mot: can you count, Nicki?

Nicki: say one two three.

you say it now.

Nic: xxx.

Mot: you say it.

one two three.

you say it.

quick.

Nic: 0 (plays with keys).

In Study 1, the children who were developing typically had, unlike Nicki, no pressure to perform. Interactive play was not a challenge for either parents or children. Further research is needed to follow up the suggestions made by Girolametto (1995) and Troster (2001) about the importance of stress in the context of maternal interaction with young children with disabilities which may lead them to being more directive (Marfo, 1990, 1992). However, it was questions about the content of maternal input that led to Study 2.
Study 2. Words for the world (Appendix A).

A paper reporting this study was submitted for publication in 2005. It was written to follow through the observations made in analysing the data for Study 1. Comparison of maternal directiveness in that study showed that there was little difference between the two groups of mothers in interaction with their children, confirming a similar finding by Kekelis and Prinz (1996). At the same time this indicated that the mothers of children who were blind were making few specific adaptations to their children’s needs for more direction and information. Therefore, the focus for Study 2 shifted to the content of maternal input, using a case study approach to explore individual differences.

Two features of early language experience have been identified as critical for children’s lexical development: the frequency of maternal input and what mothers refer to in their interactions with their children. In Study 2, these features were explored through case studies of the four mothers and their children who were blind, who had participated in Study 1. Maternal input was analysed at two time points, Time 1 when the children were 18-19 months old and Time 2 when they were 24-27 months old. The transcripts of video-recordings were analysed for the frequency of talk, its referentiality, the use of adaptive strategies for sharing meaning, and topic management. Examples used for coding categories and reliability measures are given in Campbell (2005b, Appendix A.).

Analysis of the first case, and through replication three additional cases, showed patterns of limited object reference and use of adaptive strategies, but with increased reference to child actions as the children became more mobile. At Time 2 there were fewer adaptive references, as if this strategy were no longer needed when the children began to use more words. The mothers of Matt and Amy increased the frequency of talk, but there was little change for Nicki and Sam. The increase in word use for all children made the interactions more conversational, with several turns about the same topic, but most of the topics were introduced by mothers, as in the example below, and the noun use recorded for the children was more restricted than that recorded for age-matched children who were sighted (Bates, et al., 1994). As shown in Campbell (2005b, p.21, Appendix A)
the dominant noun categories for all four of the children were toys, food, and drink, but Nicki made one remote reference, to playgroup, as shown below.

Mot: now sit down.
Nic: 0.
%act: picks up toy phone.
Mot: sit.
Mot: now what’s that?
Nic: playgroup.
Mot: it’s not playgroup.
Mot: playgroup have got a toy telephone, haven’t they?

In the example above Nicki’s mother wants her to name the telephone. In fact Nicki’s response, generalizing to another instance of a toy telephone, was much more interesting than just providing a correct label for the item in her hand. However it was not the immediate response her mother expected. Although there is more of a conversational exchange in this example than at Time 1, the frustrations for parent and child alike in sharing meaning are still apparent. The study highlights the challenge for parents to meet the children’s needs for a wide range of information.

Although analysis of maternal referential input showed both the differences and similarities between the mother-child dyads, there were qualitative aspects to the interactions that were more difficult to pinpoint through transcript analysis alone. To investigate these affective aspects of interaction I needed to find out more about the impact of blindness on responsiveness, of both partners in the interaction. This was done through Study 3.

**Study 3. Early interaction and emotional availability: Understanding the needs of children who are blind. (Appendix B).**

This study was reported in a paper submitted for publication in 2006, following a preliminary report presented at an international conference in 2005 and a background paper presented at the Education Research Conference, University of Western Sydney, 2004. Central to the conceptualization of the study was an understanding of the importance of the voice of the caregiver for children who are blind. While this is
emphasized in commentaries on early emotional development for all children (Trevarthen & Aitken, 2001) there has been little investigation of this aspect of early experience for children who are blind. These children need caregiver input that is frequent, sensitive, and adaptive to their unique communicative needs, in particular the need to know about caregiver feelings and intentions. Preisler (1997) speaks of the importance of parents making themselves psychologically present to their children, through talking about themselves and thus helping the children to become aware of others.

Two case studies involving children who were blind were used to explore these aspects of interaction. Amy and Matt, who with their mothers also participated in Study 1 and Study 2, were both born prematurely, at 26 and 28 weeks respectively. The first year was a difficult time for both children and their families. However, their developmental assessments indicated no additional disabilities, although Amy had continuing health problems.

The interaction was recorded at home in a play context. Maternal input was assessed for frequency and personal references, and the qualities of the interaction were evaluated using the Emotional Availability Scales (EAS) (Biringen, 2000). This rating scale was chosen because it evaluates both adult and child interactive qualities. It is not a quantitative measure of discrete behaviours, but requires trained observers using clinical judgement and contextual cues. I undertook the necessary training to be able to use the EAS. The rating was done by the investigator and an independent observer of the video-recorded interactions. The use of the rating scale complemented the measures of frequency of maternal utterances and personal references, which were taken from the transcripts of the same video-recordings. Maternal utterances were coded in four categories of personal reference: physical features (that’s your pretty hair), general appearance (oh, pretty Matt), feelings (you woke up in such a lovely mood) and wants or needs (want to give her a hug?).

Analysis of mother-child interaction showed differences in the EAS ratings of maternal sensitivity and structuring, although not in the other ratings and not in the ratings of child behaviour. In the sensitivity scale (rated from high to low) sensitivity refers to the parental ability to read and respond appropriately to child cues, maintain positive affect, be sensitive to timing and transition, flexible and creative in play, and to
resolve conflict and misunderstanding. Structuring (rated from optimal to non-optimal,) refers to the appropriate structuring of the child’s play, following the child’s lead, setting rules, and showing parental bids that successfully scaffold the child’s involvement in an unforced way. The full criteria for the six emotional availability dimensions are given in Biringen (2000) and brief definitions are given in Campbell (2006. Appendix B).

Amy’s mother was more talkative and more adaptive to her child’s blindness. She talked about her own features and feelings as well as those of her child, but seemed less sensitive in her interactions, being more managing and demanding of specific responses. In contrast, Matt’s mother was more sensitive and accepting of child behaviour, but was less adaptive to the need to provide more structure and more information about herself and her intentions. The two examples below show differences in response to situations that were difficult for the children.

**Example 1, Matt and his mother.**

Mot: bye
%act: says good-bye to Matt’s brother and father.
Mat: xxx xxx
%act: claps and reaches out to mother.
Mot: did you hear the door shut and you’re not out there?
Mat: [=!cries]
Mot: that’s a bit bad isn’t it.
Mot: you’re going to stay here and play.
Mat: mm.
Mot: oh dear, oh dear.

**Example 2. Amy and her mother.**

Mot: don’t rub your eyes, naughty.
%act: smacks Amy’s hand lightly.
Amy: [=!cries].
Mot: don’t rub your eyes.
Mot: here, let’s find something you can do with both hands.
Mot: here have this one.
%act: offers tambourine, shaking it to make a noise.

Matt’s mother understands and talks about his feelings, but does not help him to move on to play. Amy’s mother is not sympathetic to the eye-pressing (it is potentially harmful), but does move quickly to find something to play with that has interesting sounds. The two cases demonstrate the need in early intervention to support parental interaction style that can be both sensitive and adaptive to the information needs unique to the child who is blind. The study shows how the use of a qualitative evaluation can add valuable information to understanding the experiences of both parent and child, and inform early intervention and support.

**Summary of findings from three studies**

The three studies illustrate different aspects of maternal interaction with young children who are blind. There was no difference in directiveness when mothers of children with blindness were compared to a carefully matched group of mothers whose children were developing typically. Directiveness on its own seemed unlikely to have any direct link with blindness and the delay in early word learning. However the content of maternal input was shown to be affected by the children’s blindness in a number of ways.

The mothers of Amy, Nicki, Sam, and Matt had distinctive individual patterns of interaction, but all found it difficult to share references, provide descriptions, and use language adaptively. In order to engage the children’s attention, they initiated most topics with the result that the children’s words were more likely to be responses to this initiation rather than a way of introducing their own topics. The unexpected finding was that the adaptive references to non-visual attributes, sometimes used at the first time point, declined markedly at the second time point, as if no longer needed because of children’s increased ability to use words and be responsive in interaction. Amy’s mother was the only one to continue to refer to non-visual properties and attributes, which was consistent with her purposeful approach to facilitating Amy’s language development.

The use of a case study design enabled individual differences to be explored, with interesting associations between frequency of maternal talk and children’s gains in word use. Individual differences were explored further in the third study, which followed up
the way mothers talked about personal characteristics and internal states. The two mothers in Study 3 referred to the children’s needs and feelings, but said little about themselves or others. This was also an area requiring adaptation to the children’s need for information. Adaptiveness as an aspect of sensitivity was assessed using the Emotional Availability Scales with interesting comparisons along the dimensions of sensitivity and structuring. The use of this scale enabled some of the qualitative features of the interaction to be evaluated in a way that complemented the analysis of language data.

Overall, the results of the three studies suggest that blindness constrains many aspects of interaction between mothers and children and is implicated in the delay in early word use. Study 2 includes a discussion of lexical theory, which may account for this outcome (Golinkoff, Hirsh-Pasek, & Hollich, 1999). The early years are potentially rich for all parents and children to establish relationships and understandings, and potentially vulnerable to negative experiences. While the experience of young children who are blind is a reminder of this vulnerability, there are broader implications for understanding the needs of children with and without disability who may find themselves in this “developmental limbo”. Suggestions for further research and the implications for early intervention and support are discussed in the next chapter.
Chapter 4: Linking research and practice: implications and recommendations

Since many of the child’s discoveries about the physical and logical properties of the world do not take place in isolation, but in social encounters with familiar adults, this also makes more demands of caregivers and other interactive partners.

Webster & Roe (1998, p.70)

The links between research and practice depend on a comprehensive understanding of what is relevant to professionals and parents in the field. Through my experience in the professional preparation of practitioners as well as the design and delivery of early intervention services, I am very conscious of the need for such connections to be established and maintained. Professionals working in the field seldom have ready access to research findings, and researchers, while making general suggestions, seldom have the time or financial resources to follow through with their findings. Making the links between research and practice is a vital role in professional education that has been the basis of much of my teaching and writing. In this chapter, some specific recommendations will be made in relation to the study of young children who are blind. Then the implications of the research will be discussed in relation to best practice in early intervention, and finally the information needs of teachers and caregivers will be considered with reference to work that I have published to meet those needs.

Recommendations for further research

The studies reviewed in this portfolio demonstrate the difficulties of gathering data from populations with low-incidence disabilities such as blindness. However, the study of congenital blindness is still needed to increase our understanding of the needs of the children and their families. Small group and case study methodologies will enable further investigation to be carried out, but some guidelines would be useful to establish a clear rationale for what might be gained and how the interest of families might be served. This is a different goal from showing that children have developmental problems and that parents fail to provide what is needed for early word learning. Involving parents in the investigation would also allow them to take an active rather than a passive role, with the
potential for positive outcomes.

Information from research findings needs to be shared with teachers and caregivers to lay the groundwork for change in practice, even if some questions about language and blindness are not finally resolved. We do not know yet why some children are slower than others to use early words, although the findings reported here clearly indicate significant factors that can be identified in interaction. Further research is needed in this aspect of early development and experience. Fraiberg (1977) noted that for children born blind, their world had “large empty spaces”. We need to show just how those empty spaces can be filled by words for the world.

Implications for early intervention

The material reviewed in this overarching statement has both general and specific implications for early intervention. The first of these is to do with timing and the understanding of the full implications of communicative delay in young children and recognizing when children need help (Campbell, 2005a, Appendix F; Campbell & Johnston, 2005, Appendix G). This need, whether children are blind or have other additional needs, can be identified early in terms of the range of communicative strategies available to them that can be responded to contingently by their caregivers. Waiting for words to emerge when the context that would enable them to do so is limited in some way, is too late. The importance of rich and mutually satisfying communicative interactions is important both before and during early word use. It is important for both children and parents, whether or not there is a disability, in fostering lexical development for the children and in encouraging the parental responsiveness that will nurture relationships. For children who are blind, these are the experiences that will help them reach out to others and reach out to the world, rather than being literally “in the dark” about their social context.

One of the major factors to emerge from my studies has been a much greater appreciation of the difficulties faced by parents, often still coming to terms with a full understanding of what blindness entails. Communication with someone who cannot see is hard. Parents, so often considered as somehow failing their children by not talking enough, not referring to labels or attributes, or talking about their intentions and feelings, are in fact telling us that this is hard work. The question of whether they should make
particular changes that are adaptive to the children’s particular needs is not a straightforward matter. A question raised by Marfo (1990) in relation to maternal directiveness is how results of studies may be translated into the program goals of early childhood intervention, in particular attempting to reduce maternal directiveness on the assumption that it is an “aberrant interactional style”. Even when an intervention goal is agreed upon, it might be very difficult for mothers to change something as personal as speech style.

In a review of studies of interaction intervention, Barnard (1997, p.264) concluded that individual guidance “directed at the early interactional process, has proven to be an effective intervention strategy” that should be a core component of all early intervention programs. “Intuitive parenting”, the ways parents have successfully interacted and communicated with other children in the family without any professional instruction, may need to be complemented by “constructed parenting”. Parents of children who are blind, within the parameters of family style, may need to talk in an unconventional way, frequently, stating the obvious, describing movement and relationships, and trying to think about what the child needs to know. With good and timely help, each family can be supported to create an effective combination of interaction that is both sensitive and structured. It is this combination that enables early words to be used, setting the direction for the continuing development of parent-child relationships.

Family-centred practice, as exemplified in the early intervention program that I helped to establish and manage from 1992-1998, provides the context in which such support can be provided. The key concepts of early intervention; a sound knowledge base, the professional ability to support families, the importance of typical development and high quality early childhood care and education as a frame of reference, and the advocacy of children’s rights to be given the help that is timely and accessible (Moore, 2005), are all implicated in the recommendations made here. Kelly and Barnard (2000) also recommend that professional preparation programs include skills in facilitating parent-child interaction. This is relevant to my current teaching in two programs; Bachelor of Early Childhood Studies (Child and Family) University of Western Sydney, and Master of Infant Mental Health, NSW Institute of Psychiatry.
Publications designed for teachers and caregivers

My research has taken place against a background of teaching at university level and working with parents in early intervention programs. From my experience and my critical reading of the literature I find good evidence that what parents do and say is important for children’s language development and has long-term consequences for their social and emotional well being. Child language, far from being the isolated product of an innate capacity, is dependent on a rich and responsive social context to flourish. Teachers and caregivers need to be aware of just how much they can do in providing that context. These are major themes in my writing about early language development (Campbell, 1979; 1991). In 2005, I returned to this theme in a monograph written for Early Childhood Australia (Appendix F). The aim was to provide an accessible resource for teachers, caregivers and parents that explained what to expect in typical language development and when to seek help for difficulties.

More substantial writing about early language development in the context of early education settings was written in 1995 and appeared as part of a book (Makin, Campbell, & Jones Diaz, 1995). The two chapters of which I was sole author are included in this portfolio as Appendix D and Appendix E. The book was written to provide information about language and literacy that could address issues faced by teachers uncertain about cultural and linguistic diversity. In Campbell (1995a) I provide an overview of early language development with particular reference to similarities and differences that are culturally based. In Campbell (1995b) there are two main themes in relation to children with disabilities in bilingual families. One is the range of beliefs and attitudes within families and within communities that influence access to early intervention services. The other is to look at the range of beliefs that influence service provision, both within the structure of services and with the professional preparation of service providers. The book was used as a set text for student teachers at the Institute of Early Childhood, Macquarie University from 1995 - 1998.

Teachers working in the field also need information that supports them in understanding the needs of children with disabilities in inclusive mainstream settings. Early communicative development is implicated in many developmental delays and difficulties and is a highly sensitive indicator of developmental well-being. Teachers need
to recognize where there are additional needs for support and assistance. “Does This Child Need Help?” the in-service training program developed by Early Childhood Intervention Australia (NSW Chapter) addresses this information need. The training manual to which I contributed (Campbell & Johnston, 2005, Appendix G) also provides a valuable resource for student teachers. In this chapter we discuss the need to interpret observations of children across developmental domains and within the context of relationships.

Finally, the professional education of all those working in early childhood education, early childhood intervention, and infant mental health services needs to include a comprehensive understanding of the needs of families where children have a disability. My teaching in professional degree programs in these three areas is a constant reminder of how much valuable information and experience can be shared. We tend to divide the field of family services into arbitrary sections that separate families into problem-based territories, when so much could be gained by sharing a common framework of concern for the qualities of early childhood experience that should be shared by all children.
Summary of contributions to the profession

There are three fields of interrelated interests that underlie my research, writing and teaching, at the Sydney Kindergarten Teachers College (which became the Institute of Early Childhood, Macquarie University in 1989), the Institute of Psychiatry from 1998, and the School of Education, University of Western Sydney from 2003. These are first, theories of early development, and language development in particular, with a special interest in the language development of children who are blind. The role of vision in language development is controversial and investigation in this area has proved most interesting. The role of parental input in language experience for children developing typically and atypically has similarly been controversial. Although these debates are important, there has also been a need for sound, research-based information for teachers and parents and this I have provided in a number of ways through course design, conference presentation and publications as shown in Table 3 (p.31).

The second field of interest is the development of children with disability, the transactional nature of experience in an eco-cultural context, and the range of risk factors, including risks to infant mental health. There have been changes in thinking about what teachers need to know about early development and disability (Campbell, 1981; Campbell, 1988) and in understanding the need to place that information in the context of family and culture (Campbell, 1995b, Appendix E). In 1998 I was invited to contribute to the writing and teaching for a new program, Master of Infant Mental Health (NSW Institute of Psychiatry). Through this, my long-term involvement in the field of early childhood education has been broadened to include a more detailed understanding of developmental and clinical issues that arise for many families, including those whose children have a disability.

The development of early intervention and support services constitutes a third field of interest, along with the training and professional development of those working in early childhood education, early childhood intervention, and family support services. My teaching and course design in both undergraduate and postgraduate early childhood teacher education programs have provided the basis for leading innovation in programs and services. In 1993, I was co-founder of a major family-centred early intervention
program, which gave great impetus to my teaching and research. From 2002 I have been Chairman of a family-centred network of regional services, developed to provide a range of inclusive opportunities for children with additional needs and support for their families.

In Table 3 (p.31), I present selected writing for course designs, conference presentations, and publications. The continuum of teaching at pre-service and post-service levels provides the basis for more specific research and writing, with conference presentations providing the opportunity to test my ideas in an academic and professional forum. The course designs reflect the demand for internal courses to be matched by distance education, particularly needed for specialist courses for students who are unable to attend metropolitan universities. The writing for these courses requires a particular understanding of the needs of students in remote locations and, while the course materials are not publications per se, they demand an equivalent high standard of research-based writing. Distance education has brought me in contact with post-graduate students in every part of Australia and New Zealand, while my work in teaching undergraduate students is a reminder of how much care and attention is needed to prepare young teachers for highly complex roles in early childhood education.

The portfolio that I have presented here comprises a considerable body of work that has contributed to the field at different levels and in a range of related areas. At its heart is a fundamental concern for the lives of children.
Table 3: Contributions to the Profession: Teaching, Conference Presentations, and Publications

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References


Campbell, J. (2005b.). *Words for the world: Mothers talking to young children who are blind*. Manuscript submitted for publication.


Appendices

Appendices (A-H) contain copies of work submitted for publication or previously published in refereed journals and books. These works were written while I was a doctoral candidate at Macquarie University from 1994-1997, and from 2002-2003. I enrolled as a doctoral candidate at the University of Western Sydney in 2004. The breaks in enrolment were due to family circumstances. (The library copy of this portfolio includes the first two items only as the other items are available as separate publications.)


APPENDIX A

Abstract

Two features of early language experience, the frequency and relevance of maternal input, have been identified as critical for children’s lexical development. When children are blind from birth their experience of these features appears to be limited. In this paper, case studies of four mother child dyads are used to explore difficulties in interaction when the children were in their second year. Maternal input was analysed at two time points for the frequency of talk, its referentiality, use of adaptive strategies for sharing meaning, and topic management. Analysis of the first case, and through replication three additional cases, revealed limited object reference and use of adaptive strategies, but increased reference to child actions. Theoretical implications for lexical development are discussed.

Keywords

blindness; input frequency; lexical development; mother-child interaction; referentiality
The ways in which mothers talk to their children form the basis for much of our understanding of early language development. While children bring innate abilities to the process of language learning, it is the context of interaction that provides the opportunity for words to be used to share meaning. Mothers are not the only caregivers or family members who provide these opportunities, but they are the ones most likely to be available to their children on a regular basis. What mothers say about the world around them and how frequently they do so, enables children to share that world and participate as increasingly competent conversational partners. These features of maternal input are important for all children, and provide a framework for understanding the difficulties that arise when early experiences are compromised, as they are for children who are blind.

Maternal reference to the child's immediate context has been established as significant for lexical development in sighted children (Harris, 1992; Hart, 2004; Hart & Risley, 1999; Weizman & Snow, 2001). These findings are consistent with the view that children's language develops through interaction (Bruner, 1983) and that features of the linguistic context provided by adult guides lead to the child’s understanding of the world (Nelson, 2001). When children are in their second year, adult speech that is focused on and relevant to their attention provides “optimum occasions for language learning” (Tamis-LeMonda, Bornstein, & Baumwell, 2001).

When mothers talk to their young children about what the children are attending to, they are sharing reference to aspects of the immediate context that are available to both partners in the conversation. Most parents of sighted children in their second year have moved from being child-centred to object-centred in their conversation (Messer, 1997). They assume that the children are interested in objects and respond with object names (“that’s a doggie”), thus providing a referential context based on joint attention to a visible object (Bridges, 1986; Macnamara, 1982; Masur, 1997). Gentner and Boroditsky (2001) explain the early dominance of nouns in the lexicon as an outcome of their correspondence with “cohesive perceptual entities”, but these correspondences are an integral part of the social context to which both adult and child contribute. Adults may provide names, but children invite naming through attention, indication, or participation in familiar games and routines (Messer, 1997). These are the kinds of experiences that Tomasello (2001) considers to be essential for understanding adult intentions within social interaction, as well as providing the basis for word learning.
However, for children who are born blind, the context of interaction is not so easily shared. They do not have access to non-verbal information such as the speaker’s gestures, gaze, intentions or agency. In contrast to the sighted child’s visually rich and busy world, their world has “large empty spaces” (Fraiberg, 1977). Children who are blind are much more dependent on what they are told than those with vision, but at the same time have fewer conventional strategies such as pointing, or offering, for initiating and sustaining adult engagement. Baird, Mayfield, and Baker (1997) suggest that children who are unable to use eye-gaze or gesture as cues to their interests may seem unresponsive to parental initiations, thus further reducing opportunities for learning words. Recent evidence of the importance of frequency and referentiality in maternal input for typical lexical development (Hart & Risley, 1999) suggests the need for another look at the implications for children who are blind.

Around age 1; 6 most children who are blind start to use single words and to play with toys with their parents (Preisler, 1997), a much later achievement than for children with vision. Preisler noted that by age 2;0 individual developmental differences become apparent, both between children, and in parental communication styles. During the age period 1; 6-2;0, parents might expect to be making references to objects and events, led by the child’s interests, but find considerable difficulty in doing so. Thus, Kekelis and Prinz (1996) found that mothers focused almost exclusively on child-centred topics, perhaps because they felt more confident about being understood. Shared meaning may be easier to establish through child-centred talk than through talk about objects that are “absent things” (Urwin, 1984). Nevertheless, objects and their attributes are part of the social context and shared reference to them is part of understanding a wider world.

Moore and McConachie (1994) noted that mothers requested information when talking to their children who were blind, but provided very little in return, even though they had been given advice about the children’s needs for rich and detailed input. In contrast to a group of children with moderate visual impairment, the children with little or no vision who needed more information about their world were actually given less. This result is perhaps indicative of the difficulties for parents in saying something relevant for the child when the focus of attention was hard to determine. However, a study by Conti-Ramsden and Perez-Pereira (1999), which compared the conversations of three mothers and their children, one of whom was blind, found little difference in the quality of input. Their study highlights the role of
Maternal directions that include descriptions, and the importance of this strategy for establishment of joint attention. It is also interesting that the mother of the child who was blind spoke more and used elaboration and repetition as a way of providing a more supportive linguistic context. These findings suggest that quantity, quality and conversational strategies are all important aspects of maternal input for children who are blind.

Maternal reference to the child’s immediate context supports early word learning for all children, but shared references also need to be frequent. Analyses carried out by Hart and Risley (1999) revealed that the amount of talk that children were involved in was related to their cumulative vocabularies and verbal competence. This was consistent with the earlier findings of Harris (1992) that the amount that mothers talk to their children measured in absolute frequencies was a positive predictor of their lexical development. However, Andersen, Dunlea and Kekelis (1993) drew attention to the reduced frequency of maternal input to children who were blind, associating this with mothers’ difficulty in sustaining interaction.

Moore and McConachie (1994) also reported this difficulty. Mothers of the children with little or no vision in their study were noted as making more requests such as “What’s this?” While this is a familiar way of initiating a topic to interest a child who can see, it serves no purpose for a child who is blind unless the referent is immediately tangible or audible. Requests like this are an indicator of the difficulty of attracting the child’s attention in the first instance, as well as the difficulty of being able to sustain attention when the children provide few conventional cues to their interests.

Where shared visual attention is not possible, shared reference might occur adaptively through attention to non-visible attributes and properties. For example, maternal use of auditory cues, established games or routines, and contingent responsiveness to the children’s interests, are all aspects where adaptive strategies might be used, thus supporting shared reference. Landau (1997) questions whether, when given comparable non-visual information, the child can take advantage of this in word learning and whether or not parents actually provide such information. We do not know whether mothers respond to children’s blindness adaptively by sharing attention to non-visible attributes and this needs to be ascertained before answering the question of what the child learns from this adaptive strategy.

Attributes and properties are perceived through a number of sensory inputs other than vision, but, under normal circumstances in early development, perception using modalities such as hearing and touch...
has a developmental track in which vision contributes in either a cross-modal or complementary way (Streri, 1993; Teplin, 1995). The importance of vision as a coordinator of sensory stimuli is shown in the use of achievements like turning to sound (expecting to see a visible sound source) and visually guided reaching (attempting to touch a visible object) as developmental milestones (Fogel, 1997). Without vision, other sources of sensory information are less powerful. Teplin sums this up:

"Of the human senses, vision is unique in its superior ability to organize other sensory information. … And unlike hearing, vision can simultaneously provide information from multiple locations. The developmental progress of a sighted infant is closely tied to these superior perceptual skills conferred by vision." (p. 18).

If perception, particularly visual perception, is essential as a basis for shared reference in interaction and early word learning as proposed by Golinkoff, Hirsh-Pasek, & Hollich (1999), then some of the difficulties for mothers in sharing reference become easier to understand. We expect sighted children to initiate topics for shared reference by showing us what they see, more often than what they hear, touch, taste or smell. Adult responses are most likely to be informative about visible properties, rather than those that are non-visible. However, those expectations must be completely revised to share attention with a child who is blind. The context for children who can see is rich with visual interests, so that frequent, sustained attention and reference to these topics is not difficult for the interactive adult, but frequent and sustained attention to non-visible topics is not something that sighted adults expect.

Such a different requirement is something that Fraiberg (1974) found difficult even for a trained professional. After visiting a child mistakenly thought to be blind, she realised from her case notes that she had talked to him much more than she did to another child who was indeed blind. This experience was a reminder that however much she knew that she should talk with a child who was blind, it was significantly harder to do. This is the situation faced by parents of children who are blind. Even when they know what is important for their children’s language development, an everyday interaction may seem an impossible task.

Delay in early word use is a well-documented feature of the language development of children who are blind (Fraiberg, 1977; Hatton, Bailey, Burchinal & Ferrell, 1997; McConachie & Moore, 1994).
The study undertaken by Hatton et al involved a much larger group of children than previous studies. Of 186 children with vision impairment, the sub-group of 27 children with little or no vision, and no additional disability, was assessed as being less delayed in communication skills than in other developmental domains. Nevertheless, statistical projections pointed to a ten-month delay compared to sighted children, confirming the small group findings of McConachie and Moore. The authors note that the wide range of individual differences in this group, obscured by a group mean, suggests that many factors may be involved, including the transactional nature of a disability. The disability of blindness affects the child, the parent, and the interaction. These three factors are central to understanding the early language experiences of young children who are blind.

The finding in the literature that mothers talking to their children who are blind seem not to provide the kind of input thought to be crucial for children’s early lexical development raises some interesting questions. While there is no evidence that the mothers concerned were negligent or unwilling to talk in a way that was informative, the fact that they seldom did so suggests that this is an area that needs to be investigated further to identify the particular difficulties involved.

Referentiality and frequency are clearly important aspects to be examined, but maternal style is also relevant. Little is known about the use of adaptive strategies such as referring to non-visible attributes. Further, although the child who is blind cannot offer the same cues to interest as the child who is sighted, parents may choose to lead or follow a child’s focus of attention in their choice of topic. A detailed examination of maternal input should demonstrate how difficulties with referentiality, frequency, adaptive strategies and topic management are evident in interaction. This is the central purpose of the present study.

METHOD

The method of case study enquiry (Yin, 1994) was used to examine the way a child’s blindness affects maternal input. The aim of the investigation was to establish a chain of evidence identifying those aspects of maternal input proposed as problematic, namely, referentiality, frequency, adaptiveness, and topic management. The approach to analysis was to study one case in depth, and then through replication to examine a further three cases for confirmation of the patterns found in the first case (Hubermann & Miles, 2002).
Participants

The families of four children who were blind, with no light perception, were contacted through a major agency. All parents agreed to involvement in the study on behalf of their children, and the mothers agreed to being videotaped with their children. The names used for the children, (Sam, Nicki, Matt and Amy), are not their real names.

The mothers' social status ranged from 3.8-4.6 on a scale that measured from a high of 1 to a low of 7 (Daniel, 1983). This social scale is based on field of employment rather than socio-economic status. Three of the four mothers were registered nurses and the fourth was a bank teller. All worked part-time, while other family members cared for the children. There were two parents and older children in all the families, with the exception of Nicki, who was the only child in a two-parent family. All families were provided with home-based physiotherapy services.

The children in the study were all blind from birth, forming a purposive sample (Bernard, 2002). Nicki and Sam were full-term babies and Amy and Matt were born prematurely. At the time of the study all parents reported that their children were using single words, but no two-word combinations. None of the children had any additional disabilities and, with the exception of Amy, were achieving within the expected range at their most recent developmental assessment. Amy’s delay in expressive language development was attributed to a tracheostomy needed during her first year. The characteristics of mothers and children are shown in Table 1.

Table 1 here

Procedures

Observations of mothers and children were videotaped in the family homes, as recommended by Connors and Glenn (1996). Following earlier visits to their homes, video recording began when Sam, Nicki, Matt, and Amy were aged 1; 6 -1; 7 (Time 1) and continued at five-week intervals until they were 2 years old (Time 2). Amy was recorded twice only because of health problems, the second time being when she was 2; 3.

Mother-child interaction was observed during a play session that consisted of free play with favourite toys and a set of toys provided by the investigator. The latter were chosen to suggest familiar
events (cup, bowl, spoon, hairbrush), and early pretend play (doll or teddy, blanket, toy phone). Mothers were asked to play with the children using any of the playthings. Video recording took place over a thirty-minute period, allowing time for mothers and children to settle into play. Unavoidable interruptions such as phone calls were edited out, providing a standard twenty-minute recording that was then transcribed and entered into computer files using Codes for Human Analysis of Transcripts (CHAT) (MacWhinney, 2000) to assist coding and analysis. The transcripts recorded language used by mothers and children and the actions that accompanied their utterances and thus became the database for the case studies.

Data analysis and coding

The Child Language Analysis system, CLAN (MacWhinney, 2000) was used to calculate frequency of maternal utterances, MLU (mean length of utterance), and TTR (type-token ratio). Maternal utterances were further analysed for the incidence of general nouns, a measure used in the study of frequency by Hart and Risley (1999). These measures, taken at two time points, were used to provide information about the frequency, diversity, and noun use in the twenty-minute sample. The children’s input was measured in the same way.

The referential content of maternal input was coded in four categories, based on those used by Della Corte, Benedict, and Klein (1983) and Pine (1994), with two additional categories to identify references to visible and non-visible attributes. The categories were: reference to objects, their visible and non-visible attributes, actions, child features, and other personal features.

Maternal style was coded for topic initiations and deictic or verbal requests. An interesting feature of maternal interaction noted by Moore and McConachie (1994) was the use of deictic requests such as “What's that” or “Do you want this?” The use of such requests, sometimes called verbal pointing, was coded for visual or non-visual referents to identify the incidence of adaptive attention gaining. The occurrence of maternal topic initiations and the occurrence of maternal topic following, that is talking about something that the child was playing with or showed interest in, was also coded, based on the work of Kekelis and Prinz (1996). Examples of all coding categories are given in the Appendix.

Coding reliability was established using Cohen’s Kappa (Cohen, 1960). The investigator and an independent coder took a sample of 50% of the transcript pages for each mother-child pair. Agreement reached .86 for all categories of reference, and for deictic requests and topic management .87.
CASE DESCRIPTIONS

Case 1: Sam and his mother

Sam and his mother were first observed when Sam was aged 1; 4. At that time he used no words, played repetitively with some persistent rocking, seeming generally unresponsive to his mother, although he was reported as using single words. When Sam was 1; 6 his mother seemed to find interaction a little easier. This is how she introduced Sam to a doll.

Mot:    Look at this (places doll in Sam’s arms and helps him touch it).
        It’s a dolly.
        She’s got hair, aah (helps Sam touch the doll’s hair).
        See, and she’s got fingers on the end of her arms.
        See? (folds Sam’s fingers around the doll’s hands).
        And she’s got a nose, Sam.
        Look, aah, a little nose and mouth (places Sam’s hand on doll’s face).

Sam:   Mouth.

Mot:    Yes that’s right, mouth.

Sam’s mother was warm and gentle in interaction, but provided few other examples of information about attributes and qualities. Of 188 maternal utterances at Time 1, only 10% referred to objects, 2% referred to visible attributes and 4% to non-visible attributes. She talked about Sam’s features (one of his early words was “handsome”), and referred to how he was feeling and what he might want to do (“Oh, we’re going to stand up are we?”). More than 20% of her utterances were child-centred, twice as many as were object-centred. As in the example above, the words “look” and “see” were used for attention gaining and investigating, and were accompanied by touch. Sam’s mother also used deictic or verbal pointing, without reference to other perceptual attributes, for example “What have you got?” There were 2% of utterances like this, but twice as many that were adaptive, using touch or sound to gain attention.

At Time 2, when Sam was 2 years old, maternal utterances in the twenty-minute observation had increased to 244, but there were fewer references to objects, their non-visible attributes or how they should
be used, and no references to the actions of objects. Scripts or rhyming games were hardly used at all, although Sam began to sing Jingle Bells during the play session, suggesting that this was a familiar routine.

Figure 1 shows the changes in the referentiality of maternal input for Sam from Time 1 to Time 2.

As shown in figure 1, child-centred references (combining reference to features, appearance, states and intentions) declined, but reference to child actions increased. Talk about the personal qualities of others increased slightly, but Sam’s mother made no reference at either time to her own feelings or characteristics. Adaptive references and requests were few at age 1; 6 and even fewer by age 2; 0.

The style of verbal interaction that Sam’s mother showed was remarkable for its consistency and dominance of child-centred references, which moved from talk about features at Time 1 to talk about actions at Time 2. Although objects were named, their attributes, uses or actions were seldom mentioned. Adaptive reference and attention gaining evident at Time 1 was almost non-existent at Time 2. It was possible that as Sam became more responsive, interaction became easier and there was less need to work at being adaptive.

In terms of topic management, the balance moved a little in Sam’s favour with an increase in topics that followed what he was attending to and a reduction in the overall number of topics as he became able to sustain an interest for longer. Although there was more talk when he was older, it was less adaptive and less informative, with more emphasis on child action. Frequency of maternal utterances increased, but mean length of utterance (MLU) and type-token ratio (TTR) stayed the same, suggesting that although there was more talk it was not more elaborate. Maternal noun use increased slightly from 13.65 % to 16.8% as a percentage of all word types, and includes all nouns, not just names and labels of objects.

Although Sam was taking a more active role in interaction at Time 2, his MLU remained less than 2. His word count increased from 23 to 50, but at Time 2 there were proportionately fewer nouns than at Time 1. (Time 1: 30.4%. Time 2: 22%). Using the noun categories employed by Hart (2004) the number of words for toys and furniture stayed at 3, words for the body and food increased from 3 to 5, and words for people and animals increased from 1 to 3. At neither time point did Sam use words for outside or remote locations.
Although these samples taken from the twenty-minute recording are only indicative of a total
lexicon, it does not suggest the pattern of rapid increase in noun use found in the early language of typically
developing children as reported by Bates, Marchman, Thal, Fenson, et al. (1994). In that study there was an
increase in nouns as a percentage of children’s first 50-100 words from 40% to more than 50%. This level
of increase is not shown in Sam’s lexicon. His word use reflects his language experience of talk that was
mostly about himself, with increasing emphasis on his actions. Information about others, their intentions or
feelings, was minimal. The constraints of blindness were not only to make interaction difficult in terms of
what to talk about, but also to limit the child’s understanding of the role of the interactive partner.

In the three additional case studies, involving Nicki, Matt and Amy and their mothers, there is
evidence of similar problems, but also a range of individual differences. These will be discussed below in
terms of the referentiality, frequency, and topic management of maternal input.

Referentiality

Maternal input for Nicki, Matt and Amy showed substantial increases in reference to objects by
Time 2, and a small increase in reference to attributes. As in Sam’s maternal input, reference to non-visible
attributes dropped by about half for Nicki and Amy, but more than doubled for Matt. Matt’s mother was
not very talkative at Time 1, watching his play with occasional (“that’s right, you’ve got it”), but providing
very little information. This changed when she began to attend a playgroup for children with visual
impairment. By Time 2 her references to objects increased from 4% to 18.8%, and to non-visible attributes
from 1% to 4%, making her input more like that of the other mothers.

Talk about conventional use of objects decreased for Matt and Nicki, but increased for Amy who
was the only child to be given more information of this kind at Time 2.

Mot: (Amy is combing her hair with the spoon). “No, that’s not what you do with a
spoon, is it? Spoon is for mouth.”

There were very few references to the dynamic properties of objects at either time point for any child.
Dunlea (1989) noted that children who were blind did not refer to the activities of others or dynamic states.
This information is not available to children who cannot see what is happening, or who is doing what,
unless they are directly told and, in these observations, they were not given this type of information.
The dominant feature of maternal utterances at both time points for all children was the use of references to personal action, with the greatest increase for Matt (27%-38%). He was the only child to be walking independently at age 2; 0, which may account for some of this change. Maternal reference to child actions was high for Nicki at Time 1 (42%) but had dropped to 37% at Time 2. Maternal reference to child actions for Amy remained consistent at 30%. References to child action centred on suggestions for play and use of toys and these references made up between 25% and 40% of all maternal utterances at Time 2. While this follows the shift from object-centred to action-centred described by Adamson and Chance (1998) in the experience of sighted children, it does so without the richness of preceding object references.

Reference to child features, appearance, and internal states dropped sharply for all children at Time 2, but reference to child intentions increased or showed only minor change. It is possible to see a link here between parental talk about what children might want to do and their increased capacity to respond with appropriate words or action. Maternal references to others declined with the exception of Amy’s mother who talked about her own appearance and feelings as well as the features of toys at both time points.

Amy’s mother’s references were a valuable way of guiding awareness of others, building on the more subtle cues of touch, tone of voice and information about intentions and states. Preisler (1997) questions whether the focus of early intervention programs on mobility, hand use, and words for objects, bypasses the needs of parents and children to talk about emotional states. With the exception of Amy’s mother, there was very little talk of this kind, particularly of the feelings of others. The long-term consequences of this have been shown by Preisler to be difficulties in social interaction, suggesting the need for more research in this area.

Frequency

The frequency of maternal utterances in the twenty-minute observation increased in every case, but with interesting variations. In a pattern similar to maternal input to Sam, there was little change for Nicki, suggesting a consistent interactional style. However there were major changes for Matt and Amy. Maternal utterances for Matt increased from 74 at Time 1 to 228 at Time 2, a total similar to that for Sam and Nicki. Amy’s mother was the most talkative at both time points with totals of 258 and 390.
The increase in input frequency for Amy and Matt could be attributed in part to additional intervention support they received between Time 1 and Time 2. Amy and her mother gained the support of a speech pathologist, and Matt and his mother began attending a playgroup for children with visual impairment, giving her as she said, “Someone to talk to about what it’s like”. Amy’s mother reported that she had particular goals in mind in providing a running commentary during interaction and in using labels and adaptive references wherever possible.

Frequency, however, entails more than word quantities. While input provides lexical data as well as structural features, the frequency of this provision depends, in turn, on interactions that are meaningful for children and sustainable by their caregivers. It is the relationship between children’s bids for attention and interest in their surroundings that determines the frequency with which caregivers provide the information needed for all aspects of children’s language development. For children who are blind, input provides information that they may depend upon more than children who are sighted, for example, cues to maternal location, and affective cues in prosody. While this information was potentially available, and increasingly so by Time 2 as input increased, information about objects and their names and labels did not increase at the same rate. The number of nouns used by all mothers at Time 2 (12-16%) was a small percentage of all words. Amy’s mother was the only one to substantially increase her noun use from 9%-15%. The dominance of naming and labelling in maternal input found by Hart and Risley (1999) in their study of sighted children is not evident here. As in Sam’s case, maternal MLU and TTR showed very little change. Although there were more utterances, they were neither longer nor more syntactically elaborate, nor in terms of names and descriptions were they more informative.

Topic management

As the children began to use more words in the interaction, so the topic initiations changed from being mostly led by mothers, to an increase in following the child’s lead, responding to child actions or words. The increase in topic following suggests that there were more cues to children’s interests to which mothers could respond. This also led to fewer but more sustained topics. Even at Time 2 when there was more balance between topic leading and topic following, it was the mothers rather than the children who initiated talk about objects, most often to interest the children in play with toys. Adaptive attention-gaining, using non-visible means, was minimal at Time 2 for Amy, Nicki and Matt as it was for Sam, and the use of deictic requests such as “What’s this?” persisted. As with adaptive references to non-visible attributes, adaptive attention gaining was less evident as the children’s ability to participate in the interaction increased.
At Time 1 scripts or formats were used to distract Matt, Amy, and Nicki from eye pressing or at other times when they seemed restless. This use declined, reflecting the children’s greater ability to stay engaged in the interaction. However, for Amy and Nicki, rhyming games were used in a different way at Time 2, using turn-taking, imitation and repetition.

Mot: What has the lady got on her fingers and toes?

What’s she got?

Rings.

Nicki: Rings.

Mot: on her..

Nicki: ...fingers and bells on her toes.

Mot: That’s right.

Mot: She shall have…

Nicki: music wherever she goes.

The highly predictable format of rhymes and songs provided a form of interaction that both mother and daughter enjoyed.

Outcomes for Amy, Nicki and Matt

The major change from Time1 to Time 2 for all the children was their increased ability to participate in interaction, although mostly with single words (reflected in a T2 MLU of less than 2). For Amy and Nicki the percentage of their words at Time 2 that were nouns was substantially increased (from 0-22% for Amy and from 12.5% to 31.7% for Nicki). For Matt the change was from 10%-12.9% only. The most frequent spontaneous noun use was to request food or drink; ice cream, chocolate, biscuits and drinks. Nicki named several of her toys spontaneously and added “playgroup” as a descriptor of where a similar toy was located, the only example found of generalising and also referring to a remote location. All of the children named toys in response to maternal initiations.
In the figure below the four noun categories employed by Hart (2004) are used to show the range of usage by all the children, including Sam, at Time 2. They are given in absolute frequencies rather than percentages because the numbers are so small.

The number of nouns recorded for the children in the Time 2 twenty minute play period ranged from 25 for Nicki to 6 for Matt. The individual differences are very apparent here, but all recorded noun uses are small. Nicki had more words for toys, furniture, people and animals than the other children. Apart from her reference to “playgroup” there were no references to outside or remote locations and almost no words used to refer to the existence or attributes of others. The children’s noun use, as in the case of Sam, is indicative of maternal input that continues to be largely child-centred rather than object-centred. In the data reported by Bates, Marchman, Thal, Fenson, et al (1994) there was an increase in nouns as a percentage of the first 50 words -100 words from 40% to more than 50%. The total word types for Nicki, Amy and Sam, place them within this 50-100 words level, but the percentage of nouns is much lower.

Theoretical implications

Golinkoff, Hirsh-Pasek and Hollich (1999) propose principles of reference as the basis of lexical development, based on their studies of sighted children in the second year. They found that children were first drawn by perceptual salience and only by age 2; 0, coinciding with a vocabulary spurt, were able to use a full “coalition” of pragmatic and structural cues. The first tier of cues in their model enables children to begin to use words in a “slow and piecemeal way” by using social-pragmatic cues, while the second tier, built on the first, enables them to use features of linguistic input they were not able to use earlier. Such a model may account for the way some children who are blind are slow to use words, but not subsequently to have problems with the structural features of language (Landau, 1997). Some children who are blind are eventually able to utilize other cues, taking alternative routes to language development (Conti-Ramsden & Perez-Pereira, 1999: Hatton et al, 1997; McConachie & Moore, 1994). What can make a difference to
accessibility is the kind of adaptive parental input as described by Peters (1994) where references to objects and attributes are consistent, frequent, and often framed in a formulaic way.

The chain of evidence in the case studies presented here suggests that for children who are blind, both availability and accessibility are limited, which in turn restricts the children’s development of a mature principle of reference, and the concomitant rapid increase in vocabulary. Under these circumstances, with limited access and availability of cues, the interactional style and choice of topic provided by caregivers are both very important. As shown in this study, adaptive style, that is, replacing visual information and cues with cues that are otherwise perceptible, diminished for all the children except Amy, as the children’s ability to respond increased. It was almost as though their use of words, however “slow and piecemeal”, negated the referential restrictions of blindness, and no further compensatory effort was needed. Although the children’s word-use made interaction easier and was matched by increased frequency of maternal input, the qualities of information did not increase in the same way, remaining more focused on the child than on attributes of objects or others.

Objects and their attributes do not have, and probably never will have, the kind of salience for children who are blind that they have for children who are sighted. The importance of talk about objects lies not only in the information about the physical world that is conveyed, but also as the coinage of conversations, which enables co-construction of reality. In an investigation of “autistic-like” features in older children who were congenitally blind, Brown, Hobson, Lee and Stevenson (1997) concluded that these children may have a special problem in understanding how attitudes are directed at objects and events in a shared world, but if they are given appropriate social experiences they may find other ways of achieving co-reference. Those appropriate social experiences begin in early interaction.

What parents talk about and how they manage a conversation is important and difficult. Their task is to make “bridges between the child’s inner world and the world outside” (Webster & Roe, 1998. p.70). This requires adaptive, and what might seem to be unconventional uses of language, because the words must carry additional referential substance. In the case studies reported here, the topics of conversation were more to do with that inner child-centred world and very little to do with the outside world or the feelings and intentions of others. Unlike the shift in emphasis from child-centred to object-centred described by Messer (1997), the outside world and the world of objects did not play a major part. The most
interesting and knowable objects for the children were themselves and understandably, since this was meaningful to both mothers and children, talk about themselves was a dominant topic of conversation, first in terms of features and then in terms of actions.

Freire (1977) refers to the “difficult apprenticeship of naming the world”, and from the case studies reported here, we can see that there is none more difficult than for children who are blind. It is also a difficult apprenticeship for parents who need to learn how to adapt their interactional style, talk about themselves, and confront everyday assumptions about reality. This can be assisted through the kinds of support utilised by the mothers of Amy and Matt, but, ideally, such support should be available right from the start so that all the early communicative experiences receive attention.

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Appendix: Examples of maternal input categories taken from the transcripts.

Maternal reference to objects

1. Labels or names for one or more items, but no additional information, “Here's your plate and spoon”.
2. Visible attributes (colour, shape, dimensions, number, location) “Oh, that's a hard one” (looking at a star-shaped block), “There's a bowl down there” (looking to side).
3. Non-visible attributes (sound, touch,) “Good sound there” (to child pushing truck).

Maternal reference to actions

1. Personal actions. “You feed the dolly”.
2. Familiar games or routines. “Can you do Donald Duck?”
3. Object-related actions or processes. “The wheels go round”.
4. Conventional uses. “Yuk! You don’t put your hairbrush in your mouth”.

Maternal reference to child characteristics including internal states

1. Naming and/or describing body parts. “That's your pretty hair”.
2. Describing general appearance “Oh, pretty Matt”.
3. Describing internal states and feelings. “You woke up in such a lovely mood”.
4. Inferring child wants, needs, or intentions, “Want to give her a hug?”

Maternal reference to self or other, including personified toys

1. Naming and/or describing body parts. “Find Mummy's nose”.
3. Describing internal states and feelings. “He wants a kiss”.
4. Inferring wants, needs or intentions. “Do I get a clap for that one?”

Attention-gaining

1. Deictic requests using demonstrative pronouns, this, that, here, there, with visual cue. “What about that?” (pointing to phone).
2. Deictic requests using auditory or tactile cues “Want to play with this one?” (plays music box).

Topic initiations, (topic leads) and maternal response to child topic initiations, (topic follows).

1. Topic leads. “Hey, what’s this?” Mother shakes the toy making its bell tinkle. “That’s lamby, hmm?”
2. Topic follows (initiated by the child with word or action that mothers followed). Sam picked up his comb, his mother said, “Oh, can you comb your hair?” responding to his lead.
Table 1

Characteristics of Children and Mothers

<table>
<thead>
<tr>
<th></th>
<th>Age T1</th>
<th>Age T2</th>
<th>Diagnosis</th>
<th>Birth order</th>
<th>Pregnancy</th>
<th>Maternal status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amy (f)</td>
<td>1;7</td>
<td>2;3</td>
<td>a ROP</td>
<td>6</td>
<td>26 weeks</td>
<td>3.8</td>
</tr>
<tr>
<td>Nicki (f)</td>
<td>1;7</td>
<td>2;0</td>
<td>b ONH</td>
<td>1</td>
<td>full term</td>
<td>4.6</td>
</tr>
<tr>
<td>Matt (m)</td>
<td>1;7</td>
<td>2;0</td>
<td>ROP</td>
<td>3</td>
<td>28 weeks</td>
<td>3.8</td>
</tr>
<tr>
<td>Sam (m)</td>
<td>1;6</td>
<td>2;0</td>
<td>Anophthalmia</td>
<td>2</td>
<td>full term</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Note a.  
ROP  Retinopathy of prematurity

Note b.  
ONH  Optic nerve hypoplasia
Figure 1. Maternal references for Sam at Time 1 and Time 2 shown as percentages of total utterances.
Figure 2

Total counts of noun use by children at T2 in four categories, with total word type in brackets.
APPENDIX B

Early interaction and emotional availability: Understanding the needs of children who are blind

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Early interaction and emotional availability: Understanding the needs of children who are blind

Abstract

For young children who are blind the language of the parent is the link to both the world of objects and the world of feelings. What parents say about feelings and intentions is an important part of learning about self and others. This aspect of early interaction is explored through two case studies in which the children, whose blindness resulted from retinopathy of prematurity, were both aged 19 months. Maternal input was assessed for frequency and personal references, and the qualities of the interaction for both mother and child were evaluated using the Emotional Availability Scales (Biringen, Robinson, & Emde, 2000). This comparative study illustrates some of the difficulties for parents in adapting to the needs of young children who are blind.

The way in which mothers and babies look at each other is an important element in early relationships (Stern, 1985). Through eye contact babies come to understand the agency and intentionality of
others and to develop the capacity for intersubjectivity, that is, an ability to share feelings with others and to deliberately engage with them (Trevathan & Aitken, 2001). Without eye contact, as is the case for children born blind, other ways must be found to develop and sustain relationships. Interaction provides the opportunity for parents to become emotionally available through responsiveness and adaptation to the particular needs created by blindness. In particular, the caregiver’s voice establishes a physical presence and location not dependent on touch. Caregivers’ voices also make them psychologically present and emotionally available through references to affective states and personal features. These qualities of caregiver talk are particularly important for building awareness of self and others (Harel, J., Oppenheim, D., Tirosh, E., & Gini, M. 1999).

The way in which parents usually talk to their young children “intuitive parenting” (Meadow-Orlans & Spencer, 1996) may not meet the needs of children who are blind. All the cues that are obvious for the sighted child in interaction must be actively presented to the child who is blind, and interest created through suggestion and encouragement. The primary information source then becomes the caregiver who both mediates and translates what is there in the context of the interaction. This role, described as that of “treasurer” of the child’s world (Nesker-Simmons & Davidson, 1985), places an unexpected demand on parents and caregivers to use language in interaction in very specific ways, to talk about feelings and intentions, as well as physical entities. As Fraiberg (1974) pointed out, a sighted baby does not need an extraordinary mother, but children born blind do.

Review of the literature

There are two consistent findings from studies of parental interaction with young children who are blind. The first is that there is less talk than for children who are sighted or have even a little vision (Andersen, Dunlea, & Kekelis, 1993). The second is a notable difficulty in naming and describing objects and events that are relevant to the child’s focus of interest (Moore & McConachie, 1994). However, frequent and relevant talk in the second year is just the kind of language experience shown to be essential for early word learning for all children (Hart & Risley, 1999; Tamis-LeMonda, Bornstein & Baumwell, 2001). The delay in early word learning, noted in the experience of children with blindness (Preisler, 1997), not only affects their language development, but also constrains their ability to participate in conversations that enable meaning to be shared.

Emotional development for all children takes place within interactions that “mirror” the child’s sense of self, a process which may be at risk where one or other partner in the dyad is unable to participate in the expected way (Murray, 1991) as is the case when a child is blind. This has implications not just for the just for the quality of interaction and communication between caregiver and child, but also for the long-term capacity of children to understand the emotional reactions of others (Hobson, 1993; Recchia, 1997).

For parents interacting with their children who are blind the lack of conventional cues to each other’s interests, feelings and intentions constitutes a major challenge. Parents were reported by Preisler (1997) to have difficulty in talking about themselves and their feelings. She concluded that “from a blind child’s
perspective, it must be difficult to form a stable inner representation of another who is neither visible, nor showing her or himself in any other way’ (p. 76.). From the parents’ perspective it may not be easy to adapt to this unconventional need for information about themselves.

These findings in the literature highlight the difficulties for parents and their children who are blind, indicating the importance of adapting to the particular need for information about feelings and intentions. The importance of emotional availability in interaction has been demonstrated in a study of mothers and children with hearing-impairment (Pressman, Pipp-Siegel, Yoshinaga, & Deas, 1999), but there has been no similar study involving children who are blind. Through the case descriptions presented here, the interactive roles of mothers and children are explored. Personal references and frequency of maternal input are considered, as well as the ways in which mothers and children make themselves emotionally available.

Method

The research strategy of case study enquiry (Yin, 1994) is used to explore the ways in which blindness affects mother-child interaction. The aim is to establish a chain of evidence identifying those aspects of interaction that might be at-risk, in particular, emotional availability of mothers and their children to each other. The study was approved by the University Ethics Committee in 2002. The parents gave written consent to involvement in the study on behalf of their children, whose names have been changed, and the mothers agreed to the play sessions being recorded on videotape.

Participants

The participants in this study were identified with the assistance of a major agency providing services for the visually impaired. Both mothers were registered nurses and both children had older siblings. The two mother-child dyads formed a purposive sample (Bernard, 2002) as the children had been diagnosed with retinopathy of prematurity (ROP) and had no light perception. Children with this diagnosis are sometimes excluded from studies of blindness because of their high-risk status (Goldson, 1996). However, in spite of medical advances, ROP continues to cause blindness (Teplin, 1995) and there is a need to understand more about the early experiences of these children within a family context. At the time of the study, both Matt and Amy were achieving generally within the expected range at their most recent developmental assessment. At age 19 months, both were reported to be using a few single words, but there were some concerns about Amy’s expressive language.

Procedures

Interaction between mothers and their children was recorded in their own homes. Mothers were invited to play with their children using some favourite toys and some chosen by the investigator to suggest familiar events (hairbrush, cup, bowl and spoon) and early representational play (doll or teddy, blanket, and toy telephone). Video recording took place over thirty minutes to allow for time to settle into play. Interruptions such as phone calls were edited out, leaving a twenty-minute sample for both mother-child dyads.

This report is based on the descriptive analysis of two main features of the recorded mother-child interactions. The first consists of detailed analysis of frequency of maternal input overall, as well as frequency of maternal references to personal features, states, and intentions. The second analysis comes
from the application of the Emotional Availability Scales (Biringen, Robinson, & Emde, 2000), which evaluate both partners in the dyad for the ways in which they are emotionally available to each other. This rating scale was chosen because it evaluates both adult and child interactive qualities. It is not a quantitative measure of discrete behaviors, but requires trained observers using clinical judgment and contextual cues. Permission to use the EAS was given following training and validation. The use of the rating scale complements the measures of frequency of maternal utterances and personal references.

Measures of maternal input

The use of computerised coding of the transcripts (Child Language Analysis: CLAN, MacWhinney, 2000) allows frequency of utterances to be calculated. Total frequency is important in itself, but it also provides a basis on which the relative frequency of particular features can be calculated. The transcripts were reviewed and the following coding categories were developed based on those used by Della Corte, Benedict, and Klein (1983).

Maternal utterances were coded for references to the child in four categories, as shown in these examples taken from the transcripts.

1. Naming or describing physical features. “That’s your pretty hair”.
2. Describing general appearance. “Oh, pretty Matt!”
3. Describing internal states and feelings. “You woke up in such a lovely mood”.
4. Inferring wants, needs, or intentions. “Want to give her a hug?”

Maternal utterances were also coded for reference to self or other, including personified toys.

1. Naming or describing physical features. “Find Mummy’s nose”.
2. Describing general appearance. “Oh, pretty Teddy”.
3. Describing internal states and feelings. “I thought I was very good.”
4. Inferring wants, needs or intentions. “He wants a kiss.”

Coding reliability was established with the investigator and an independent coder sampling 50% of the transcript pages, reaching agreement of .86 using Cohen’s Kappa (Bakeman & Gottman, 1997).

Evaluation of emotional availability

The Emotional Availability Scales (EAS) were developed by Dr Zeynep Biringen to evaluate mother-child relationships through observation of interaction in a play context. This approach builds on the theory of attachment (Ainsworth, Waters, Blehar, & Wall, 1978) but differs in an emphasis on the role of the child, the lack of induced stress in the play context, and a definition of sensitivity that is not based solely on the mother’s ability to be responsive (Biringen, Robinson, & Emde, 2000). This is particularly important for the mother-child case studies considered in this report, because of the ways in which maternal responsiveness is constrained by the child’s blindness.

The scales consist of four parental dimensions and two child dimensions. Brief definitions of each component are given below.
1. Sensitivity: parental ability to read and respond appropriately to child cues, maintain positive affect, be sensitive to timing and transition, flexible and creative in play, and to resolve conflict or misunderstanding.
2. Structuring: appropriate structuring of the child’s play, following the child’s lead, setting rules, and showing parental bids that successfully scaffold the child’s involvement in an unforced way.
3. Non-intrusiveness: the parent’s ability to be available to the child without being overdirective, overstimulating or overprotective.
4. Hostility: the parent being overtly hostile, threatening, harsh or frightening, or showing covert signs of boredom and impatience.
5. Child responsiveness: willingness to engage with the parent, following a bid or suggestion and the affective quality of that response.
6. Child involvement: engaging the parent in play, balanced with autonomy.

Agreement between the investigator and an independent rater for the EAS was .89 (Pearson’s r).

Case descriptions.

The following case descriptions illustrate the constraints of blindness on interaction between mother and child, and individual differences in maternal response to those constraints. These differences are demonstrated through assessment of the frequency and affective content of maternal input, and through evaluation of emotional availability.

Case 1.

Matt was born at 28 weeks in a country hospital and transferred to an interstate Neonatal Intensive Care Unit (NICU). His six months in hospital were very difficult for his family, who needed to spend time with him and also care for two older brothers. However, Matt made good progress and a full developmental assessment at 18 months showed him to be developing within his age-range in all areas.

Matt’s mother was quietly supportive throughout the play session, but not very talkative. There were 74 maternal utterances in the twenty-minute play session of which 14.86 % referred to Matt’s features, states or intentions, 9.45 % referred to those qualities in others (in this instance a doll), and 1.35 % referred to her own intentions. Much of what she said was to encourage play, “You make it go,” but with few labels or descriptions. When Matt initiated play, his mother was responsive, but provided little in the way of elaboration.

Sensitivity

In this interaction Matt’s mother was rated as generally sensitive, using the definition of sensitivity meaning ability to read and respond appropriately to child cues. She was warm and responsive to Matt’s initiatives most of the time, and responsive to his emotional cues as shown in the following example where Matt’s father and brother can be heard going out the front door.

Mot: Bye

Matt: (vocalizes, claps his hands and reaches out to his mother).

Mot: Did you hear the door shut and you’re not out there?

Matt: (cries)
Mot: That’s a bit bad, isn’t it?
Mot: You can’t go.
Mot: You’re going to stay here and play.

While this episode demonstrates the ability to be responsive to emotional cues and share reference to auditory cues, the lack of further explanation or elaboration on what was heard and what it signified, also illustrates some of the limitations in this interaction. Blindness creates particular conditions for evaluating parental sensitivity, which must be adaptive to additional needs for explanation of what might be obvious to the parent, but unavailable to the child.

Parental structuring

This scale evaluates the degree to which the parent appropriately structures the child’s play. This involves providing adequate information and scaffolding the child’s involvement. In the following example Matt is given a doll for the first time.

Mot: Where’s dolly? (placing doll in Matt’s lap).
Mot: Want to give her a hug?
Matt: Oh (bending over doll).
Matt: Eh, eh.
Mot: (laughs). Babies do that, don’t they?
Matt: Eh, eh (exploring doll’s face and hair).
Mot: What’s dolly doing?
Matt: Eh (grabs doll’s hair).
Mot: Dolly’s hair, dolly’s hair.
Matt: Yeah (pats doll’s face).
Mot: Give dolly a hug. Oh, hug the baby.
Matt: Eh, yeah (throwing away the doll’s blanket and exploring the hands).
Matt: Eh, eh (claps doll’s hand between his two hands).
Mot: Crying. Is bubby crying?
Matt: Yeah, eh.
Mot: Give her a hug. Can you hug the baby?
Mot: Give her a kiss, the baby a kiss, give dolly a kiss.
Matt: Oh (claps doll’s hands between his two hands).
Mot: Hands, fingers.

The length of this episode is sustained by Matt’s excitement as he explores the doll. While his mother is generally responsive, she does not provide the kind of structure that could have made this episode very rich. This is inconsistent structuring as defined in the EAS, apparently following the child’s lead, but not matching comments to what the child is actually doing and saying. Matt is given general information about what to do, and confirmation of the sound of baby crying, but there is not much attention given to what he is interested in beyond brief labeling of the doll’s hair, hands, and fingers.
Parental non-intrusiveness

This refers to the parent’s ability to be available but not overly directive. There are dilemmas here when parents may feel there is a need to re-direct play that has become repetitive. Matt’s mother occasionally used distraction, but most of the time was content to wait for him to change direction on his own. The more subtle aspect of this quality is the extent to which play-behavior is accepted, without raising the possibility of something more complex that could be achieved through more finely tuned structuring.

Parental hostility

Matt’s mother showed no signs of either overt or covert hostility, remaining warm and gentle throughout the interaction.

Child responsiveness

This is not easy to identify when a child is blind. Matt’s mother invited him to come to her when he pulled himself to stand. She touched his free hand to signal that she was close by, but after eight requests he stayed turned away from her. In the episode with the doll he is excited, but this is about the doll rather than the parent.

Child involvement

This scale rates the child’s balance between autonomous play and involvement of the parent. Many ways of engaging the parent, such as looking and pointing, are not available to the child who is blind. Matt reached out to the sound of the door and used a handclap, perhaps to draw attention or emphasize his frustration. With increased mobility, children like Matt can move towards the parent more easily and, as word use increases, words can also be used to engage the parent, but Matt’s three identifiable words in this interaction (doggie, good, and jump) were not used in this way. Children who are blind may use their words in very restricted ways (Peters, 1994).

In this first dyad, maternal interaction is sensitive, but not always effective in structuring, or in providing the frequency of talk that is fine-tuned to the child’s need for adaptive information. In the second dyad, described below, there are many differences, particularly in the balance of sensitivity and structuring.

Case 2.

Amy was born at 25 weeks and spent most of her first year in hospital. A tracheotomy was needed to help with lung function and, although the tube was removed before discharge, she continued to need periodic oxygen support. Her delay in expressive language was attributed to this treatment and the family was given advice from a speech pathologist about specific strategies to use in interaction.

Amy’s mother was talkative, providing a running commentary as she played with her daughter. With 258 utterances in the twenty-minute observation, this was more than three times the frequency provided for Matt. There were more references to Amy’s features, states, and intentions (22.09%), and more references to herself (6.58%), including features and intentions. Unlike the relaxed watching and waiting which was observed in the interactions between Matt and his mother, this play period was
informative and busy. In the following example Amy’s mother links self and other through shared reference.

Amy: (touches her hair).
Mot: Yeah, that’s your pretty hair.
Mot: Where’s my pretty hair?
Mot: (shaking her hair over Amy’s hands). Where’s mummy’s pretty hair?
Mot: Where’s Mummy’s pretty hair? She hasn’t got any (laughs).
Mot: That’s Amy’s pretty hair, isn’t it, huh? (touching Amy’s hair).
Mot: That’s Amy’s.

Sensitivity

Amy’s mother was generally sensitive to child cues, as in the example above, and looked for different ways to engage Amy in play. She expressed concern over whether Amy felt tired, hot, or needed medicine and in so doing made references to internal states, feelings and intentions. Conflict was handled by using distraction, but there was also an element of frustration when Amy persisted in rubbing her eyes. In the following example, she reacts by smacking Amy’s hand and then quickly finding something else to do.

Mot: Don’t rub your eyes, naughty (smacks Amy’s hand lightly).
Amy: (cries).
Mot: Don’t rub your eyes.
Mot: Here, let’s find something you can do with both hands.
Mot: Here have this one (offering a tambourine and shaking it to make a noise).

This episode is quite indicative of the interaction as a whole, where Amy’s mother is intent on achieving particular goals (no eye rubbing) at the cost of some sensitivity, but also able to quickly turn to alternatives and provide structure for play and interaction.

Parental structuring

Amy’s mother was able to successfully structure play. In a lengthy sequence of finding toys in a bucket, Amy was praised with each new find and the toy was named and described. When Amy began to tire she was given hugs and kisses for being clever and something new was introduced. Although Amy was able to lead the play she was very dependent on her mother’s ability to follow her and make something of it.

Parental non-intrusiveness

The play session was quite intensive and seemed somewhat intrusive, with quite sudden changes of activity, sometimes missing Amy’s latent response. Nevertheless, Amy could refuse to comply, shaking her head when her mother suggested she say something. Amy’s mother used language in a way that was not conventional and would have seemed redundant and overwhelming for a sighted child, but for Amy it provided information, structure and interactive roles.

Parental hostility
Apart from the hand smack, there were some signs of frustration. Interaction with Amy required patience.

Child responsiveness

Amy smiled from time to time and responded to her mother’s bids with head shaking, vocalizing and handclaps. She searched for toys in the bucket and maintained the reciprocal sequence of finding something for her mother to talk about.

Child involvement

Amy had limited strategies for taking initiatives that would involve her mother. Twice she reached out and held her mother’s hair, but most of her actions and vocalisations were responses to her mother’s initiatives. As for Matt, these two categories of responsiveness and involvement demonstrate the constraints imposed by blindness on the children’s range of ways to reach out to others.

In reviewing these case descriptions it can be seen that both mothers were warm and sensitive to their children, but differed in their response to perceived needs. There was a clear focus on the needs of Amy as a child who was blind, in contrast to Matt for whom there were few adaptations to his blindness. Both parents made themselves emotionally available in the interaction, but with Amy’s mother this came through the structure of play and the verbalisation of psychological qualities. Matt’s mother provided warmth and encouragement, but comparatively few words and little that would meet his need to understand more about the agency and intentions of others.

Discussion

These two cases illustrate a dilemma in early intervention for children with disabilities (Gilkerson & Stott, 2000). A parent’s primary or “intuitive parenting” must be respected as an essential part of early relationships (Papousek & Papousek, 1987). On the other hand a more deliberately constructed style of parenting may be necessary as an adaptation to a child’s particular developmental needs. The mothers in the interactions described here needed a balance between the intuitive and the constructed, to be both sensitive and effective in structuring play, and informative about the social and emotional context.

Emotional availability has been described as the “connective tissue of healthy socioemotional development” (Easterbrooks & Biringen, 2000). Through the six dimensions of the EAS, the affective qualities of the interactions observed in two case studies could be evaluated. Because the emotional expression and responsiveness of both partners in the dyad was involved, it was a valuable way of understanding more about the difficulties for mothers interacting with their children who are blind, and of complementing the information gained from assessment of maternal language use.

Through the use of case studies evidence can be found to illustrate some of the difficulties of interaction with young children who are blind. If they seem to be unresponsive this places a high demand on the caregiver to be adaptive and make inferences about what the children need to know. Under these circumstances, caregivers may respond with sensitivity, but little active adaptation as in Case 1, or with very purposeful adaptation at a cost to sensitivity as in Case 2. There are many individual differences in the ways that families respond to the constraints of blindness (Urwin, 1978) and the cases presented here are
not intended to suggest that there are only two alternatives. However, in both cases there is a need for support that can strengthen parent-child relationships and address the particular social-emotional needs of young children who are blind.
References


