Prediction of Social Competence and Social Integration in Children with or at-Risk for Intellectual Disability

by

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Abstract

Research in the field of intellectual disability (ID) has long recognized that social skills and, in turn, social acceptance, are key areas of difficulty for children with ID. However, little work has been done to examine the factors that may contribute to the development of these difficulties. This study examined early childhood parent-child interactions, as well as early characteristics of both the parent and the child, in order to identify the factors that may be relevant to the later development of social competence and social integration. The study found that the social competence of school-aged children with ID affects the extent to which they are integrated within the social and academic domains. Furthermore, school-age social competence was affected by child and parent functioning in toddlerhood. The findings have important implications for intervention, as mentally healthy, well-supported parents may pose a protective factor for at-risk children. Future studies will need to further examine the role of parent-child interactions in child development.
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Chapter 1

Introduction

Researchers in the field of intellectual disabilities (ID) have long accepted that one of the key areas of deficit for children with ID is social competence, and that this deficit, in turn, contributes to difficulties with social integration. In particular, the last few decades have seen much discussion with regard to the academic integration of children with ID, as well as its potential effects on the social competence of these children, and on their acceptance by typically-developing (TD) peers.

Crucial issues remain to be examined, however, with regard to the development of social competence in children with ID. Researchers have argued that a relevant examination of social competence requires identifying factors that contribute to its development over time. To date, there is a lack of longitudinal data aimed specifically at examining the development of social competence and the factors that affect it in children with or at-risk for ID.

Likewise, very few studies have examined the factors that benefit or impede the outcome of children with ID with regard to social integration. Although the movement toward the inclusive education of children with ID has resulted in abundant discussion in the literature, the factors relevant to successful social integration remain understudied. Surveys of teachers as well as studies of social acceptance and rejection suggest that social competence may play an important role in the social integration of children with ID. However, this link remains to be examined empirically.

The present research aims to identify factors that may, over time, significantly affect the development of social competence in children with or at-risk for ID. Further,
the study aims to explore the role of social competence in the social integration of children with or at-risk for ID. As well, the study will examine the effect of child and parent factors on the development of social competence. This represents a significant advance over previous research, as the effect of parental stressors and traits remains significantly understudied in relation to social competence in children with ID. The results of this research have implications for both the broader understanding of ID, as well as for the design of specific interventions aimed to increase the social competence and social integration of children with ID.
Chapter 2

Social Competence: Literature Review

The estimated prevalence of intellectual disability (ID) has been found to be about 1% in studies based in both North America (Shenoy, 2007) and Europe (Westerinen et al., 2007). Intellectual disability is defined as a “common heterogeneous group of chronic disorders of early onset sharing the essential core feature of a predominant disturbance in the acquisition of cognitive, motor, language, and/or social skills that have a significant and continuing impact on the developmental trajectory of the child” (Shevell et al., 2005, p. 648). More specifically, ID has been defined as a disability characterized by significant limitations both in intellectual functioning, which encompasses skills such as reasoning, learning, problem solving, and in adaptive behavior, which includes a range of everyday social and practical skills (AAIDD, 2009). This disability is manifested prior to adulthood and likely to continue indefinitely. In research with children who may be too young to fully exhibit symptoms of a disability, children who are at risk of ID are often examined, because it is often not clear whether children will, at a later time, meet criteria for diagnosis (Baker et al., 2003). Children may be considered at risk for ID due to a variety of factors. These may include low birth weight or prematurity; known prenatal exposure to noxious substances, such as narcotics or alcohol; known biological conditions that are associated with ID (such as genetic disorders, pervasive developmental disorder/autism, or brain damage); or children who exhibit global developmental delays due to an unknown aetiology (Feldman et al., 2007).

Although the classification of ID encompasses a large and heterogeneous group of children, previous studies examining the broad group of children with ID have shown that
these children are at high risk for numerous problems, including difficulties in establishing peer relations; unsatisfying friendships; social rejection and isolation; poor school performance; and out-of-home placement decisions (Holland, 1999; Keogh, Coots, & Bernheimer, 1995; Sameroff & Fiese, 2000). The rate of behavioural and emotional problems is substantially higher for children with ID than for typically developing (TD) children (Einfeld & Tonge, 1996; Quinn, Carr, Carroll, & O’Sullivan, 2007). In addition, children with ID often require long-term and costly health, respite, and special education interventions (The Roeher Institute, 2000).

Among the array of difficulties often encountered by children with ID, the development of social competence and social relationships is particularly important and problematic (Howell, Hauser-Cram, & Kersh, 2007; Salisbury, Gallucci, Palombaro, & Peck, 1995). Social competence is crucial to interpersonal functioning, and deficits in this arena have been hailed as being at the core of the difficulties experienced by persons with ID (Leffert & Siperstein, 1996; Matson, Anderson, & Bamburg, 2000).

A number of factors are likely to contribute to the development of deficits in social competence in children with ID. These may include: less opportunity for age-appropriate social experiences due to segregated placement (i.e., educational placement in specialized classes for children with ID, where they do not have the opportunity to interact with non-ID peers), parental overprotection, or barriers to social interaction posed by the presence of paraprofessional attendants (Neuharth-Pritchett, 2006); deficits in receptive or expressive social abilities as a result of sensory or expressive limitations; the presence of antisocial behaviours in children with ID, which can further limit their opportunities for socially-appropriate peer interaction (Zion & Jenvey, 2006); and deficits
in cognitive capabilities that may interfere with the processing of social information (Haskett & Willoughby, 2006).

Social Deficits in Specific Subgroups of Children with ID and at-risk

Studies examining more specific subgroups of children with ID have established that considerable variability exists with respect to the severity and pattern of deficits. For instance, children diagnosed with Down syndrome have been shown to demonstrate social characteristics that distinguish them from both typical peers as well as from children with nonspecific ID: compared to peers with nonspecific ID, they show a greater inclination to seek out social interactions (Jahromi, Gulsrud, & Kasari, 2008), and in comparison to typical peers, children with Down syndrome display more frequent positive facial expressions (Kasari & Freeman, 2001). Although these characteristics have likely contributed to the stereotype of children with Down syndrome as highly sociable (Fidler, 2005), research identifies a number of characteristics that may contribute to social deficits. For instance, infants with Down syndrome are characterized by shorter affective expressions as well as decreased responsiveness to their environment (Jahromi et al., 2008). Other studies demonstrate that these children as a group exhibit a more limited range of emotional regulatory strategies (Fidler, Most, Booth-LaForce, & Kelly, 2006; Kasari & Freeman, 2001). Recent findings also suggest that children with Down syndrome begin to exhibit a significantly greater frequency of behaviour problems from 30 to 45 months of age (Fidler et al., 2006). These difficulties include higher levels of noncompliance, as well as greater difficulties in their ability to delay gratification (Jahromi et al., 2008).

Previous research examining social skills in other specific groups of children with
ID has identified that children with Prader-Willi syndrome commonly show high rates of behavioural difficulties such as underactivity, compulsions, stubbornness, and aggressive behaviour (Einfeld et al., 1999). These difficulties have been demonstrated to interfere with the formation of typical interpersonal relationships and, consequently, with the development of social competence in this subgroup of children with ID (Rosner, Hodapp, Fidler, Sagun & Dykens, 2004). In contrast, prior research demonstrates that children diagnosed with Williams syndrome have a very sociable personality style, but exhibit poor peer-related social competence as a result of interpersonal difficulties such as overfriendliness and social disinhibition (Dykens 2003).

Perhaps the most severe deficits in social competence of any group of children with ID occur in children with autism spectrum disorders (ASD), including autism, Asperger syndrome, and pervasive developmental disorder (Owen-Deschwyer, Carr, Cale, & Blakeley-Smith, 2008). Research examining the social competence of children with autism in comparison to other groups of children with ID has consistently identified severe deficits in social skills that are specific and unique to this group. Deficits in social competence that have been identified in children with autism include the lack of orientation toward a social stimulus; lack of or inadequate use of eye contact; impaired or absent initiation of social interactions; impaired interpretation of both verbal and nonverbal social cues; inappropriate emotional response; and impaired or absent ability to empathize with another individual’s distress (Weiss & Harris, 2001). Additionally, research examining children with this diagnosis has consistently demonstrated that children with autism struggle with sharing affective experience and have difficulty understanding another person’s perspective – skills that are considered essential building
blocks to achieving social reciprocity and, consequently, the building of meaningful friendships (Gutstein & Whitney, 2002).

**Social Deficits in Children with ID as a Group**

Research examining children with ID as a group demonstrates that these children have significant deficits in social ability and knowledge, and that the actual social behaviour of these children differs from that of TD classmates (Leffert & Siperstein, 1996; Zion & Jenvey, 2006). Additionally, studies have shown that individuals with ID generally demonstrate deficits across a broad spectrum of social behaviours, and these include both deficits (e.g., poor eye contact) as well as excesses (e.g., clinging to others in a manner that is not age-appropriate; Bielecki & Swender, 2004). Findings of social competence deficits in children with ID appear to be robust, as they have been consistent across diverse measures and in a variety of settings. Furthermore, these deficits have been shown to remain after controlling for children’s developmental level, suggesting that the development of social competence in children with ID is impaired, rather than simply delayed, in comparison to TD peers (Guralnick, 1999a; Guralnick, Neville, Hammond & Connor, 2007).

Social competence deficits can lead to a cyclic pattern of social isolation from peer interactions, whereby initial deficits in social competence lead to a failure to effectively utilize social interactions to secure meaningful subsequent social contacts, thereby gradually decreasing the opportunity to gain the social experiences necessary to further develop social competence. This inability to develop social competence, in turn, may lead to difficulties in gaining social integration within the peer group (Margalit, 1995; Matson et al., 2000). Researchers have argued that social relationships are a key
element of quality of life for school-age children (Watson & Keith, 2002). Furthermore, the quality of social interactions during childhood has been shown to relate to adjustment in adulthood (Margalit, 1995). For instance, social competence plays a critical role in the ability of adults with ID to retain employment (Butterworth & Strauch, 1994). In addition, the lack of social integration experienced by adults with ID can lead to an increased risk of mental health issues: persons with ID who have poor social competence and are socially isolated have been found to have a higher risk of mental illness, particularly mood or anxiety disorders (Matson et al., 2000). Thus, social competence difficulties have far-reaching potential effects for children with ID.

Social Competence

Definition of Social Competence

Research in the area of social competence does not use a single, uniformly accepted definition of the construct. Frequently, researchers studying social competence have addressed only a limited range of behavioural skills relevant to social interaction, such as group entry and interpretation of affective expression (Bost et al., 1998). However, a number of researchers have argued that definitions of social competence should be broader in their nature, as well as more relevant to the socio-cultural contexts in which social development occurs (Bost et al., 1998; Rubin & Rose-Krasnor, 1992). Further, such broader definitions should transcend specific settings, so that social competence can be understood as a generalizeable skill that is influenced by the individual’s developmental history. For instance, Waters and Sroufe (1983) proposed that social competence should be defined as “the capacity to manage behaviour, affect, and cognition to achieve one’s own social goals, without unduly constraining peers”
opportunities to achieve their goals, and without entering into a developmental trajectory that would limit future social goals which presently cannot be anticipated. (p. 82)". This definition is compelling because it suggests the possibility of evaluating social competence as a generalizable skill that is unified, although multifaceted. More importantly, however, unlike definitions that focus on situation-specific social skills, this view of social competence takes into account the importance of developmental and social learning histories. That is, the definition implies that earlier developmental and social learning experiences serve as the foundation for future achievements in social competence, even though the specific behavioural attainments seen at later periods may differ, both quantitatively and qualitatively, from those that characterize earlier phases of development (Rubin & Rose-Krasnor, 1992). Other researchers have further emphasized the importance of context, as individuals may demonstrate differing levels of social competence in different types of social situations (Bost et al., 1998).

Measuring Social Competence

The methods used to measure social competence in different studies have been determined somewhat by the conceptualization of the construct used by the study in question. However, the variety of methods used to measure social competence can be organized into two categories: direct and indirect measures. Direct measures include behavioural observations within the target environment, as well as analogue observations within a simulated environment or role-play situation. Indirect methods involve the use of behaviour ratings made by significant individuals in the child’s life, (such as teachers, parents, and caregivers), with the assumption that ratings given by these individuals are based on ongoing interaction and observation of the child over time (U.S. Department of
Each of these methods of gathering information has important advantages as well as drawbacks which will be outlined below.

Naturalistic observations are the most direct method of observing behaviour. They involve several raters who assess the child on specific social responses that are defined prior to the assessment. This observation technique is often preferred because it allows the observation of the behaviour within the environment where it occurs, thus being more relevant to the individual’s actual day-to-day experience (U.S. Department of Education, 1996). However, this method of assessment also has a number of potential drawbacks. Most notably, it is costly and time-consuming, and the presence of an observer may result in reactivity, thereby altering the natural behaviour of the participant (Bielecki & Swender, 2004).

Analogue observations involve the presentation of a simulated situation, such as a role-play, to which the child responds. The technique has the advantage of allowing the cost-effective evaluation of behaviours that otherwise occur with a low frequency (U.S. Department of Education, 1996). However, this technique also has several limitations: namely, role-play measures have been shown to not correlate with other social skills assessment techniques, appropriate or inappropriate social interactions, peer or teacher evaluations of social behaviour, or scores on self-report measures (Matson, 1986). In addition, role-play measures are verbally demanding, such that they may place unrealistic demands on a child with ID to generate a solution and articulate the steps required to solve the problem (Bielecki & Swender, 2004).

In research examining large, geographically diverse samples, direct measures are not readily feasible. Among indirect measures, behavioural checklists and rating scales
are the simplest and most frequently used. The chief advantages of such measures include that they are quick and inexpensive and allow a wide range of information to be collected from a variety of informants – for instance, checklists can include instruments such as self-report, parent measures, teacher ratings, and peer nominations (Nowicki, 2003). However, indirect measures have been criticized for having poor psychometric properties and lacking precise terminology. Additionally, informant biases can affect the results of indirect measures (Marchetti & Campbell, 1990). In particular, the use of self-report measures with individuals with ID has been criticized because these individuals may have difficulties with reliable self-reporting when assessed using an interview format, as they often look to others for approval and may readily agree with an interviewer’s questions (Reiss, 1994; Zigler & Burack, 1989).

Indirect instruments can be divided into two categories: (a) instruments that focus mainly on psychopathology and problem behaviours, and (b) instruments that include both positive and negative behaviours. Studies suggest that instruments focused on psychopathology provide a measure of problem behaviours but do not adequately sample the skills that form a child’s social competence (Bielecki & Swender, 2004). In contrast, instruments that assess both positive and negative behaviours provide a more accurate reflection of the child’s level of social knowledge and skill (U.S. Department of Education, 1996).

The Ecological Approach as a Framework for Examining the Development of Social Competence

A meaningful assessment of social competence in children with ID must also consider the wide range of influences on the development of this skill (Guralnick, 1999a;
Leffert & Siperstein, 1996). Currently prevailing explanations of the development of children with ID (Guralnick, 1998; Guralnick, Hammond, Connor, & Neville, 2006; Guralnick et al., 2007; Ramey & Ramey, 1998) are based on an ecological-transactional model that views child development as a function of a dynamic, reciprocal interaction of biological and environmental factors (Bronfenbrenner, 1979; 1986; Sameroff & Chandler, 1975; Sameroff & Fiese, 2000). This model proposes that children with similar biological vulnerabilities may develop differently depending on individual experience, and that children change and modify their environment as they develop. The main theoretical framework for an ecological approach to examining the development of children is drawn from the work of Bronfenbrenner (1979; 1986; 1992). Bronfenbrenner’s theory also recognizes the impact of the larger societal context on children and their proximal environments. As a result, Bronfenbrenner considers a number of factors that may affect children’s development. These factors will be detailed below.

The first factor relevant to development pertains to the characteristics of the child and the way in which these characteristics are perceived and responded to by significant others. According to Bronfenbrenner (1992), the child characteristics most likely to impact development are either those that reflect an organized approach to the environment, or those that provoke reactions from the environment. For instance, a child’s organized approach to the environment may include skills such as the ability to draw inferences, understand social consequences of behaviour, and to generalize these lessons to similar future social interactions. In children with ID, deficits in these skills are likely to have important effects starting very early in the child’s development. For
instance, research demonstrates that even very young infants with Down syndrome show
decreased emotionality and responsiveness to their environment in comparison to their
typical peers (Jahromi et al., 2008). For infants with ASD, even very early interactions
are characterized by impaired eye gaze and poor joint attention (Dawson et al., 2004).
Therefore, a child’s ID status can impact the development of social competence by
diminishing the child’s ability to approach the environment in an organized manner.

The other child characteristic considered most likely to impact the child’s
development is that which provokes a reaction from the environment. An example of
such a characteristic is a behaviour problem. Insofar as the child is provoking caregivers
to respond to behaviour problems, the child does not have the opportunity to experience
positive social interactions that could be of benefit to the development of his or her social
competence.

That the presence of behaviour problems diminishes a child’s opportunities to
experience positive social interactions is a key concept for children with ID, as these
children as a group have a greatly increased risk of behaviour problems in comparison to
the general population (Feldman et al., 2000; Baker et al., 2003). In fact, behaviour
problems are prevalent in many diagnostic categories of ID. For instance, behavioural
problems associated with Prader-Willi syndrome (PWS) are “among the most debilitating
aspects of the condition” (Reddy & Pfeiffer, 2007, p. 831). Symptoms of insatiable
appetite typically emerge in early childhood and evolve into a more generalized acting
out and poor coping ability, including violent temper tantrums, impulsivity, irritability,
self-injury, and emotional lability (Akefeldt & Gillberg, 1999). Other behavioural
symptoms in these children may include skin picking, arguing, stubbornness, inactivity,
Fragile X syndrome, as well, is associated with behavioural and social difficulties. Approximately 90% of boys diagnosed with Fragile X syndrome demonstrate one or more features of autism, such as impaired social interaction, decreased eye contact, social anxiety and avoidance, perseverative speech, hypersensitivity to sensory stimuli, or stereotypic behaviour (such as hand flapping; Brodkin, 2008).

Research examining children with ID has also identified that behaviour problems in these children are a significant factor in child-related parent stress. Various studies have found this to be the case specifically for parents of children with Down syndrome (Stores et al., 1998), as well as in heterogeneous groups of children with ID (Hauser-Cram et al., 2001; Nachshen, Garcin, & Minnes, 2005). In one study of 3-year-old children with ID, Baker et al. (2002) found that, when the influence of behaviour problems on parenting stress was accounted for, the child’s level of cognitive disability did not explain any additional variance in parent stress. This suggests that child behaviour problems may play an important role in interfering with the child’s opportunities for social interactions both directly, as well as indirectly, by increasing parenting stress, as is postulated by Bronfenbrenner’s next factor.

The next factor that Bronfenbrenner considered relevant to the child’s development is the microsystem, or each particular immediate environment that is relevant to the child. The earliest microsystem that affects the child’s development is that of the family (Bebko et al., 1998). Thus, an ecological perspective must consider the caregivers’ interactions with the child, as well as characteristics of caregivers themselves and any external stressors placed on the caregivers. Relevant characteristics of caregivers
may include caregiver mood status, as depressed mood may diminish quality of parent-child interactions. For instance, depressed mood may impact parent-child interactions by causing the caregiver to be less responsive, less sensitive, and less able to attend to a child or engage the child in an appropriate manner (Meadows, McLanahan, & Brooks-Gunn, 2007). Recent research suggests that low birth weight, for instance, may impact cognitive and social development by its effect on parenting. That is, the complex medical needs of low birth weight babies may heighten parental stress, which in turn may impede appropriate parenting (Reichman, 2005). External stressors that affect caregivers may include marital discord or lack of social support (Mackey & Goddard, 2006). Research has demonstrated that greater levels of parental emotional distress significantly predict harsh, insensitive parenting, which in turn predicts social maladjustment (Haskett & Willoughby, 2006; Feldman et al., 2007).

During the school years, another microsystem that becomes relevant to the child’s development is the classroom. Characteristics of the classroom environment that may have an effect on the child’s development include the teacher and fellow students and their relationships with the target child (Cummins & Lau, 2003). Children with ID may be particularly vulnerable to developing difficulties within the classroom context, as they are less likely to be accepted by their peers and are more likely to experience social isolation, social neglect, or social rejection (Nowicki & Sandieson, 2002). With respect to the importance of student-teacher relationships, past research has demonstrated that the quality of student-teacher relationships plays an important role, as it has been demonstrated to be associated with motivation, behavioural engagement, and emotional engagement in school (Skinner & Belmont, 1993). Although relatively few studies have
examined the quality of bonds with teachers for children with ID, the existing evidence in this area indicates that these children have poorer attachment to school and higher levels of fear and victimization at school (Fink, 1990). Additionally, the quality of student-teacher relationships for students with ID is associated with indicators of social, emotional, and school-related adjustment (Murray & Greenberg, 2001). Furthermore, teacher-student relationships for students with ID may be negatively affected by teacher stress. More specifically, the inclusion of children with ID in mainstreamed educational settings is often stressful for teachers who feel unprepared to cope with these students’ educational and behavioural needs and are likely to feel overwhelmed by the additional workload required to successfully integrate these children into the classroom (Engelbrecht, Oswald, Swart & Eloff, 2003; Forlin, 2001; Shearman, 2003).

The next levels of the child’s environment considered relevant by Bronfenbrenner’s theory involve the larger social system in which the child resides, called the exosystem, and the relationships between the microsystem and exosystem, which is known as the mesosystem. Examples of these relationships could be, for instance, societal attitudes towards individuals with ID and the impact of these attitudes on the child and the child’s family. Finally, Bronfenbrenner posits that the different levels of a child’s environment have a complex, interactive effect, underscoring the importance of assessing the interactions between the child’s development and the child’s environment.

*Previous Research on Factors Affecting the Development of Social Competence*

Although numerous studies have examined the development of social competence in TD children, the body of research available for children with ID is far more limited
(Guralnick, 1999a). However, consistent with the ecological-transactional developmental model, researchers are beginning to examine a broad array of factors, including the effect of the child on the parent and family (Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001; Keogh et al., 2000; Mackey & Goddard, 2006). The factors that have been found to be relevant to the development of social competence, in TD children as well as in children with ID, have been consistent with the ecological-transactional developmental model. Therefore, these factors include characteristics of the child, of the child’s environment, as well as the interactions between the child and environment.

Child characteristics. Numerous characteristics of the child have been identified to play a role in the development of social competence. The most significant of these is the child’s level of disability. For instance, Keough et al. (2000) found a significant association between child level of disability and social competence. This finding may be explained by the fact that many of the precursor skills involved in the successful development of social competence are affected by cognitive difficulties encountered by children with ID (Guralnick, 1999a). Specifically, children with ID may experience cognitive deficits in areas such as attention and processing speed, in addition to deficits in information processing, as well as receptive and expressive verbal abilities (Gibson, 1992). In fact, as detailed earlier, research has documented that, compared to TD children, youngsters with ID exhibit deficits in the earliest precursors to social behaviour, putting these children at a disadvantage in developing the most basic socialization skills that form the building blocks of later social competence (Bray, Fletcher, & Turner, 1997; Tomporowski & Tinsley, 1997). Such deficits are likely compounded over time, and these difficulties can disrupt the formation and use of appropriate social strategies.
(Guralnick, 1999a).

In addition to compromised cognitive ability, many children with ID exhibit behavioural problems and difficulties in emotional regulation. Numerous studies indicate that children with ID have higher rates of behavioural problems than do TD children (Baker, Blacher, & Olsson, 2005). Problems such as hyperactivity, inattentiveness, and impulsivity are two to four times more prevalent among children with ID (Benson & Amman, 1999). In a 2002 study, Wiener found that children who were rated by teachers as having higher levels of externalizing behaviour problems were also reported to be less socially skilled. Other researchers have posited that externalizing behaviour problems not only interfere directly with opportunities for successful social interactions with peers, but may also interfere indirectly by adding to the social stigma associated with disability (Howell et al., 2007), thereby leading to further social rejection of children with ID. As a result, not surprisingly, children with ID report high rates of loneliness, which places them at a substantially increased risk of social isolation from their community of peers (Leffert, Siperstein, & Millikan, 2000). Perhaps somewhat more surprising, however, is the finding that the social acceptance of children with ID is independent of the children’s developmental level and severity of ID (Freeman & Alkin, 2001). In an extensive review of the available literature, Freeman and Alkin (2001) found that socially accepted and socially rejected children with ID had similar IQs, but different patterns of social behaviours. Whereas socially rejected children had higher levels of aggression and disruptiveness, socially accepted peers positive social behaviours. Similarly, Siperstein and Leffert (1997) reported that socially accepted children with ID displayed higher levels of social behaviour and lower levels of sensitive-isolated behaviour. A recent study
by Odom and colleagues (2006) further supported this finding, revealing that children with disabilities who are socially accepted by their peers demonstrate more positive affect as well as greater social skills and communication skills in comparison to their socially rejected counterparts.

*Parent characteristics.* In addition to child characteristics, and consistent with the theoretical framework of the ecological approach, characteristics of parents themselves have been demonstrated to play a role in the child’s development. In addition, the role of parent factors in the development of the child’s social competence has been posited to be transactional, such that the characteristics of the parent interact with those of the child and those of the family’s sociocultural context throughout the child’s development (Armstrong, Birnie-Lefcovitch, & Ungar, 2005). For example, studies demonstrate that factors such as parenting style and parental support affect the quality of early emotional attachments between caregiver and child, as well as children’s later peer relations (Clark & Ladd, 2000). For children with ID in particular, a number of child characteristics may affect the parent, which may then in turn influence the parents’ ability to provide the above learning opportunities, and thus can impede or enhance the development of children’s social competence.

Recent research examining the effect of children with ID on their families has demonstrated that elevated parental distress is not an inevitable reaction to the presence of a child with ID, and that, in fact, families’ responses vary widely (Hastings et al., 2002; Scorgie & Sobsey, 2000). Studies have found that parents of children with ID consistently report positive as well as negative experiences related to parenting a child with ID (Hastings et al., 2005).
Studies in this area have demonstrated a range of positive outcomes of parenting a child with ID. For instance, families reported that having a child with ID contributed positively to the family as a source of happiness and fulfilment, as well as that having a child with ID strengthened the bond of the family and brought the family closer together (Greer, Grey, & McClean, 2006). Furthermore, in-depth research conducted by Stainton and Besser (1998) reported nine positive outcomes of having a child with ID, as identified by parents: (1) joy and happiness; (2) increased sense of purpose and priorities; (3) expanded personal and social networks and community involvement; (4) increased spirituality; (5) increased sense of family unity; (6) increased tolerance and understanding; (7) personal growth; (8) positive impacts on the community; and (9) interactions with professional and services.

Additional research conducted by Scorgie and Sobsey (2000) has identified that parents report that parenting their children with ID resulted in a series of transformations, including new roles, new personal traits, and improved relationships with family members and friends. More recent work by Hastings et al. (2002) attempted to identify the variables that may affect positive perceptions and outcomes. The results of this line of research suggest that positive outcomes and perceptions are associated with the use of coping strategies focused on the positive reframing of stressful events in family life, as well as with the helpfulness and usefulness of support from family and friends. Coping styles that result in more positive outcomes have also been described as the developing of a sense of distance from negative aspects of the family situation (Morin & Lacharité, 2004).

Although literature recognizing and documenting the positive outcomes of
parenting a child with ID is relatively recent, parents of children with ID experience higher levels of stress (Trute, Hiebert-Murphy, & Levine, 2007). Recent research has shown that negative outcomes, such as parental stress, and positive outcomes, such as life satisfaction, are independent of each other (Hastings & Taunt, 2002). In an example of the transactional nature of the parent-child relationship, one of the factors that has been demonstrated to be significantly correlated with parental stress is child behaviour problems, more so than ID status per se (Baker et al., 2003). Given the transactional nature of the parent-child relationship, therefore, it is likely that while the child’s behaviour problems have an impact on the parent’s level of stress, the parental stress, in turn, may impact the parent’s interaction with the child, thereby exacting an influence on the child’s social development.

In examining parent factors that may contribute to the child’s development of social competence, one factor that has been demonstrated to be associated with difficulties in children’s emotional regulation is marital conflict (Katz & Gottman, 1993). In general, inter-adult conflict, whether between married parents, long-term partners, or parents and members of the extended family, provides a context in which the child can learn adaptive and/or maladaptive ways in which to manage conflict and regulate emotion (Cummings & Davies, 1994). Research demonstrates that, even when anger is not directed at the child, children respond to ‘background anger’ and the presence of such a context places the child at increased risk of developing social and emotional problems (Lemerise & Dodge, 1993). One group of researchers has recently posited a mediational model of children’s emotional security and marital conflict (Davies & Cummings, 1998, 1994; Davies, Harold, Goeke-Morey, & Cummings, 2002), in which the effect of marital
conflict on child adjustment is mediated by the child’s emotional security, which entails abilities that are vital to the development of social competence (Morris, Silk, Steinberg, Myers & Robinson, 2007). Another theory regarding the mechanism by which marital conflict affects children’s adjustment was put forth by Fauber, Forehand, Thomas, and Wierson (1990). These researchers proposed that marital conflict has a deleterious effect on parenting, which in turn affects child adjustment. However, not all research in the area has found deleterious effects on family harmony; Perry, Harris, and Minnes (2004), for instance, found so such effects.

Another factor, maternal mental health, has been well documented to play an important role in the development of social competence in TD children, and is likely to affect children with or at risk for ID in a similar manner (Guralnick, 1999a). Children model caregivers’ strategies for regulating emotion (Parke, 1994). Therefore, children whose caregivers are depressed have fewer opportunities to observe appropriate emotional regulation. Recent studies have shown that children of depressed mothers demonstrate fewer strategies for regulating emotions than do children of non-depressed mothers, and the strategies they utilize are considered less effective (Silk et al., 2006). In addition, poor maternal mental health may adversely affect parent-child interactions and disrupt parenting (Dodge, 1990). In a longitudinal study, depressed mothers of young children demonstrated less sensitivity toward their children than did non-depressed mothers, and these differences were predictive of the children’s peer adjustment difficulties later in childhood (NICHD Early Child Care Research Network, 2004). Longitudinal research examining adjustment to parenting children with ID has shown general mental health to be an important element that affects the long-term prognosis for
A depressed caregiver’s ability to cope may be particularly taxed by the stressors of parenting a child with a disability. As children with or at risk for ID may have behavioural or medical difficulties, meeting the needs of such a child is both physically and emotionally demanding (Mackey & Goddard, 2006). Studies are revealing growing evidence that caring for a child with a long-term disability increases one’s risk for chronic sorrow, depression, social isolation, and physical and mental health problems (Barr, 1997). The risk to the caregiver has been shown to increase with the degree of the child’s disability (Hall & Hill, 1996; Singer, 2006) and the presence of unknown reasons for the child’s disability (Feldman et al., 2007). Therefore, in keeping with the transactional model, children with greatest level of disability may also be at the greatest level of environmental disadvantage, as they pose the greatest level of challenge to their caregivers. Recent research suggests that support for the caregiver, such as respite care, may have a positive effect not only on immediate caregiver functioning, but also on longer-term child outcomes such as academic achievement (Barnard-Brak & Thomson, 2009). This finding is particularly relevant to the current research when considered together with another recent study, the findings of which indicated a significant relationship between academic achievement and social adjustment in children with ID (Walker & Nabuzoka, 2007). Therefore, although it is not yet clear whether support services for parents may have similar consequences for other areas of child functioning, such as social competence or social integration, the result of this recent study does indicate that parent functioning may have long-term effects on academic achievement, and that its effect on other areas of child outcome merits further study.
Studies have demonstrated that the level of social support available to the parent has an impact on the parent-child relationship. Social support has been found to mediate the relationship between parental depressive symptoms and child behaviour problems (Feldman et al., 2007), as well as to mediate parents’ perception of the difficulty of the child’s behaviour (Armstrong et al., 2005). Some research examining the emotional burden borne by caregivers of children with disabilities has reported that some caregivers, most frequently mothers, may have limited levels of social support (Armstrong et al., Mackey & Goddard, 2006). In families with children with ID, the degree of support available to the primary caregiver is significantly correlated with the level of satisfaction with family functioning. Lack of social support is associated with increased levels of caregiver stress, as well as decreased feelings of competence and increased role restriction (Quittner, Glueckauf, & Jackson, 1990). Limited parental social support adversely affects parent-child interactions (Melson, Ladd, & Hsu, 1993), in addition to leading to increased parental use of coercive strategies in coping with their child’s difficulties with peer-related social competence (Mills & Rubin, 1992).

_Parent-child interactions._ Consistent with the ecological-transactional developmental model, research has also identified a number of characteristics of the child’s environment that play a role in the development of social competence. Researchers have argued that early parent-child interactions lay the foundation for social competence throughout life (Bebko et al., 1998), and a substantial body of research has supported the effect of parent-child interactions on the development of children’s social competence (Guralnick & Neville, 1997; Guralnick, 1999a). More specifically, three separate theoretical models have been proposed to explain the mechanism through which
parent-child interactions affect the development of social competence.

A family systems perspective (Minuchin, 2002) suggests that familial influences and the child’s developing social competence are bidirectional processes, where children and parents mutually influence one another throughout the child’s development. In this model, family relationships characterized by a greater sense of cohesiveness and expressiveness may provide opportunities for children with ID to develop a positive perception of themselves that in turn may lead them to demonstrate more competence in subsequent interactions with parents (Howell et al., 2007). In infancy, the child’s caregiver must be sensitive to the infant’s cues and to use these to facilitate interactions, thus increasing the likelihood of forming a bond between the child and caregiver (Ainsworth, Blehar, Waters & Wall, 1978; Isabella, 1993). Other researchers have similarly suggested that positive parent-child interactions create a sense of social belonging, which promote the child’s development of a positive sense of self, and contribute to the development of the child’s ability to engage in successful subsequent peer interactions (Shonkoff & Phillips, 2000).

A different viewpoint is the modelling theory. The modelling theory is based on Bandura’s (1997) model of self-efficacy, which suggests that children learn appropriate social interactions through modelling within parent-child interactions. Through observing caregivers, children learn that certain situations provoke particular emotional reactions, and by observing the reactions of others, children learn how they ‘should’ react in similar situations (Denham et al., 1997). Therefore, if parents frequently model high levels of anger in frustrating situations, children are less likely to learn effective ways of managing their own emotions (Morris et al., 2007). Research findings have supported the modelling
theory, as studies have shown that parents of children with ID actively encourage and model self-regulation (Weiner & Sunohara, 1998), which is crucial to successful social interactions.

Finally, a theoretical perspective derived from attachment theory (Ainsworth & Bell, 1970) postulates that children develop a working model of relationships through the early emotional bonds developed between family members, and that a secure parent-child relationship helps foster a positive sense of social relatedness (Ellicker, Englund, & Sroufe, 1992). Attachment security has been well documented to predict adjustment with peers. For instance, children who are securely attached are more independent (Sroufe, Fox, & Pancake, 1983); more capable of generating problem-solving strategies (Arend, Gove & Sroufe, 1979); and more socially interactive (Lieberman, 1977). In contrast, children who form insecure attachments to caregivers experience less social acceptance among peers and have more aggressive behaviours (Cohn, 1990). Levitt (2005) postulated that if positive relationships exist amongst all members of the nuclear family, children develop a more generalized sense of the security in interpersonal relationships, and this sense of emotional security assists them in the development of positive relationships with peers. Research findings have supported these ideas, as a number of researchers have demonstrated that toddlers who establish a secure attachment to their caregivers are more likely to have positive social and emotional development in later childhood (Booth, Rose-Krasnor, & Rubin, 1998). Attachment security also plays a role in social integration, as numerous studies have shown that the quality of the parent-child relationship impacts the child’s adjustment in peer groups (e.g., Booth, Rose-Krasnor, MacKinnon, & Rubin, 1994; Youngblade, Park, & Belsky, 1993). The formation of
secure attachment depends on the parent’s ability to accurately recognize, interpret, and respond to the infant’s behaviours (Howe, 2006). In a child with ID, the presence of functional and/or sensory impairment may limit the child’s responsivity, thereby increasing difficulty in understanding, communication and interpretation between the child and parent (Johnston et al., 2003), which in turn increases the risk of the development of insecure attachment.

Research examining specific child and parent characteristics that contribute to attachment suggests that parental sensitivity may be affected by child factors such as the child’s innate reactivity, temperamental difficulties, arousability, and ability to self-regulate (Howe, 2006). Therefore, children with ID, who can exhibit particularly challenging behaviour, may act as an additional stressor when cared for by parents under stress, thus being particularly at risk of developing insecure attachments (Baker et al., 2003). In children with ID, the clarity with which children are able to communicate their needs may be compromised, and parents of children with ID have increased risk of parental stress due to problems of communication, understanding and interpretation (Johnston et al., 2003). In addition, a line of research conducted by Snyder, Cramer, Afrank and Patterson (2005) aimed specifically at examining how the respective behaviours of the parent and child contribute to co-constructing the nature of the parent-child relationship. This study found that the development of child conduct problems is influenced by a reciprocal relationship between the effects of the child’s behaviour on parenting, and of ineffective parenting strategies on child behaviour.

The majority of research examining the impact of parent-child interactions on the development of social competence pertains to TD children. Such research in TD children
has identified the importance of positive affective styles, especially those in which parents are warm and respond contingently and appropriately to children’s affective expressions (Mize & Pettit, 1997; Gottman, Katz, & Hooven, 1996). In contrast, the experience of negative affect in the context of parent-child interactions can make children especially vulnerable to difficulties with emotional regulation, and these problems can carry over to affect peer interactions (Guralnick, 1999a). Additionally, studies examining the impact of parent-child interactions in TD children have differentiated between two types of parent-child interactions (Russell, Pettit, & Mize, 1998): “vertical” or asymmetrical interactions that include substantial differences in control, knowledge, and other relationship dimensions, and “horizontal” interactions, that are characterized by a much more symmetrical quality of exchanges in which mutual influence is encouraged. Such horizontal interactions include exchanges in which children attempt to influence parent behaviour by issuing directives or questions. These types of horizontal exchanges are also characteristic of children’s interactions with peers, and consequently, children’s ability to obtain compliance to questions or requests in horizontal parent-child interactions may constitute an important link to social competence within the peer group (Guralnick et al., 2007). Studies examining the linkage between social competence of TD children in parent-child interactions and that in peer contexts have consistently supported this association, finding that TD children whose interaction pattern (i.e., directives, relevance, requests, interruptions) was more effective in the parent setting were similarly able to demonstrate a higher level of social competence within the peer context (Black & Logan, 1995). One reason why greater levels of opportunity to engage in horizontal parent-child interactions are associated with more developed social competence within
the peer setting may be due to more frequent opportunities within the parent-child context to observe, learn, and practise interpersonal skills related to turn-taking, negotiating, compromise, and joint establishment of play (Lindsey, Mize, & Pettit, 1997; Mize & Pettit, 1997). These opportunities may increase children’s generalized social knowledge regarding the socially appropriate use of requests and directives, which is directly generalizeable to the peer context (Russell, Pettit, & Mize, 1998).

In comparison to TD children, youngsters with ID have been hypothesized to be at higher risk for atypical parent-child relationships due to multiple factors. For example, such children may have difficult temperament, lower level of ability, and may be less responsive to parents (Bebko et al., 1998). Parents, in turn, may have more difficulty interpreting the children’s cues and responding appropriately (Kelly & Barnard, 2000) and the increased parental stress of caring for a child with disabilities may interfere with the parents’ ability to provide optimal care (Howe, 2006). Within the context of parent-child interactions, the available evidence indicates that, in comparison to TD siblings, parents interacting with their ID children tend to be more directive, persistent, negative, hostile, and over-involved (Beck, Daley, Hastings, & Stevenson, 2004). However, the available evidence also indicates that children with ID have considerable difficulty in creating and sustaining mutual social exchanges with parents due to their tendency to be less socially directive and responsive and less able to present appropriate social cues (Spiker, Boyce, & Boyce, 2002). As a consequence, parents’ higher levels of exhibited control may, in many circumstances, be an appropriate response to the child’s level of ability and communication skill (Roach, Barratt, Miller, & Leavitt, 1998). However, the pattern of association previously noted in TD children, whereby skills demonstrated in
parent-related social competence appear predictive of peer-related social functioning, has been demonstrated in a recent study to also hold true for children with ID (Guralnick et al., 2007). That is, children’s ability to appropriately use requests and directives as influence strategies within the context of parent-child interaction appears to be associated with a core pattern of social behaviour that is also expressed within the peer context.

Existing Models for the Development of Social Competence

Current models proposed to account for the development of social competence in children with ID have been transactional and consistent with the ecological approach (Sameroff & Fiese, 2000). These approaches emphasize the vulnerability of children with ID and the importance of their early interactions with caregivers as essential building blocks of later social competence (Bebko et al., 1998; Guralnick et al., 2007).

On the basis of these key arguments documented in the literature, Bebko and colleagues (1998) have proposed a model for the formation of social competence in childhood. In this model, infants are assumed to possess genetic and biological traits that influence their potential to develop social competence. Child traits are thought to impact the development of competence in two ways: (a) directly, by imposing limits on the ability to develop the necessary cognitive, perceptual, and emotional abilities; and (b) indirectly, by shaping early interactions with caregivers. The relationship between early parent-child interactions and early social skill development is assumed to be dynamic, in that positive interactions are thought to promote skill development, which consequently may benefit further interactions. Conversely, atypical or negative parent-child interactions may contribute to difficulty in establishing the precursor skills to social competence. Bebko and colleagues hypothesized that such disruptions to parent-child
interactions may be brought about by child factors, including difficult temperament and lack of responsiveness. However, these researchers did not directly address the effect of parent characteristics on parent-child interactions. Although the model proposed by Bebko and associates also addressed the formation of social competence and friendship in adolescence, the portion of the model that is relevant to this review and the current study is outlined in Figure 1.

Figure 1. Model for social skill acquisition proposed by Bebko and associates (1998).

Another model of child development was examined by Keough and associates (2000). Specifically, these researchers tested child-driven and transactional models of child-family interactions to examine which type of model best accounts for child outcome. The study found that longitudinal child outcomes are best accounted for by a child-driven model. That is, the results indicated that child variables, rather than family variables or a combination of these factors best account for outcomes. However, the family factors examined in this study consisted of family accommodations of the child
with ID, or functional responses and adjustments to the demands of daily life with a child with ID. The study did not directly examine parent factors, such as stressors, social support, or mental health, to investigate how these factors may influence child outcomes.
Chapter 3

Social Integration: Literature Review

As children reach school age, the classroom becomes the next important microsystem that plays a significant role in their development. Historically, children with ID were segregated from TD peers, as well as from society as a whole (Harrower, 1999). In recent decades, the inclusion of individuals with disabilities in both education as well as in society as a whole has become a global trend (Vash, 2001). Within the realm of education, policy has shifted to favour the inclusion model, also termed mainstreaming, defined as “an educational model in which students with disabilities receive their education in a general education setting with collaboration between general and special education teachers” (Accardo & Whitman, 1996, p. 157). Legislative support for inclusive education of children with disabilities has been in place since the 1970s in the United States, and has been implemented more recently in Great Britain (Lewis & Lewis, 1987) and in Canada (Winzer, 1996). This shift in educational policy has intensified concern over the social adjustment of children with ID due to the increased social challenges presented by inclusive educational placement (Dyson, 1994).

The Rationale for Mainstreaming

The movement for inclusive education for children with ID has been influenced by social development theory, which highlights the importance of the socio-cultural context in which children’s social competence arises (Salisbury, Gallucci, Palombaro, & Peck, 1995). The drive for increased social inclusion of children with ID also is guided by the principle of normalization (Wolfensberger, 1972), which states that the attainment of socially valued outcomes should be available for all people, including individuals with
disabilities. Thus, proponents of mainstreaming argued that such an approach to education would result in a number of positive outcomes (Gresham & MacMillan, 1997; Hughes et al., 2002). Specifically, they have argued that increased exposure to children with ID would result in their greater acceptance by TD peers; that it would allow for the formation of mutually beneficial and positive social interactions between TD peers and children with ID; and that it would facilitate the development of social competence in children with ID due to the modelling of these skills by TD classmates.

The modern understanding of the concept of inclusion is that it is comprised of three dimensions: physical integration, instructional integration, and social integration (Siperstein & Parker, 2008). The first dimension, physical integration, simply refers to the amount of time that a student with a disability is present in the general education classroom (U.S. Department of Education, Office of Special Education Programs, 2006). Most educators differentiate between full inclusion, where the student is in a full-time inclusion setting, and partial inclusion, in which the student is included in regular education on a part-time basis. Although accommodations vary across different educational systems and categories of disability, it is estimated that about 14% of students with ID spend the majority of the school day in a general education classroom (Siperstein & Parker, 2008).

The second dimension of inclusion, the concept of instructional integration, encompasses the access of students with disabilities to the general educational curriculum, with appropriate adaptations in order to accommodate and promote the academic progress of these students (Agram, Alper, & Wehmeyer, 2002). However, researchers in this area have acknowledged that questions remain regarding the best
educational accommodations for children with ID (Siperstein & Parker, 2008). In addition, it has been suggested that the uncertainty of educators about how best to adapt the general curriculum to the needs of students with disabilities remains a significant challenge to instructional integration (Agram, Alper, & Wehmeyer, 2002).

The third dimension of inclusion is social integration. Social integration encompasses the social aspects of the school experience, and will be discussed in more detail in the following sections.

Outcomes of Mainstreaming

Research examining the outcomes of mainstreaming has produced mixed findings. Some results have been encouraging, as researchers have documented higher rates of peer-related social behaviour among preschool children with ID in inclusive settings than in segregated settings (e.g., Freeman & Alkin, 2001; Maras & Brown, 2000). Some researchers have theorized that when TD children have a better understanding of the conditions of disabilities, they are more likely to include children with disabilities in their peer groups (Diamond & Kensigner, 2002); however, findings have also demonstrated that TD children’s positive attitudes toward persons with disabilities do not necessarily translate into friendships with this group of children (Dyson, 2005).

With regard to outcomes for children with ID, one study demonstrated that children with severe ID in inclusive classrooms progressed in their level of social competence whereas matched controls in segregated classrooms regressed in social competence over the same time period (Cole & Meyer, 1991). As well, mainstreamed elementary school students with severe ID received more numerous social interactions
(Hunt, Staub, Alwell & Goetz, 1994) and had more extensive friendship networks (Fryxell & Kennedy, 1995) in comparison to peers in segregated settings.

Studies have also documented positive effects of mainstreaming on TD peers. For instance, TD children in inclusive classrooms benefit from increased empathy, personal development, greater acceptance of diversity, and more friendships with students with disabilities (Hughes et al., 2001). Research has also demonstrated a significant increase in positive attitudes toward children with severe ID among TD children in mainstreamed settings (Maras & Brown, 1996; Diamond, Hestenes, Carpenter, & Innes, 1997; Dyson, 2005).

However, many other findings are less encouraging. For instance, studies have reported almost no indication that mainstreaming facilitates the modelling of appropriate social behaviour by TD peers for the benefit of children with ID (Cooney, Jahoda, Gumley & Knott, 2006; Hallenback & Kauffman, 1995). In fact, studies have found that physical proximity alone does not ensure that students with ID will be included socially in peer interactions that occur in their mainstreamed education settings (Hall & McGregor, 2000). Researchers suggest that many children with ID spent more time interacting with adults than with TD peers (Hall & Strickett, 2002; Odom, 2002). The available evidence indicates that although TD students were willing to form friendships with peers with disabilities, they did not think they would share common interests with a child with ID and felt that they may not know how to interact with such a peer (Freeman & Alkin, 2000; Hendrickson, Shokoohi-Yekta, Hamre-Nietupski, & Gable, 1996). Numerous other studies have concluded that mainstreaming does not appear to increase acceptance of students with ID (Freeman & Alkin, 2000), and that children with ID are
likely to “occupy a marginal position in the social network of the regular classroom” (Siperstein & Leffert, 1997, p. 340), because TD children are unlikely to interact with peers with disabilities unless they are supported and encouraged to do so (Cooney et al., 2006; Favazza, Phillipsen, & Kumar, 2000).

Thus, the successful social integration of children with ID is a multidimensional and complex process, one which requires far more than simply the placement of a child with ID in a mainstream classroom (Freeman & Alkin, 2000). The body of evidence currently available suggests that, although children with disabilities today are more likely than ever to be physically included and to have gained access to the general education curriculum, they have gained little ground with regard to social integration (Siperstein & Parker, 2008).

**Definition of Social Integration**

Researchers have argued that children with ID must be socially integrated within the inclusive classroom to fully benefit from mainstreaming (Odom, 2000). Despite such recognition of the importance of social integration, definitions of the construct vary widely. In past education literature, the term was often used to refer simply to inclusive educational placement of children with ID in regular classrooms (Hallahan, 1998; The Roeher Institute, 1992). A more specific definition of social integration refers more directly to social belonging. From this perspective, social integration within the educational setting has been conceptualized as being based on “full, valued, and meaningful equal membership and participation within the school and classroom community” (Kliwer, 1998, p. 318). Complete social integration of the children with ID has been argued as being achieved when TD peers maintain the same quality of
interpersonal relationships with children with ID as they do with other TD peers (Guralnick, 1999b).

**Acculturation as a Perspective for Measuring Social Integration**

Another way of defining integration is from the perspective of acculturation, which is based on a cross-cultural framework developed by Berry (1993) and adapted to individuals with ID by Buell and Minnes (1994). The acculturation perspective maintains that integration consists of having the unique characteristics of the minority group (such as disability status) identified and supported while maintaining contact with the larger, mainstream society (Berry, Kim, Power, Young & Bujaki, 1989).

The AIMS (Assimilation, Integration, Marginalization, Segregation) Interview was developed to investigate the community integration of individuals with ID from an acculturation perspective (Minnes, Buell, Feldman, McColl, & McCreary, 2002). The interview determines four potential levels of integration on the basis of affirmative or negative responses to two issues. **Issue One:** Is it considered valuable to recognize and support the unique characteristics of people with developmental disabilities? **Issue Two:** Is it considered valuable for people with developmental disabilities to maintain relationships with other groups?

The two-by-two matrix resulting from the outcome of these two issues determines the nature of the acculturation relation - integration, assimilation, segregation, or marginalization. Integration results when both issues are resolved in the affirmative: 1) disability-related needs are identified and supported in a way that facilitates participation in the community. Assimilation results when only the second issue is resolved in the affirmative. That is, disability-related needs are not identified and supported, but the
individual is in the community. Thus, integration and assimilation are defined by the individual having contact with the larger society. Presumably interactions between the individual and society are more positive when the individuals’ needs are identified and supported. In contrast, segregation and marginalization are characterized by the absence of positive relations between the minority group and the larger society. Segregation occurs when the first issue is resolved in the affirmative: 1) the needs and distinct nature of the minority group are identified and supported, but 2) without a positive relationship to the larger culture, and the minority group is separated from the larger society. Marginalization occurs when neither issue is resolved in the affirmative; neither the unique needs of the minority group, nor its ties to the larger community are valued.

**Issue One:** Is it considered valuable to recognize and support the unique characteristics of persons with disabilities?

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<td><strong>Integration</strong></td>
<td>Disability-related needs are identified and supported and the person is involved in the community</td>
<td>Disability-related needs are not identified and supported but the person is involved in the community</td>
</tr>
<tr>
<td><strong>Segregation</strong></td>
<td>Disability-related needs are identified and supported but the person is not involved in the community</td>
<td>Disability-related needs are not identified and supported and the person is not involved in the community</td>
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**Issue Two:** Is it considered valuable for persons with disabilities to maintain relations with other groups?

*Figure 2. The AIMS Acculturation Framework.*
Recently, the AIMS Interview has been adapted to measure social integration in children with ID (Solish, Minnes, & Kupferschmidt, 2003). Therefore, the AIMS Interview (Child Version) considers children with ID to be integrated into the inclusive classroom if their unique needs are identified and supported in a way that facilitates the classroom involvement of these children. This view is similar to those expressed by other researchers examining social integration within the inclusive classroom. Several researchers have emphasized the need for children with ID who are placed in inclusive classrooms to have their disability status be emphasized rather than downplayed to ensure that they receive the educational supports they need (Cook, 2001; Favazza et al., 2000; Odom, 2000). Critics of inclusion policies have argued, for instance, that regular classroom teachers do not possess the specialized training required to provide adequate educational experiences to children with ID (Fox & Ysseldyke, 1997). In fact, regular class teachers report a significant amount of stress arising from concern about their inability to provide appropriate education for special needs children and to teach other children within the class while focusing on such a child (Forlin, 2001).

Previous Research on Factors Influencing Social Integration

Despite generalized findings that children with ID do not experience full social integration in inclusive classrooms, studies show that some children with ID do, in fact, gain acceptance and inclusion within the TD peer group (Siperstein & Leffert, 1997). The range in the level of social integration in mainstreamed children with ID allows for the study of factors that influence the social integration of these children. In TD children, the strategy of comparing socially accepted children to those who are socially rejected has been used to identify factors that contribute to children’s social status (Siperstein &
Leffert, 1997). One consistent finding in studies with TD children is that social
knowledge impacts children’s social status, and children with high and low social status
differ in the types of strategies they generate for solving social problems such as peer
group entry and peer conflict resolution (Crick & Dodge, 1994). Social behaviour also
plays a role, as socially included children display more sociable behaviour, whereas
rejected children engage in more aggressive and disruptive behaviour (Newcomb,
Bukowski, & Pattee, 1993).

Studies examining the factors that influence social integration in children with ID
have been far less plentiful than those concerning TD peers, and findings have not been
as clear-cut (Dyson, 1994). Much of the body of research currently available has
examined social integration within segregated educational settings, and this work is
difficult to generalize to children with ID who are educated primarily in mainstreamed
classrooms (Siperstein & Leffert, 1997). However, the evidence that is currently available
does appear to suggest that social behaviour affects the social integration status of
children with ID, both within mainstreamed and segregated educational settings
(Guralnick et al., 2006; Guralnick et al., 2007).

Key among possible predictors of social integration that have been identified
within the literature is social competence. As children choose friends on the basis of
common interests, abilities, and interaction styles, researchers have suggested that social
competence is likely to play a role in social integration (Guralnick, 1999b; Bost et al.,
1998). The available evidence suggests that children with ID have pervasive difficulties
with the use of social communication strategies, such that compared to TD peers they are
less directive, more dependent on play companions to help organize play activities, and
generally less responsive to peers (Guralnick et al., 2007). Additionally, due to higher levels of problem behaviours of these children, the peer interactions of children with ID tend to create frequent conflicts (Guralnick et al., 2006), and research has demonstrated that behavioural difficulties limit social integration (Demchak & Drinkwater, 1998).

*Previous Model for the Development of Social Integration*

Although relatively few studies have examined directly the factors that influence the social integration of children with ID in inclusive classrooms, a study by Siperstein, Leffert, and Widaman (1996) examined possible pathways to social acceptance and rejection among children with ID in segregated settings. These researchers examined a conceptual model of influences on social acceptance and rejection. The model was constructed on the basis of findings by Morrison, Forness, and MacMillan (1983) who concluded that child behaviours influence both teachers’ and peers’ perceptions of the target child, and that these perceptions impact the child’s level of acceptance in the classroom. Although other studies previously had identified the connection between children’s social behaviour and their social outcome, this study was the first to examine such a connection in children with ID. On the basis of this work, Siperstein et al. (1996) proposed a conceptual path model of the development of children’s social acceptance or rejection. The proposed model posits that child behaviour variables influence both teachers’ and peers’ perceptions of the target child, and that these perceptions, in turn, impact child acceptance and rejection. The child behaviours proposed to influence children’s acceptance and rejection included on-task classroom behaviour, negative or inappropriate behaviour, as well as appropriate peer initiation and interaction. A simplified diagram of the model proposed by these researchers is shown in Figure 3. The
researchers’ results largely supported the model, in that children’s behaviours, both positive and negative, affected peers’ and teachers’ perceptions, as well as children’s level of social acceptance and rejection. This model is consistent with the arguments of other researchers. For instance, the model proposed by Bebko and associates (1998), reviewed previously, posits that childhood social competence has an impact on the formation of childhood friendships.

Figure 3. A simplified diagram of the model proposed by Siperstein et al. (1996).

Recently, a line of research by Guralnick et al. (2007) has investigated the linkages between early parent-child interactions, the development of peer-related social competence, and social integration with peers for children with ID in mainstreamed social settings. This study examined children aged 48 to 78 months, and parent-child and peer interaction data were collected within the same week. As reviewed previously, these researchers established that children with ID who are more competent at directives and requests in parent-child interactions also display greater levels of skill in social interactions with TD peers. Moreover, this study established that children with ID who were able to demonstrate greater levels of social competence in their interactions with peers were also able to secure a greater level of social integration within their network of TD peers (Guralnick et al., 2007). Therefore, this study was able to demonstrate not only
that the nature of early parent-child interactions has an impact on future peer-related social competence for children with ID within mainstreamed social settings, but also that these children’s social competence has direct bearing on the extent to which they are integrated by TD peers.

**Limitations of Previous Research on Social Competence**

Previous research in the area of social competence has been limited by the lack of a broad, integrative approach to defining the construct. As reviewed previously, researchers have argued that a more relevant definition of social competence would view the construct as a personal attribute and would allow for quantitative and qualitative changes over different phases of development (Bost et al., 1998; Rubin & Rose-Krasnor, 1992). Such an integrative definition, unlike those limited to specific skill sets, requires longitudinal investigation to identify the factors that are relevant to its development. To date, few studies have used such an integrative definition of social competence. In particular, there is a lack of longitudinal data aimed specifically at examining the development of social competence, as well as the factors that impact such development in children with or at-risk for ID.

The use of an ecological approach in examining the factors that are relevant to the development of social competence is crucial. Relevant factors include child traits, parent-child interactions, and factors that impact parents themselves. Although the importance of parent factors, such as mental illness and stress, is well-documented in TD children, research concerning children with ID is far more limited. Specifically, the impact of parental stressors on parent-child interactions, and subsequently on social competence, has not been examined directly.
Previous research examining the development of social competence in children with ID has focused largely on specific subgroups of children, such as those with Down Syndrome (Gibson, 1992). However, given the heterogeneous nature of the diagnosis of ID, such fragmented findings on specific subgroups of children with ID may be difficult to generalize to the population of children with ID as a whole. Specifically, research has demonstrated that children with Down Syndrome are significantly different from other groups of children with ID (Rosner et al., 2004), so that generalizing from this specific disability group to other children with ID may in fact be misleading. As well, specific and unique social skills deficits are a key element of autism spectrum disorders (Owen-Deschwyer et al., 2008). As a result, more readily generalizeable research, performed with a wider group of children with ID, is needed.

Limitations of Previous Research on Social Integration

Although the movement toward the inclusive education of children with ID has resulted in abundant discussion in the literature with respect to issues such as achievement, social competence, and social integration, very few studies have examined the factors that benefit or impede the outcome of children with ID in mainstreamed settings (Sale & Carey, 1995). More specifically, the factors relevant to successful social integration remain understudied. Surveys of teachers as well as studies of social acceptance and rejection suggest that social competence may play an important role in the social integration of children with ID. However, little work has been done previously to examine this link empirically.

The dearth of prior research on the social integration of children with ID has been due, in large part, to the lack of social integration measures for children with ID. An
extensive review of inclusive education literature, as well as personal communications with experts in the area (Ivan Brown, personal communication, 2002; Michael Guralnick, personal communication, 2002), failed to generate any available measures of social inclusion that were normed specifically for children with ID. As a result, the recently developed AIMS Interview (Child Version) represents an opportunity to gain further knowledge in this field. However, as the development of this measure is so recent, it has not been previously used to investigate child factors that may contribute to the development of social integration.

**Advances Represented in the Current Study**

The present program of research investigated the impact of child factors, parent factors, and parent-child interactions on the development of social competence. Further, I also examined the role of social competence in the social integration of children with or at risk for ID. The study contributed to the scope of current knowledge on the development of social competence and social integration by taking an ecological approach to study this area.

The current research used a heterogeneous sample of children with or at-risk for ID. In addition to collecting measures of social competence and social integration, previously collected, longitudinal data on parent and child functioning was utilized as predictors of current social competence and social integration. In so doing, the current program of study will be able to address social competence from a wider, more integrative perspective than would research that is focused on specific social skills. As well, examining the impact of child and parent factors on the development of social competence represents a significant advance over previous research, as the role of
parental stressors and traits remains significantly understudied for children with ID.

Previous research in the area of social integration of children with ID also has been impeded by the lack of available measures for this construct. Thus, the use of the AIMS (Child Version) in the current line of research represents an advance. Furthermore, as little previous work has specifically examined the role of child social competence in social integration for children with ID, examining this relationship allows the current research to also contribute to the available knowledge in this area.
Chapter 4

Predictors of Social Competence and Social Integration: Proposed Models and Hypotheses

As reviewed previously, considerable evidence in the literature suggests that both child and parent characteristics affect the quality of early parent-child interactions. Parents who have higher levels of symptoms of depression, higher amounts of stress, and less social support are likely to be less attentive and responsive to their child, and they are less likely to be able to cope with child-related stressors such as behaviour problems. In turn, children who have higher levels of behaviour problems, psychopathology, and lower levels of adaptive behaviour are less likely to be able to fully benefit from social learning opportunities which would build their social competence. These interactions, in turn, are postulated to form the basis of later social competence, and social competence may then play a role in the child’s level of social integration. Thus, I proposed four models to analyze the development of social competence and social integration in children with or at-risk for ID.

Model 1. The first model is illustrated in Figure 4. In this model, early parent-child interactions are affected by child characteristics such as the child’s level of disability and behaviour problems, and parent characteristics such as social support, mental health, and stress. The quality of the early parent-child interactions affects the development of social competence in childhood. The child’s level of social competence, in turn, has an effect on social integration. According to the specifications of this model, the influence of early parent-child interactions on later social integration is fully mediated by the child’s social competence. Additionally, this model predicts that parent-child
interactions mediate the impact of parent characteristics, as well as of child characteristics, on social competence.

Although Model 1 does not take into account all factors that may affect the development of social competence and social integration, it represents an important starting point for (a) examining the effect of developmental and social learning histories on the emergence of social competence, and (b) understanding the influence of social competence on social integration.

![Figure 4. Model 1: Full-mediation model for the development of social competence and social integration.](image)

This model, therefore, allows us to examine the following hypotheses regarding the development of social competence and social integration of children with or at-risk for ID: (1) higher levels of parental social support will result in more positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (2) higher levels of parental stress will result in less positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (3) higher levels of parental mood...
problems will result in less positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (4) higher levels of adaptive functioning in the toddler with or at-risk for ID will result in higher responsivity and more positive social engagement during parent-child interactions; (5) higher levels of the toddler’s positive social engagement in parent-child interactions will correlate with higher levels of social competence at school age in the child with or at-risk for ID; (6) higher levels of the parent’s positive engaging behaviours during parent-child interactions toward the toddler with or at-risk for ID will correlate with higher levels of social competence at school age in the child with or at-risk for ID; (7) higher levels of social competence at school age will be correlated with higher levels of social integration at this time in the child with or at-risk for ID.

Aside from the relationships between the variables proposed in this model, other possible paths of influence between the variables are supported by the literature. Thus, I examined three other models.

*Model 2.* The second model is illustrated in Figure 5. This model includes all of the paths tested in the first model, as well as the following additional relationships: (a) a direct effect of early parent-child interactions on social integration; (b) a direct effect of early child characteristics on social competence and social integration, and (c) a direct effect of early parent characteristics on social competence and social integration.

Thus, as represented in this model, the effects of the predictor variables are only partially mediated by the mediator variables from Model 1. This model is more comprehensive than the first model, and it allows for the investigation of relationships that are less directly supported by the existing literature. However, Model 1 is the
currently preferred model due to its greater parsimony and agreement with previous theory and empirical findings.

Figure 5. Model 2: Comprehensive model for the development of social competence and social integration.

In addition to the hypotheses examined in the previous model, therefore, this model also allows us to additionally examine the following hypotheses: (1) higher levels of parental social support during toddler years will result in higher levels of social competence at school age in the child with or at-risk for ID; (2) higher levels of parental stress during toddler years will result in lower levels of social competence at school age in the child with or at-risk for ID; (3) higher levels of parent mood problems during toddler years will result in lower levels of social competence at school age in the child with or at-risk for ID; (4) higher levels of parental social support during toddler years will result in higher levels of social integration at school age in the child with or at-risk for ID; (5) higher levels of parental stress during toddler years will result in lower levels of
social integration at school age in the child with or at-risk for ID; (6) higher levels of parental mood problems during toddler years will result lower levels of social integration at school age in the child with or at-risk for ID; (7) higher levels of adaptive functioning in the toddler with or at-risk for ID will result in greater social competence at school age in the child with or at-risk for ID; (8) higher levels of adaptive functioning in the toddler with or at-risk for ID will result in greater social integration at school age in the child with or at-risk for ID; (9) higher levels of the toddler’s positive social engagement in parent-child interactions will correlate with higher levels of social integration at school age in the child with or at-risk for ID; (10) higher levels of the parent’s positive engaging behaviours during parent-child interactions toward the toddler with or at-risk for ID will correlate with higher levels of social integration at school age in the child with or at-risk for ID; (11) higher levels of social competence at school age will be correlated with higher levels of social integration at this time in the child with or at-risk for ID.

In addition to the first two models, which were theory-driven based on my review of the available literature, I included Models 3 and 4 in order to avoid a possible hypothesis confirmation bias (Greenwald, Pratkanis, Leippe, & Baumgardner, 1986), and in order to adopt a multi-model approach, as recommended (MacCallum, Wegener, Uchino, & Fabrigar, 1993; MacCallum, Roznowski, & Necowitz, 1992).

Model 3. The third model tested is illustrated in Figure 6. In this model, early parent-child interactions serve as antecedents to both social competence and social integration. Unlike Model 1, this model does not propose a relationship between social competence and social integration. Consequently, if this model were found to fit the data significantly better than does Model 1, then I would conclude that social competence is
not a mediator of the relationship between parent-child interactions and social integration.

Consequently, the hypotheses tested by this model are as follows: (1) higher levels of parental social support will result in more positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (2) higher levels of parental stress will result in less positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (3) higher levels of parental mood problems will result in less positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (4) higher levels of adaptive functioning in the toddler with or at-risk for ID will result in higher responsiveness and more positive social engagement during parent-child interactions; (5) higher levels of the toddler’s positive social engagement in parent-child interactions will correlate with higher levels of social competence at school age in the child with or at-risk for ID; (6) higher levels of the parent’s positive engaging behaviours during parent-child interactions toward the toddler with or at-risk for ID will
correlate with higher levels of social competence at school age in the child with or at-risk for ID.

**Model 4.** The fourth model is illustrated in Figure 7. This model is the most distinct from the preferred model, Model 1. In this model, only early child factors are predictive of social competence and social integration. If this model is found to fit the data significantly better than Model 1, then I would conclude that parents play no role (other than genetics) in determining social competence or integration and that social competence and social integration are not related to each other.

![Figure 7](image.png)

*Figure 7. Model 4: Child-factor driven model for the development of social competence and social integration.*

Consequently, the hypotheses tested by this model are as follows: (1) higher levels of parental social support will result in more positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (2) higher levels of parental stress will result in less positive engaging behaviours toward the child with or at-risk for ID in parent-child interactions; (3) higher levels of mood problems in the parent will result in less positive engaging behaviours toward the child with or at-risk for ID in
parent-child interactions; (4) higher levels of adaptive functioning in the toddler with or at-risk for ID will result in higher responsiveness and more positive social engagement during parent-child interactions; (5) higher levels of adaptive functioning in the toddler with or at-risk for ID will result in higher levels of social competence at school age in the child with or at-risk for ID; (6) higher levels of adaptive functioning in the toddler with or at-risk for ID will result in higher levels of social integration at school age in the child with or at-risk for ID.
Chapter 5

Method

Background

A four-site, prospective longitudinal study measuring the effect of early intervention services was previously conducted by Dr. Maurice Feldman and associates. Over a span of three years, ending in December 2003, this study collected data on the development and prediction of developmental, behavioural, and school problems in children with or at-risk for ID. The study initially recruited the families of approximately 260 children across four sites, including families in Ontario, Quebec, Manitoba, and Alberta. The study collected an array of longitudinal measures on the child, parent, and family. The resulting database has produced three full years of longitudinal data on the entire sample (ages 2-4 years) and 6 years of data (ages 2-7 years) on a subset of approximately 120 Ontario children who had participated in earlier, compatible longitudinal studies. Of this initial sample of 260 families, a number chose to drop out during the course of the initial study. Others indicated at the conclusion of that study that they would prefer not to be contacted to participate in follow-up research, while others moved and did not forward new contact information to the researchers overseeing the project. This attrition contributed to a final participant sample of 64 children from 60 families for the current study.

Participants

Recruitment. Families participating in the previous multi-site, longitudinal project described above were approached and asked to participate in this further study. Due to the potential difficulties with translating interview materials into French, families from the Quebec site of the initial study were not approached for participation. The remaining
families were mailed a letter of information about the project and were subsequently contacted by telephone to ascertain whether they would be interested in participating.

*Selection criteria.* Children for the archival study were selected for participation using a social system epidemiological approach (Kiely & Lubin, 1983). To qualify for participation, the children either (a) had been independently diagnosed with a condition that had led to, or put them at-risk for, developmental problems (e.g., low birth weight, prematurity, Down syndrome) and/or (b) were eligible for services reserved for children with or at-risk for ID such as infant development programs, early intervention, and specialized preschools. Thus, risk status and formal diagnosis (when available) of the children were determined by existing independent evaluations and not by the researchers. Children whose *only* risk factor was low SES were not selected for participation in the initial study. The families participating in this line of research were considered representative of those who typically enrol in infant development programs reserved for children with or at-risk for ID (Dr. Maurice Feldman, personal communication, November 2005).

*Procedures*

*Previous research.* With the parents’ consent, a large assessment battery was initially administered to each family when the children were approximately two years of age (measures were later repeated, but data from the repeat administrations were not utilized in the current research). The elements of this battery used in the current study included questionnaires administered to the parent (listed below) and videotaped observations of parent–child interactions. Parents completed the questionnaires through interviews conducted in their homes at their convenience by specially trained and
experienced interviewers. The videotaped observations of parent-child interactions that were used consisted of a 20-minute segment of play between the contact caregiver and the child, in which the parent was instructed to play with their child as they normally would. Families received an honorarium for their involvement in the larger, initial study.

Current research. In order to decrease the amount of missing data, I contacted only families for whom all archival data of interest for this study were available. Those families consenting to participate in the follow-up research were contacted via telephone at the parents’ convenience and completed the two additional instruments via a phone interview with a trained and experienced interviewer. The interview length was typically of about 90 minutes.

Measures

Tables 1 and 2 present a list of all measures that were used in the study, with archival measures listed in Table 1 and new measures that were added to the current research presented in Table 2. A detailed description of each measure will be provided below. With the exception of the measure of parent-child interactions, which was an observational measure, all measures were completed by the primary caregiver.
Table 1

*Archival Measures Utilized in the Current Study*

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Provides a measure of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vineland Adaptive Behaviour Scales</td>
<td>Early adaptive functioning (<em>child characteristic</em>)</td>
</tr>
<tr>
<td>Child Behaviour Checklist</td>
<td>Early behaviour problems (<em>child characteristic</em>)</td>
</tr>
<tr>
<td>Reiss Scales for Children’s Dual Diagnosis</td>
<td>Early child psychopathology (<em>child characteristic</em>)</td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>Parent mood (<em>parent characteristic</em>)</td>
</tr>
<tr>
<td>Questionnaire on Resources and Stress: SF</td>
<td>Parent stress (<em>parent characteristic</em>)</td>
</tr>
<tr>
<td>Interpersonal Support Evaluation List</td>
<td>Parent social support (<em>parent characteristic</em>)</td>
</tr>
<tr>
<td>Parent-Child Interactions: Parental approval</td>
<td>Parent-child interaction</td>
</tr>
<tr>
<td>Parent-Child Interactions: Child social engagement</td>
<td>Parent-child interaction</td>
</tr>
</tbody>
</table>

*Archival Measures.* The previous study collected measures of child and parent characteristics and outcomes at different child ages. These measures were chosen because: (a) they had (at least) adequate psychometric properties; (b) they had been used extensively in previous research; (c) taken together, they would provide a comprehensive view of child, parent, and family circumstances, risk and protective factors, and outcomes; and (d) they included measures used in previous longitudinal studies at the Ontario and Quebec sites, thereby allowing the families there to contribute longitudinal data for a total of six years. Table 1 above lists the measures used in this broader study that were also used for analyses in the current study.
Table 2

*New Measures Utilized in the Current Study*

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Provides a measure of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills Rating System</td>
<td>Social Competence</td>
</tr>
<tr>
<td>The AIMS Interview (Education and Social domains)</td>
<td>Social Integration</td>
</tr>
</tbody>
</table>

*Child characteristics.* As previously reviewed, characteristics of the child such as early social abilities and behavioural problems have been shown by the literature to be most relevant to the development of social competence. As a result, the archival measures that were used in determining child factors consisted of the *Vineland Adaptive Behaviour Scales* (VABS: Sparrow, Balla, & Cicchetti, 1984), the *Reiss Scales for Children’s Dual Diagnosis* (Reiss: Reiss & Valenti–Hein, 1990), and the *Child Behaviour Checklist - Ages 2-3 and 4-18* (CBCL: Achenbach, 1988, 1991).

1. The *Vineland Adaptive Behaviour Scales*

The *Vineland Adaptive Behaviour Scales* (VABS) is a tool designed to assess adaptive behaviour of individuals aged from birth through age 19 years. Adaptive behaviour is defined as the ability to perform daily activities required for personal and social sufficiency. Three versions of the VABS are available: the survey form, expanded form, and classroom edition. In each form, a respondent familiar with the behaviour of the individual in question answers behaviour-oriented questions. In each version of the scale, adaptive behaviour is measured in four domains: Communication, Daily Living Skills, Socialization, and Motor Skills. The Survey and Expanded forms also include a Maladaptive Behaviour domain. The Communication domain samples receptive,
The Socialization domain focuses on interactions with others, including play and use of free time, as well as responsibility and sensitivity to others. The Motor Skills domain evaluates gross and fine motor coordination. Finally, the Maladaptive Behaviour domain examines inappropriate behaviours that may interfere with adaptive functioning.

The Survey Form of the scale was administered. This form contains 297 items that are presented to the respondent in an interview format conducted by a trained examiner. The questionnaire requires 20 to 60 minutes to administer. The internal consistency for split-half means of the Survey Form of the VABS fall in the .83 to .90 range for the domains, and at .94 for the adaptive behaviour composite score (Sparrow et al., 1984). Test-retest reliability is in the .81 to .86 range for domains, and at .88 for the adaptive behaviour composite score (Sparrow et al., 1984). Inter-rater reliability is in the .62 to .78 range for domains, and at .74 for the adaptive behaviour composite score (Sparrow et al., 1984). The adaptive behaviour composite score was used in the current study. Cronbach’s alpha on the VABS for the participants of the current study was 0.85.

2. The Child Behaviour Checklist (CBCL)

Data from the original administration of the CBCL/2-3 was used in the current study to provide a measure of child behaviour problems. The CBCL/2-3 is a preschool version of the checklist, composed of a 100-item behaviour problems checklist. Items are clustered into eight syndrome scales: Aggressive behaviour, Attention Problems, Delinquent Behavior, Social Problems, Somatic Complaints, Thought Problems, Anxious/Depressed, and Withdrawn. The scales also yield composite behaviour problems
scores for Internalizing, Externalizing, and Total Problems scores. The CBCL checklists are empirically derived measures aimed to differentiate between typical children and those with behaviour disorders. Consequently, items were only included on the behaviour problem checklists if they significantly discriminated between referred children and typical children. The syndrome scores on both versions of the checklist are moderately reliable, with one-week test-retest reliabilities generally falling above .8 and internal consistencies averaging .8 (Doll, 1996). As is the case with any behavioural rating scale, the reliability of the syndrome scores depends heavily on the raters. Coefficients of interparent agreement are .66 on the CBCL/4-18, and slightly lower on the preschool version (Doll, 1996). However, the reliability of composite behaviour problems scores is substantially higher, with internal consistency and one-week test-retest coefficients above .89 (Doll, 1996). Cronbach’s alpha on the CBCL/2-3 for the participants of the current study was 0.89.

3. Reiss Scales for Children’s Dual Diagnosis

The Reiss Scales for Children’s Dual Diagnosis (Reiss: Reiss & Valenti–Hein, 1990) provides a measure of psychopathology in children with ID. It is a 36-item instrument using Likert-type scales. The scales yield a total score as well as eight scales: Aggressive Behaviour, Psychosis, Paranoia, Depression (Behavioural Signs), Depression (Physical Signs), Dependent Personality Disorder, Avoidant Disorder, and Autism. It is the only widely available instrument for assessing dual diagnoses in children and adolescents (Reiss & Valenti–Hein, 1994). It was validated using a large, racially diverse sample of children and adolescents. It has a high degree of internal reliability, reporting Cronbach’s alpha coefficient for the total score of .91-.92 (Reiss & Valenti–Hein, 1994).
Content validity was established using factor analysis, as well as a high degree of correlation between the Reiss and psychiatric diagnoses, psychological case studies, and other measures of psychopathology (Reiss & Valenti–Hein, 1994). Cronbach’s alpha on the Reiss for the participants of the current study was 0.86.

**Parent characteristics.** As discussed previously, current research pinpoints that the parent factors that are most closely associated with child social competence outcomes include factors such as parental stress, parental social support, and maternal mental health. Therefore, the archival measures that were used in determining parent factors consisted of the *Questionnaire on Resources and Stress: Short Form* (QRS/SF: Holroyd, 1987), the *Interpersonal Support Evaluation List* (ISEL: Cohen & Hoberman, 1983), and the *Beck Depression Inventory II* (BDI-II: Beck, Steer, & Brown, 1996).

1. **The Questionnaire on Resources and Stress: Short Form**

   The QRS/SF was used to provide a measure of parental stress. The QRS/SF is designed to measure stress in families caring for ill or disabled relatives by examining the impact the illness or handicap has on the family members. It also examines the resources available to the family to assist them in the care of the ill or handicapped individual. The short form consists of 66 items, answered in a true/false format. Scores are compared to families who do not have members with a disability.

   Reliability is demonstrated using the Kuder-Richardson-20 method for measuring internal consistency. The overall Kuder-Richardson internal consistency for the short form is .79 to .85 depending on the study (Holroyd, 1987). Test-retest reliability coefficients are not yet available (Erickson, 1994). Content validity was established through item rating by 12 judges, which is a common, if qualitative, method for
achieving content validity (Erickson, 1994). Criterion validity is difficult to establish, as there are no commercially available instruments that have achieved general acceptance in this area (Erickson, 1994). Construct validation, as well, remains to be established. Overall, however, Erickson (1994) noted that the QRS/SF is capable of differentiating groups with differing levels of stress in a manner that is useful in the clinical setting as a qualitative tool in the evaluation process. A total stress score was used in the current study. Although the instrument’s manual does not discuss a total score, scoring the instrument in this way has been used in the literature (Erickson, 1994). Cronbach’s alpha on the QRS/SF for the participants of the current study was 0.95.

2. The Beck Depression Inventory II

The BDI-II is the most broadly used measure of depressed mood, both in clinical practise and in outcome studies of psychotherapy and antidepressant treatment (Arbisi, 1999). The scale consists of 21 items with four options for each item, ranging from 0 (not present) to 3 (severe). The item content is designed to reflect the DSM-IV diagnostic criteria for depression, and areas assessed include: sadness, pessimism, past failure, loss of pleasure, feelings of guilt, worthlessness, punishment and self-dislike, self-criticism, suicidal thoughts or wishes, crying, agitation, loss of interest, indecisiveness, irritability, fatigue, difficulty concentrating, as well as changes (both increases and decreases) in sleep or appetite. A total score of 0-13 is considered minimal, 14-19 is mild, 20-28 is moderate, and scores over 29 are considered severe. A cut-off score of 17 has a 93% hit rate and an 18% false positive rate for a diagnosis of major depression (Beck, Steer, & Brown, 1996). Coefficient alphas were .92 for outpatients and .93 for college students. Test-retest reliability was studied using the responses of 26 outpatients who were tested
at first and second therapy sessions one week apart, yielding a correlation of .93. With regard to construct validity, the convergent validity of the BDI-II was assessed by administration of the BDI-1A and the BDI-II to two sub-samples of outpatients (N=191). The order of presentation was counterbalanced and at least one other measure was administered between these two versions of the BDI, yielding a correlation of .93. Cronbach’s alpha on the BDI for the participants of the current study was 0.82.

3. **The Interpersonal Support Evaluation List**

The ISEL is a general measure of social support (irrespective of the parenting role). The ISEL is a 40-item self-report measure designed to assess perceived availability of social support. Respondents rate how accurately each item describes their perceived access to social support on a four-point, Likert-type scale with responses ranging from definitely false (0) to definitely true (3). Higher ISEL scores are indicative of greater perceived social support. Combining scores of the four domains tapped by the ISEL (i.e., appraisal, belonging, self-esteem, tangible) generates a total social support score.

The scale was validated on two samples, a sample of undergraduate students as well as a second sample of members of the general population participating in a smoking cessation study (Cohen, Mermelstein, Kamarch, & Hoverman, 1985). The scale was found to have moderate correlation with other measures of social support, as well as with self-esteem measures. Internal consistency of the total scale was reported as ranging from .77 to .90 for different studies (Cohen, Mermelstein, Kamarch, & Hoverman, 1985). Test-retest reliability for a four-week interval was reported as being .87 for the total score (Cohen, Mermelstein, Kamarch, & Hoverman, 1985). Cronbach’s alpha on the ISEL for the participants of the current study was 0.90.
Parent-child interactions. Videotaped and coded parent-child interactions were used to provide a measure of the quality of the interaction between parent and child. These interactions consisted of the primary care provider (usually the mother, and always the same individual who answered all the questionnaires) interacting with the child in four conditions. The conditions consisted of the following: (1) a meal condition, where either the child consumed a snack or the family consumed a meal; (2) a distraction condition, where the parent was briefly occupied with a task and unavailable to interact with the child requiring the child to briefly play independently; (3) a play condition, where the caregiver was instructed to play with the child as they would typically play; and (4) a structured play condition, in which the caregiver introduced a novel game or puzzle and was instructed to teach the task to the child.

For the purposes of the current study, I considered that the play condition would likely be most able to capture the types of parent-child interactions that are thought to be key to the development of social competence, such as joint attention and turn-taking. I considered that these behaviours would likely be absent in the distraction and meal conditions, and I felt that the structured play condition would not provide the child the opportunity to take a leadership role in directing play if they had the capacity to do so. Consequently, of the four conditions recorded for the initial study, only the play condition was utilized in the current research. In this condition, the caregiver and child engaged in play, using toys chosen by the child, and the caregiver was instructed to engage with the child in a typical play activity. To be as natural as possible, other caregivers and siblings could be present. The play activity was videotaped for about 20 minutes, and the middle 5 minutes were used for coding (in order to avoid warm up and
acclimation effects at the beginning, and fatigue effects at the end of the play session).

For purposes of coding the interactions, the 5-minute interval was divided into 30, ten-second intervals. If a coded behaviour was present at any time within a given ten-second interval, it was coded as having occurred within that interval. Final scores for each coded behaviour consisted of the percentage of intervals during which the behaviour in question was observed.

Of the behaviours previously coded in the initial study one set of parent behaviours and one set of child behaviours were used for the current study. Parent behaviours analyzed in the current study consisted of Approval, which was defined as the parent explicitly acknowledging and approving of child appropriate behaviour. This included giving the child verbal praise and/or showing physical affection; providing or promising treats, and/or other desirable consequences within the coding interval of child appropriate behaviour. It also included non-directive verbal statements said to the child in a neutral or pleasant tone of voice such as questions, conversation and compliments; engaging child in play; smiling at the child; affection to the child; rhetorical questions.

Child behaviours analyzed in the current study consisted of Adaptive Social Engagement, which was defined as the child being engaged in appropriate social interactions with an adult, another child, or a pet. This included making eye contact, appropriate listening or communication (verbal or non-verbal), appropriate play or activity with another person. The mere presence of another individual while the child is engaged in an activity was not considered to constitute social engagement; the child had to be acknowledging that individual and actively engaged. While it may be useful for future studies to also examine other parent and child behaviours, such as negative behaviours which may interfere with
appropriate learning of social skills, the small size of the sample obtained in the current study necessitated that the number of factors examined be limited, and thus these behaviours were chosen as they were considered to be most directly relevant.

Inter-observer agreement was established using a second observer who was blind to the purpose of the study and the diagnostic status of the children. The second observer was trained to achieve 90% or higher agreement with the original coder. For the current study, Kappa for inter-observer agreement was .86 for parent approval and .82 for adaptive social engagement. Ten percent of the videotapes were examined in order to determine inter-observer reliability.

New measures. In addition to utilizing data from the previous study, the Social Skills Rating System (SSRS: Gresham & Elliott, 1990), as well as the AIMS Interview - Child Version (Solish, Minnes & Kupferschmidt, 2003) were added in the current research.

1. The Social Skills Rating System

The SSRS is widely considered to be the most comprehensive and valid informant instrument for rating social competence in children with and without ID (e.g., Demaray et al., 1995; US Dept. of Education, 1996). The SSRS is made up of two separate scales – the Social Skills Scale and the Problem Behaviors Scale. The Social Skills Scale consists of 38 questions addressing a variety of social skills. There are three options for each question pertaining to the frequency with which the child is able to perform that skill, ranging from 0 (never) to 1 (sometimes) to 2 (very often). The SSRS measures such positive social behaviours as: Cooperation, Empathy, Assertion, Self-Control, and Responsibility. The Problem Behaviors Scale consists of 17 items and measures
behaviours incompatible with positive social skills, such as Externalizing Problems (aggression and anger control), Internalizing Problems (depression, anxiety), and Hyperactivity (excessive movement, impulsivity).

There are three versions of the SSRS: parent, teacher, and student. The parent version of the SSRS was used to measure social competence. Internal consistency for the parent version of the scale is .87 to .90 for the Social Skills scale, and .73 to .87 for the Problem Behaviors Scale. Test-retest is .87 for the Social Skills scale, and .84 for the Problem Behaviors Scale. Interrater reliability is not yet provided in the instrument’s manual or the literature. Benes (1995) noted that the SSRS is psychometrically sound, convenient, and linked to intervention. Furlong and Karno (1995) highlighted the excellent reliability of the parent and teacher forms. Cronbach’s alpha on the SSRS for the participants of the current study was 0.80.

2. The AIMS Interview - Child Version

The AIMS Interview - Child Version (AIMS) measures community integration in children with ID from an acculturation perspective. This instrument focuses upon integration from a service delivery perspective, to evaluate whether an individual’s unique needs are identified and supported and whether the person is involved in the community. Depending on whether the child’s needs are identified and supported, the child can be either: Assimilated, Integrated, Marginalized, or Segregated (Solish, Minnes, & Kupferschmidt, 2003). The child’s level of community integration is assessed in four domains: Medical Services, Education, Volunteering/Employment Opportunities, and Social Activities (Minnes et al., 2002). Because the current study is focused specifically peer-related social integration, only the Education and Social Activities domains of the
AIMS Interview (Child Version) were used to obtain a measure of social integration.

The AIMS Interview is conducted with the child’s caregiver and scored on the basis of answers to the questions posed in Issues One and Two of the Acculturation Framework, reviewed previously. Integration is given the highest score (i.e., a score of 3 is given if disability-related needs are identified, supported, and the child is involved in the community); Segregation is given the second-highest score (i.e., a score of 2 is given if disability-related needs are identified and supported, but the child is not involved in the community); Assimilation is given the third-highest score (i.e., a score of 1 is given if the child is involved in the community, but disability-related needs are not identified and supported); and finally, Marginalization is given the lowest score (i.e., a score of 0 is recorded if disability-related needs are not identified or supported, and the child is not involved in the community). Support scores are used to look at the quality of support and satisfaction with the supports provided. Satisfaction with support is measured on a five-point scale, from 1 “Not at all” to 5, “Completely” satisfied. As an additional measure of school supports, the AIMS educational domain includes some further questions about supports that children may receive at school. This measure asks 10 questions, such as whether the child has a special resource teacher, and whether the child receives support in task accommodations or transportation to and from school. Satisfaction for these education supports is rated on a scale from 0 to 5, with 0 being “Not at all”, and 5 being “Completely” satisfied.

A previous version of the AIMS Interview developed for use with adults with ID has been shown to have sound psychometric properties including concurrent, content, and construct validity (Minnes et al., 2002). Preliminary studies of the Child Version have
shown this new instrument to also possess good face and content validity as well as inter-rater reliability (.92-.97). Cronbach’s alpha on the AIMS for the participants of the current study was 0.61.
Chapter 6

Results

Follow-up interviews conducted for the purposes of this study yielded a sample of 64 children from a total of 60 different families. Multiple-birth families consisted of one set of triplets and one set of quadruplets. Caregivers consisted of 1 foster mother, 1 grandmother, 2 fathers, and 56 mothers. The mean age of the children was 9 years and 3 months, with a range of 7 years and 11 months to 12 years and 9 months. The children were grouped into three closely distributed diagnostic categories: (1) Low Birth Weight ($\leq$ 2500 g)/Prematurity ($\leq$ 37 weeks gestation)/multiple birth – 29.7% of the current study’s sample); (2) ID – known etiology (e.g., Down syndrome, Fragile X, ASD – 34.4%); and (3) Idiopathic ID (35.9%). The participant sample involved in the follow-up interviews was quite diverse including many families who reported few or no difficulties, as well as a number of families experiencing high levels of child- and parent-related distress including one family where the child had been placed out of the home due to extreme behavioural difficulties. Therefore, the range of experiences being reported by the families produced a number of outliers in the data that were a reflection of the reality experienced by these families. When outliers occurred, data were reviewed to ensure no errors of data entry or undefined missing values were responsible for the anomaly. As recommended by Glass and Hopkins (1996), true outliers, because they represented the diversity of the families participating in the study, were not excluded from the data analyses.

Data Preparation

Data from the new interviews were scored to provide a measure of social
competence on the SSRS as well as domain scores of social integration on the AIMS domains of Education and Social Activities. These new measures, as well as measures from the archival data, were normally distributed with the exception of the BDI Total score, which showed some positive skewness (1.929) and significant kurtosis. Data were reviewed to ensure no errors of data entry or undefined missing values were responsible for the anomaly, which was found to not be the case. As a true non-normal distribution of the data is plausible for this variable, and the intended analyses are known to be relatively robust against non-linearity (Gorman, 2008), no further transformations were performed on this variable.

Descriptive Statistics

The descriptive information for all measures is presented in Table 3 below. Standard scores on the VABS composite had a mean of 72.03 and a standard deviation of 13.66. Thus the mean of the current sample was almost two standard deviations below the mean for TD children. The range was considerable, spanning from a severe level of disability to a level comparable to TD children. This range is not unexpected for a study examining a heterogeneous group of children, some of whom were affected by severe lifelong disability; whereas others overcame early risk factors to have relatively typical developmental trajectories.

On the CBCL, T-scores of above 70 are consistent with levels of problem behaviours typically seen in referred children; whereas T-scores below this mark reflect typical levels. In the current sample, the mean was 49.11 with a standard deviation of 10.65. Consequently, overall most children were showing levels of problem behaviours comparable to a TD sample with the highest score being on the borderline.
Table 3

*Descriptive Statistics for the Entire Sample*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
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<td>VABS (Standard score)</td>
<td>46-99</td>
<td>72.03</td>
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</tr>
<tr>
<td>CBCL (Standard score)</td>
<td>32-70</td>
<td>49.11</td>
<td>10.65</td>
</tr>
<tr>
<td>Reiss (Total score)</td>
<td>0-28.5</td>
<td>6.58</td>
<td>6.10</td>
</tr>
<tr>
<td>BDI-II (Total score)</td>
<td>0-40</td>
<td>10.69</td>
<td>9.52</td>
</tr>
<tr>
<td>QRS/SF (Raw score)</td>
<td>8.8-39</td>
<td>21.76</td>
<td>6.99</td>
</tr>
<tr>
<td>ISEL (Total score)</td>
<td>67-159</td>
<td>129.18</td>
<td>18.25</td>
</tr>
<tr>
<td>Parent-Child Interactions:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental approval</td>
<td>0-30</td>
<td>20.65</td>
<td>9.71</td>
</tr>
<tr>
<td>Child social engagement</td>
<td>1-30</td>
<td>20.57</td>
<td>8.67</td>
</tr>
<tr>
<td>SSRS: Social Skills</td>
<td>51-135</td>
<td>97.13</td>
<td>25.17</td>
</tr>
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<td>AIMS: Education</td>
<td>2-4</td>
<td>3.47</td>
<td>0.88</td>
</tr>
<tr>
<td>AIMS: Social</td>
<td>1-4</td>
<td>3.22</td>
<td>1.08</td>
</tr>
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</table>

On the Reiss, likewise, children in the current study demonstrated a high degree of variability in scores, ranging from no symptoms to a marked degree of psychopathology. The mean score of 6.58 indicates that, on average, children showed low levels of psychopathology.

On average, respondents reported some symptoms of depressed mood on the BDI-II, but not of a sufficient number or severity to warrant a diagnosis of depression. As was the case with other measures, a wide degree of variability was found, ranging from respondents who reported no symptoms of depressed mood to respondents who reported...
very high levels of depression suggestive of significant depressed mood.

The items on the QRS-SF are scored in terms of whether the responses indicated either a positive or a negative effect on the family. Therefore, the sample mean score of 21.76 indicated a balance between positive and negative influence although the sample had considerable range. Again, given the heterogeneous nature of the group of families within this study, such broad differences were expected.

Scores on the ISEL represent a general measure of the parent’s perceived level of social support, irrespective of their parenting role, with higher scores representing higher levels of social support. Similarly to other measures, results obtained on this scale showed a wide degree of variability on the amount of social support parents were receiving. On average, parents reported a relatively high level of social support.

As discussed previously, measures of parent-child interactions included two separate results: one summarizing the behaviours of the child and one for the parent. Each measure consisted of a summary measure of the number of 30-second intervals within the 5-minute coded interaction in which the individual (child or parent) was engaged in the target behaviour. Both measures showed a wide degree of variability with the mean indicating that, on average, children showed a high degree of adaptive social engagement, and parents were showing a high degree of engaging their child in play or otherwise interacting with their child. However, some children showed very low levels of social engagement, particularly two children with very severe handicaps and one child with autism. Parents who exhibited very low scores of approval consisted of one situation where the parent’s interactive style consisted of issuing a number of directions in the absence of other positive or neutral behaviours as well as several parents who showed
lower rates of positive interactive behaviours.

Social competence scores on the SSRS for TD children have a mean of 100 and a standard deviation of 15. Therefore, the current sample mean was within a range comparable to that of the TD population, and indeed, some children within the sample scored well above average. However, as would be expected for a sample of this nature, more diversity was observed than would be seen within the TD population, and a number of children within the sample showed very significant deficits in social competence.

On the AIMS Education domain, most children were within the mainstreamed classroom for at least part of the day, and most parents reported that their children’s special needs were at least partially recognized and supported. However, perhaps somewhat surprisingly given the current trend towards inclusive educational placement, responses on the AIMS showed that some of the children in the sample were in segregated educational placements. In one case, this segregation was due to very severe behavioural needs where inclusive placement was not deemed feasible. However, for two other children in the sample, segregated education within a specialized setting was the parents’ choice, as parents in these cases felt strongly that their children would benefit from a hands-on curriculum geared to teaching life skills that would be of greater benefit to their children than a modified mainstreamed curriculum.

With regard to integration within the social domain, responses on the AIMS revealed that most children were participating in at least some social activities with peers, and once again, most caregivers reported that their children’s special needs were at least partially recognized and supported. Sadly, however, this situation was not the case for all the children in the sample: one child was found to be marginalized as he lacked
appropriate social opportunities due to his very severe aggressive behaviours. In several other cases, children were segregated and had peer groups of other children with similar needs. In some cases, caregivers felt that such peer groups were more appropriate for their children. In others, lack of the necessary resources prevented children from participating more fully in mainstream social opportunities. For the purposes of further analyses, a composite measure of integration was developed by multiplying the value obtained for the Education domain by the value obtained for the Social domain.

In addition, descriptive data are presented separately for each of the three diagnostic groups in Tables 4, 5, and 6. Although there was considerable variability within each of the three groups as well as for the sample overall, data for each of the groups overall were comparable. T-tests were conducted to test for between-group differences, and a Bonferroni correction was used to correct for a spiraling alpha. The analyses did not reveal statistically significant differences between the three groups.
### Table 4

*Descriptive Statistics for Low Birth Weight/Prematurity Group, N=19*

<table>
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<th>Measure</th>
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<td>VABS (Standard score)</td>
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<td>84.42</td>
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<td>CBCL (Standard score)</td>
<td>32-66</td>
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<td>6.84</td>
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<tr>
<td>QRS/SF (Raw score)</td>
<td>8.8-34</td>
<td>17.34</td>
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<tr>
<td>ISEL (Total Score)</td>
<td>106-157</td>
<td>143.81</td>
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<td>Parent-Child Interactions:</td>
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<td>Parental approval</td>
<td>0-30</td>
<td>18.78</td>
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<td>Child social engagement</td>
<td>1-30</td>
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<td>SSRS: Social Skills</td>
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<td>AIMS: Social</td>
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Table 5

*Descriptive Statistics for ID – Known Etiology Group, N=22*

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<td>CBCL (Standard score)</td>
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<td>BDI-II (Total Score)</td>
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<td>QRS/SF (Raw score)</td>
<td>11-39</td>
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<td>Child social engagement</td>
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Table 6

*Descriptive Statistics for ID – Unknown Etiology Group, N=23*

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<td>Reiss</td>
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<tr>
<td>BDI-II (Total Score)</td>
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</tr>
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<td>QRS/SF (Raw score)</td>
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<td>ISEL (Total Score)</td>
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<td>Parent-Child Interactions:</td>
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<td>Parental approval</td>
<td>2-30</td>
<td>22.47</td>
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<td>5.94</td>
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<td>3.26</td>
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</table>

*Index Measures*

Maximum likelihood factor analyses with quartimax rotation were conducted to determine if index measures could be derived for parent characteristics (composed of stress, social support, and mood) and for child characteristics (composed of adaptive behaviour, psychopathology, and behavioural problems). It has been suggested by Hair, Anderson, Tatham, and Black (1998) that factor loadings above .6 be considered ‘high’. By this standard, all measures of parent characteristics have a high loading on the first factor. Similarly, measures of child behaviour problems as well as of child psychopathology have a high loading on the second factor. The measure of early child
adaptive functioning, however, falls short of this criterion. Raubeimer (2004) has suggested that a lower criterion of .4 is acceptable, and the factor loading of early child cognitive status does fall within those parameters. A scree plot and parallel analysis also supported a two-factor solution. Factor loadings are presented in Table 7 below. Z-scores obtained on measures of parent characteristics were multiplied together to form the parent composite score and, similarly, z-scores obtained on measures of child characteristics were multiplied in order to obtain the child composite score.

Table 7

*Factor Loadings of Parent and Child Characteristics*

<table>
<thead>
<tr>
<th>Measure</th>
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<th>Factor 2</th>
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<td>.031</td>
</tr>
<tr>
<td>CBCL</td>
<td>.263</td>
<td>.754</td>
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<td>ISEL</td>
<td>-.733</td>
<td>-.157</td>
</tr>
<tr>
<td>QRS/SF</td>
<td>.708</td>
<td>.307</td>
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<tr>
<td>Reiss</td>
<td>.042</td>
<td>.852</td>
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<tr>
<td>VABS</td>
<td>.022</td>
<td>-.452</td>
</tr>
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</table>

Analyses

*Main analyses.* As reviewed previously, my primary model hypothesized full mediation of the effects of early parent and child characteristics on later social competence and social integration through early parent-child interactions.

To examine this model, as recommended by Baron and Kenny (1986), a series of regression analyses were performed. Specifically, Baron and Kenny state that mediation
can be statistically shown to occur if: (1) a change in the independent variable significantly accounts for variations in the dependent variable; (2) a change in the independent variable significantly accounts for change in the mediator; and (3) when the independent variable and mediator are both included in the model, the strength of the direct relationship between the independent variable and the dependent variable significantly decreases. Therefore, to test if mediation is occurring, the following analyses must be performed: (1) regress the dependent variable (DV) onto the IV; (2) regress the mediator onto the independent variable (IV); and (3) regress the DV onto both the IV and the mediator.

Because I was proposing two consecutive mediational relationships, two separate sets of analyses were conducted. The required analyses are outlined in Table 8 below. For the reader’s reference, the model is also reproduced, outlining the necessary analyses, in Figure 8. In the first set of analyses, the IVs were the parent and child characteristics, parent-child interactions were the mediator, and social competence was the DV. In the second set, parent-child interactions were the IV, social competence was the mediator, and social integration was the DV. Additional analyses required to test the remaining models will be discussed later in this chapter.
Table 8

**Summary of Regression Analyses**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>IV</th>
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<td>Parent-Child Interactions</td>
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<tr>
<td>Second Set</td>
<td>Parent-Child Interactions</td>
<td>Social Competence</td>
<td>Social Integration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 8.** A representation of Model 1 illustrating the analyses recommended by Baron and Kenny.

In the first set of mediation analyses, social competence (the dependent variable) was regressed onto both the composite of early parent characteristics well as that of the early child characteristics (the independent variables). The results of this analysis are presented in Table 9 below. The main effects of the early parent characteristics composite
and the early child characteristics composite were significant, satisfying Baron and Kenny’s (1986) first step that an effect existed; therefore, I continued to the second step.

Table 9

Summary of Regression of Social Competence onto Early Child and Parent Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Parent Characteristics Composite</td>
<td>3.547</td>
<td>1.690</td>
<td>.244*</td>
</tr>
<tr>
<td>Early Child Characteristics Composite</td>
<td>23.111</td>
<td>7.844</td>
<td>.342**</td>
</tr>
</tbody>
</table>

*Note. $R^2 = .208, p = .001$.

*p < .05, **p < .01

As presented in Tables 10 and 11, however, the second step, regression of parent-child interactions (the proposed mediator) onto parent characteristics and child characteristics (the independent variables) was not significant. That is, neither the parent’s interactions with the child nor the child’s engagement with the parent was significantly affected by early parent characteristics or early child characteristics. Consequently, the second of Baron and Kenny’s steps was not satisfied, and neither parental approval nor child social engagement could be considered mediators of the relationship between the early child or parent factors and social competence.
Table 10

*Summary of Regression of Parental Approval onto Early Child and Parent Characteristics*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Parent Characteristics Composite</td>
<td>.145</td>
<td>.696</td>
<td>.027</td>
</tr>
<tr>
<td>Early Child Characteristics Composite</td>
<td>4.818</td>
<td>3.229</td>
<td>191</td>
</tr>
</tbody>
</table>

*Note.* $R^2 = .039, p = .298.$

Table 11

*Summary of Regression of Child Social Engagement onto Early Child and Parent Characteristics*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Parent Characteristics Composite</td>
<td>.233</td>
<td>.642</td>
<td>.047</td>
</tr>
<tr>
<td>Early Child Characteristics Composite</td>
<td>3.717</td>
<td>2.979</td>
<td>.161</td>
</tr>
</tbody>
</table>

*Note.* $R^2 = .025, p = .460.$

For the second set of mediation analyses, the first step tested whether or not parent-child interactions (the independent variable) would have a direct effect on social integration (the dependent variable). Analyses determined that this relationship was not significant (see Table 12). Thus a further analysis of mediation could not be pursued as no effect existed to be mediated.
Table 12

Summary of Regression of Social Integration onto Early Parent-Child Interactions

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Approval</td>
<td>-0.041</td>
<td>0.023</td>
<td>-0.366</td>
</tr>
<tr>
<td>Child Social Engagement</td>
<td>0.050</td>
<td>0.026</td>
<td>0.396</td>
</tr>
</tbody>
</table>

Note. R^2 = .080, p = .141.

However, for completeness, I did run the analysis for the second step, regressing the proposed mediator (social competence) on the independent variables (parent-child interactions). As shown in Table 13, parent-child interactions did not have a significant effect on social competence further demonstrating that mediation did not occur.

Table 13

Summary of Regression of Social Competence onto Early Parent-Child Interactions

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Approval</td>
<td>0.490</td>
<td>0.518</td>
<td>0.183</td>
</tr>
<tr>
<td>Child Social Engagement</td>
<td>1.061</td>
<td>0.566</td>
<td>0.363</td>
</tr>
</tbody>
</table>

Note. R^2 = .063, p = .136.

Although the earlier steps for mediation were not satisfied, I tested the final path in Figure 8, the effect of social competence on social integration. As shown in Table 14 below, the regression of social integration onto social competence was significant, indicating that social competence was a significant predictor of social integration.
Table 14

Summary of Regression of Social Integration onto Social Competence

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Competence</td>
<td>0.0237</td>
<td>0.005</td>
<td>.560***</td>
</tr>
</tbody>
</table>

*Note. R² = .313, p < .001.

***p < .001

As described earlier, my second proposed model was more comprehensive and proposed additional relationships between early parent and child characteristics and social integration. Consequently, my next set of analyses tested for this relationship. As presented in Table 15, however, early parent and child factors were not significant predictors of social integration. Consequently, the first step of a mediation analysis was not satisfied, and I could not pursue potential mediators of these relationships.

Table 15

Summary of Regression of Social Integration onto Early Child and Parent Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Parent Characteristics Composite</td>
<td>0.492</td>
<td>0.382</td>
<td>.162</td>
</tr>
<tr>
<td>Early Child Characteristics Composite</td>
<td>3.417</td>
<td>1.773</td>
<td>.242</td>
</tr>
</tbody>
</table>

*Note. R² = .070, p = .109.
In comparing the results obtained to the four models outlined at the outset of the study, the data do not fully support any of the proposed models. As the measures of parent-child interactions were not significantly related to any of the other measures, these variables could not be mediators of the relationship between early parent and child characteristics and social competence nor could they serve as independent variables in a mediation analysis involving social competence as a mediator and social integration as the outcome. Representations of the results are shown in Figures 9 and 10.

**Figure 9.** The results of the current study, part 1.

**Figure 10.** The results of the current study, part 2.

*Secondary analyses.* I conducted secondary analyses on a subset of the sample that was identified in toddlerhood as showing delays, leaving out at-risk children who were not showing early delay. I performed these analyses to examine how focusing only on those children who were showing definite signs of early delays may yield a clearer picture of the relationship between the variables for this group of children. For the purposes of this
secondary analysis, delay was defined as a score of one standard deviation or more below the mean on the VABS Total Scale score at the time the initial data were gathered. This definition of early delay resulted in a final sample of 52 children identified as showing early signs of delay. I carried out a series of analyses between the same variables examined for the larger sample. The results obtained showed consistency with those found for the larger sample.
Chapter 7

Discussion

The current study examined how factors present in toddlerhood may influence the school-age social competence and social integration in children with or at-risk for ID. The study considered the role of the children’s early socialization skills and behaviour problems. In addition, the current research also examined the effect of early parental stress, mood and social support in the development of later child social competence and social integration. Early interactions between parent and child were also examined in order to determine whether these affect the development of school-age social competence and social integration.

I proposed that: (1) the social integration of school-aged children with or at-risk for ID would be affected by the social competence of these children at school age; (2) the children’s level of social competence at school age would be affected by variables present while the child was a toddler, such as: the child’s early socialization skills, the parent’s mental health, parental stress and social support; (3) the role of these early parent and child characteristics in predicting the child’s social functioning at school age would be mediated by the nature of the early parent-child interactions; and (4) the child’s level of social integration at school age would be affected by the child’s social competence at that age, as well as by the early parent and child characteristics. In order to test these hypotheses, I proposed four separate models outlining the possible relationships between the early parent and child characteristics, social competence and social integration. As described fully elsewhere, these included a full mediation model, a partial mediation model, a direct effects model, and a child-characteristic driven model.
The results obtained were partially supportive of these hypotheses: (1) the social integration of school-aged children with ID was found to be related to the social competence of these children at school age; (2) the children’s level of social competence at school age was found to be affected by variables present while the child was a toddler, including both the child’s early socialization skills and problem behaviours, as well as a composite measure composed of the parent’s mental health, parenting stress and social support at toddlerhood; and (3) the child’s level of social integration at school age was found to be affected by the child’s social competence at that age. However, other hypotheses were not supported: the role of the early parent and child characteristics in predicting the child’s social functioning at school age was not found to be mediated by the nature of the early parent-child interactions; and the child’s level of social integration at school age was not found to be affected by early parent and child characteristics.

With regard to the proposed models, the obtained results did not fully support any of the models outlined earlier. Partial support was obtained for elements of Model 1, although parent-child interactions were not found to be related to any of the other elements, and no mediation was found.

The obtained pattern of findings is in keeping with previous theoretical formulations, in that it is consistent with the ecological-transactional model (Sameroff & Fiese, 2000; Bronfenbrenner, 1979; 1986; Sameroff & Chandler, 1975), in which child development is considered to be an outcome of a dynamic process affected by both biological risk factors such as the child’s level of disability, and environmental factors such as parental stress and depressed mood (which may have a negative effect) or parental social support (which may be protective). The results of the current study are
also consistent with other recent research findings: for instance, as mentioned previously, Keough et al. (2000) found a significant association between child level of disability and social competence. Thus, the current results lend further support to previous findings, as well as theory postulating that many of the early precursor skills necessary for the successful development of later social competence are likely hampered in the early development of children with ID by factors such as cognitive difficulties as well as by the presence of problem behaviours (Guralnick, 1999a; Tomporowski & Tinsley, 1997; Bray, Fletcher, & Turner, 1997). It is also consistent with previous research with regard to the role of parent factors. As reviewed previously, past findings have indicated, for instance, that the amount parental support available in infancy can affect children’s outcome with regard to later peer relations (Clark & Ladd, 2000).

However, the body of prior research examining the effect of early factors on the development of later social competence in children with or at risk for ID is extremely limited. Consequently, the findings obtained in this study make an important contribution to the current level of understanding of the factors that affect the development of social competence over a longer time span. Moreover, by studying a group of children with or at risk for ID, this study extends the prior body of research to suggest that factors such as adequate parental social support and lower levels of parental stress can serve as protective factors and contribute to healthy outcomes for infants initially identified to be at risk for ID.

In addition to the above results, the current study also found social competence to be a predictor of social integration. This finding is a contribution to the body of literature on this subject, as there has been little previous research on predictors of social
integration, and specifically on the role of social competence in the social integration of children with or at risk for ID. The finding is consistent with previous research examining social acceptance in TD children, which indicates that children’s social status is determined to some extent by their level of social knowledge, a component of social competence (Crick & Dodge, 1994). Additionally, the obtained results are in keeping with theoretical models regarding the factors affecting social integration of children with ID. Theorists have suggested that early deficits in social skill are compounded over time, and the resulting poor social competence presents a challenge to social integration (Guralnick, 1999b; Bost et al., 1998). However, no previous research has directly examined the contribution of social competence to the social integration of children with or at-risk for ID. Consequently, the results of this line of study make a significant contribution to the current body of knowledge in this area.

An unexpected finding in the current line of research concerned parent-child interactions. Contrary to the hypothesis, I found that the measure of parent-child interactions used in this study did not mediate the effect of early parent and child factors on the development of social competence or social integration. In fact, the measure of parent-child interactions was not found to correlate significantly with any of the other measures. This result is inconsistent with previous models, which posit that early parent-child interactions form the basis of later peer-related social competence (Bebko, 1998; Guralnick, 2007). A number of factors may account for this unexpected finding. Firstly, the nature of this measure may not have been sensitive enough to adequately measure the effect of parent-child interactions. In the current study, a short segment of a play situation was examined. I chose this situation among three others that were available in the
archival data because I thought that, among the four conditions available, a typical play interaction between parent and child would be most likely to display skills such as joint attention and turn-taking, which I considered would be most relevant to the development of social competence. The findings did not support this assumption. Future studies with this data set may be more successful by examining the distraction condition, which may capture the child’s ability to play independently. Children with higher levels of ID may be less able to select a suitable activity and occupy themselves appropriately for a brief period, and this may be predictive of less favourable outcomes with regard to social competence and social integration. The structured play condition, as well, may be worth examining, as it requires children to adapt to a novel situation that poses multiple demands on the child, and the ability to navigate such circumstances successfully may also be predictive of future outcomes.

Therefore, rather than measuring typical day-to-day interactions, it will be key for future studies to devise specific situations in which to observe parent and child. Interactions such as those where a parent instructs the child or demonstrates how to cope with frustration, initiate play, turn-take, as well as other behaviours that form early building blocks to the development of social competence may be most instructive. Consequently, much work remains to be done in studying the types of parent-child interactions that are most relevant to the later development of social competence, and in examining the role that these interactions play in child development.

**Theoretical Implications**

Despite the small and exploratory nature of the current research, the obtained findings do make some substantial and interesting contributions to the existing body of
knowledge with regard to the longitudinal development of social competence in children with or at-risk for ID. Certainly, the finding that early child functioning appears to contribute to later social competence is not surprising. However, it is less obvious that early parent factors may also play a role. This finding in particular is an issue worth examining in future studies, as it may have implications both for refining theoretical models of development, as well as for clinical intervention. Perhaps parental stress and mood may be affected by child factors, and it is early child functioning that affects both later child development and early parent factors. Alternately, perhaps stressed parents who are not adequately supported may model less appropriate social competence to their children, thereby affecting future child outcome. Further follow-up studies will be required to elucidate the mechanism by which early parent factors may have an effect on later child development.

The role of parent-child interactions, as well, will need to be examined in more detail in future research. As such interactions are considered to be of paramount importance in current theoretical models of child development, the current findings suggest that merely looking at how parents engage children in play is not sufficient to examine the role of parent-child interaction in the development of children’s social functioning. As mentioned previously, future studies must carefully consider the methodology used in measuring parent-child interactions. Specifically, perhaps future studies focusing on parent modeling of appropriate social initiation and emotional regulation will shed more light on the role of parent-child interactions in the development of the child’s social competence and social integration.
Clinical Implications

Although the current study was small and exploratory, it did yield a preliminary finding of considerable interest with regard to clinical implications: namely, the possibility that early parent characteristics, such as higher parental stress, depressed mood and less social support, are correlated with poorer long-term child outcomes with respect to social competence. It will be worthwhile for future research to examine the nature of this relationship in more detail, as this finding has important clinical implications. Whereas most current programs aimed at early intervention for children with or at-risk for ID typically focus on intervening with child variables, this finding suggests that intervention aimed at the caregiver may not only provide an important avenue to relieve the distress faced by overwhelmed parents coping with a special needs child, but that it may have a tangible effect on the long-term outcome of the child’s functioning. This result shows parallels with the findings of another recent study, which suggested that respite care services provided to caregivers of children with disabilities have a positive, longitudinal effect on the child’s outcome with regard to academic achievement (Barnard-Brak & Thomson, 2009). While the findings of both the aforementioned study and the current research are preliminary, they do present the possibility that parents who have the supports they need to effectively manage stress, and who are in good mental health, may in fact function as a protective variable to children who are at risk for ID. It will be important for future studies to further investigate this possibility.

The current study identified social competence as one factor that influences the extent to which children with ID experience social integration. Clearly, much work
remains to be done in order to identify other factors that influence the social integration of children with ID, as well as to design, evaluate and implement programs that are successful in facilitating the social integration of such children with their TD peers.

Preliminary studies support the value of structured contact between children with and without disabilities in promoting positive peer relationships, within both academic and recreational settings (Webster & Carter, 2007; Siperstein, Norins & Mohler, 2006). However, there is still much to learn with regard to the influence on social integration of contextual factors and social ecology of the classroom, including the teachers and TD children who are part of that classroom (Siperstein & Parker, 2008). The role of these factors as well as their interplay with characteristics of the child with ID, such as social competence, will need to be examined in future studies.

Limitations and Directions for Future Research

Despite the contributions to the literature made by this study, the current research possesses a number of limitations. These will be reviewed below.

The size and nature of the participant sample pose a limitation to the generalizations that can be made from the obtained findings. As is often the case with longitudinal research, a significant amount of attrition occurred within the participant sample over the years. This poses the problem of selective attrition – that is, it is likely that the families most likely to drop out of the study were ones whose children had the highest levels of difficulty, who therefore posed the greatest demands on their parents’ time. Moreover, parents who have the least levels of social support, highest levels of stress and the most difficulties with mental health, would be most likely to discontinue their participation. A comparison of the descriptive data of the original sample from the
archival study, to that of the follow-up study does lend some support to the possibility of selective attrition. For instance, children in the full archival sample showed slightly higher levels of problem behaviours, and parents reported somewhat higher levels of depression. No parent in the current sample reported dissatisfaction with the supports they were receiving. Thus, the possibility of selective attrition suggests that the findings may have been quite different had attrition not taken place. That is, perhaps findings would indicate a much higher proportion of negative outcomes, rather than the balance of some negative and some positive that was found. An attrition analysis revealed that parents who did not continue in the study were more likely to have lower levels of education, lower income, and to rent rather than own their home. This lends further support to the possibility that selective attrition may have had an impact on the outcome of the study.

Additionally, due to the exploratory nature of the current research, the current sample was both small and heterogeneous. The heterogeneity, in particular, is a factor to consider. Although studying such an inclusive group of children did enrich the study in that I was able to include the experiences of parents with children who have very rare disorders, which may be overlooked in studies of more specific groups, the heterogeneity of the group may pose some inherent difficulties to the generalizeability of the findings to specific groups of children with ID. As discussed previously, children with ID who have different diagnoses face very different kinds of challenges with regard to social competence and social integration. The difficulties encountered by a child with Down Syndrome will be inherently different than those encountered by a child with autism. Due to these differences between children with different types of ID, it is possible that
analyzing such a heterogeneous sample as one group may have masked some group-specific effects. However, I chose to analyze the results as one group as the exploratory nature of the current study, as well as the small sample size, would have made it difficult to obtain the necessary power to conduct meaningful analyses had the participants been further divided into subgroups. Thus, it will be crucial for future studies to conduct research on more focused groups with more specific diagnoses.

The participant sample of this study was heterogeneous not just with respect to diagnosis and level of disability, but also with respect to age: there was a considerable age range, as children ranged from 7 to 12 years of age at the time of the follow-up interview. It is possible that the predictive power of parent and child functioning at toddlerhood is different for the youngest members of the sample in comparison to the oldest of the children.

Similarly, it is likely that the sample was heterogeneous with regard to a number of parent factors. One variable of heterogeneity contributed by the parent is time since diagnosis. It is likely that the parent’s mood, ability to cope, and social support network would be affected by this variable. The participant sample included children with Down Syndrome, whose parents would have had a diagnosis since birth (or since prenatal testing). The experiences and resources of these parents are likely to vary from parents whose children were diagnosed more recently, as well as from those of parents whose children are experiencing difficulties but who did not yet have a diagnosis at the time when measures were taken in toddlerhood. However, the feasibility of large-scale, longitudinal research with specific samples and ages of children with disabilities, with
controls for parent variables is problematic. The current study nevertheless made important contributions to the existing body of knowledge in this area.

In conducting the follow-up interviews, the comments made by parents in response to interview questions suggest that the issue of social integration is a tremendously complex one, with parents differing greatly with respect to their opinions regarding the benefits of integration. Whereas some parents felt very strongly that both their individual child as well as the community at large stands to benefit significantly from greater levels of integration, others expressed frustration at the level of instructional integration being experienced by their child. Experts in this area of research have acknowledged the complexity of this issue, and there has been much discussion with regard to how children with ID should be taught and what would be an appropriate curriculum for such children (Siperstein & Parker, 2008; Agran, Alper & Wehmeyer, 2002). The breadth of the discussion in the professional literature was largely reflected in the concerns voiced by parents participating in the current study. Some parents felt that lower-functioning children stood to benefit more from developmentally-appropriate programming, such as a curriculum based on teaching life skills, than they did from integration in age-appropriate programming in courses such as geography and French. With regard to social involvement outside of the academic environment as well, some parents of children with more severe levels of ID indicated that involvement with other children with similar difficulties was more suited to their children’s needs and interests than participation in activities with TD peers. Additionally, parents reported segregated social groups to have the added benefit of providing social support to the parents from other parents who were faced with similar challenges.
Therefore, the wide diversity of opinions presented by the parents participating in this study make it clear that although the AIMS constitutes a very significant step forward in the study of social integration of school-age children, the question of what level of social integration is most appropriate is a very complex one. Future research will need to more specifically examine not only the level of integration experienced by children with ID, but also whether that level of integration best meets the child’s needs. Indeed, the AIMS is a new instrument that continues to be researched and refined, and because these data were gathered research has been undertaken to redevelop the instrument to gather more qualitative data from the respondents (P. Minnes, personal communication, June 26, 2008).

In summary, this research was the first to examine the role of factors present in toddlerhood on the development of social competence and social integration in school years for children with or at-risk for ID. The study made use of the child version of the AIMS, a new instrument, to examine social integration. Additionally, the study’s results raise important questions about the role of early parent factors in child social development, which has implications for future research as well as clinical intervention design. In these ways, it expanded significantly upon previous research. However, future research will be crucial in order to more fully examine the role of parent factors in the development of social competence and social integration, and to guide the development of more comprehensive, parent-focused intervention programmes. Additionally, it will be key for future studies to develop more comprehensive measures of parent-child interactions in order to more fully capture the role of these important early childhood experiences in shaping the child’s development.
References


comparison and future aspirations. *Journal of Intellectual Disability Research, 50* (6), 432-444.


Appendix A

Letter of Information: Ontario and Manitoba families

This study is being conducted by Danuta Rajska, under the supervision of Dr. Maurice Feldman, Brock University, and Dr. Patricia Minnes, in the Department of Psychology at Queen’s University. The study is a joint project, with Dr. Dickie Yu at St. Amant Centre and Dr. Linda McDonald at the University of Alberta.

What is the study about?

This study will examine predictors of social competence and social integration of children with or at-risk for developmental disabilities. We’d like you to tell us about your child’s social skills and their relationships with classmates. We’d like to compare this to information you gave us previously to see what puts children at risk for social problems, and what may protect them from these problems.

How can you help?

Your participation in the previous study helped us learn about risk and resilience of young children with or at risk for developmental disabilities. This led to some important questions about the development of social skills and social integration that you can help us answer. If you agree to participate in this study, someone will phone you to ask questions about your child’s behaviour, social skills, and services your child is receiving. The questions will be from 3 standardized questionnaires: the Child Behaviour Checklist (used in the original study), and two new questionnaires: the Social Skills Rating Scale, and the AIMS Interview.
How much time will it take?

The entire follow-up study will consist of one phone-based interview lasting approximately 45 minutes. Unlike the previous study, this follow-up will NOT require a home visit, and you will NOT need to fill out any questionnaires.

What are the benefits in participating in this project?

By participating, you will have a chance to share your experiences and views about the supports available to your child. You will help us to better understand what puts children at risk, and what protects them from developing social problems. This may help other families in the future who have children who are at risk for delays in development.

Is participation voluntary?

Participation in this study is strictly voluntary. If you decide not to participate or if you decide to stop (which you may do at any time and for any reason), your decision will in no way affect any services you are getting now or could receive in the future.

Can I get a copy of the results of the study?

We will be pleased to send you information about the results of the study when it is completed.

How will the data be published?

The data will be summarized for groups of participants when it is published. It will be used for a Ph. D. Dissertation, and findings will be published in professional publications.

What are the risks in participating in this project?

There are no known risks associated with this procedure. Although answering questions about your child might make some parents feel uncomfortable, most parents actually welcome the opportunity to talk about challenges they face. Nevertheless, you do not
have to answer any question that you do not want to.

**Will my personal information be kept confidential?**

All information obtained during this study is confidential. The data will be stored in a locked office, and will be available only to study personnel, who will be supervised by Dr. Maurice Feldman and Dr. Patricia Minnes. Your family’s identity will not be disclosed in any presentations or publications.

**Is there any compensation for participating in the project?**

We will reimburse any costs incurred by you to contact us through long-distance telephone calls or mail, so there will be no cost to you in participating in the project.

**Who should I talk to if I have questions, concerns, or complaints?**

If you have any questions, concerns, or complaints, please contact any of the following:

Dr. Maurice Feldman, Brock University, at (519) 688-5550, ext. 3785; Dr. Patricia Minnes, Queen’s University, (613) 533-2885; Dr. Vernon Quinsey, Head, Dept. of Psychology, Queen’s University, (613) 533-2492; or the Queen’s University General Ethics Board, (613) 533-6081.

Thank you so much for considering participating in this study.

Sincerely yours,

Danuta Rajska, MA

PhD student
Appendix B

Letter of Information: Alberta families

You are invited to participate in the research project titled, Prediction of Social Competence and Social Integration in Children with or at-risk for Developmental Disability. This study is a PhD dissertation being conducted by Danuta Rajska, under the supervision of Dr. Maurice Feldman, Brock University, and Dr. Patricia Minnes, in the Department of Psychology at Queen’s University. The study is a joint project, with Dr. Dickie Yu at St. Amant Centre and Dr. Linda McDonald at the University of Alberta.

What is the study about?

This study will examine predictors of social competence and social integration of children with or at-risk for developmental disabilities. We’d like you to tell us about your child’s social skills and their relationships with classmates. We’d like to compare this to information you gave us previously to see what puts children at risk for social problems, and what may protect them from these problems.

How can you help?

Your help in the Child and Family Resilience Study helped us learn about and resilience in children with or at risk for DD. This led to some important questions about the development of social skills and social integration that you can help answer. If you agree to participate, someone will phone you to ask questions about your child’s behaviour, social skills, and services your child is receiving. The questions will be from 3 standardized questionnaires: the Child Behaviour Checklist (used in the original study), and two new questionnaires: the Social Skills Rating Scale, and the AIMS Interview.
How much time will it take?

The entire follow-up study will consist of one phone interview lasting approximately 45 minutes. This follow-up will NOT require a home visit, and you will NOT need to fill out any questionnaires.

What are the benefits in participating in this project?

By participating, you will have a chance to share your experiences and views about the supports available to your child. You will help us to better understand what puts children at risk, and what protects them from developing social problems. This may help other families in the future who have children who are at risk for delays in development.

Your rights as a participant:

Participation in this study is strictly voluntary.

You have the right not to participate, or to withdraw at any time and for any reason.

You can also choose to have your data removed and not included in the study.

Your decision will in no way affect any services you are getting now or could receive in the future.

Your family’s identity will not be disclosed in any presentations or publications.

You have the right to disclosure of any apparent or actual conflict of interest on the part of the researcher.

All data collected will be stored safely and confidentially for a minimum of 5 years following the completion of this study.

Can I get a copy of the results of the study?

We will be pleased to send you information about the results of the study when it is completed.
**How will the data be published?**

The data will be summarized for groups of participants across three different provinces (Alberta, Manitoba, and Ontario) when it is published. It will be used for a Ph. D. Dissertation, and findings will be published in professional publications.

**What are the risks in participating in this project?**

There are no known risks associated with this procedure. Although answering questions about your child might make some parents feel uncomfortable, most parents actually welcome the opportunity to talk about challenges they face. Nevertheless, you do not have to answer any question that you do not want to.

**Is there any compensation for participating in the project?**

We will reimburse any costs incurred by you to contact us through long-distance telephone calls or mail, so there will be no cost to you in participating in the project.

**Who should I talk to if I have questions, concerns, or complaints?**

If you have any questions, concerns, or complaints, please contact any of the following: Dr. Maurice Feldman, Brock University, at (519) 688-5550, ext. 3785; Dr. Patricia Minnes, Queen’s University, (613) 533-2885; Dr. Vernon Quinsey, Head, Dept. of Psychology, Queen’s University, (613) 533-2492; or the Queen’s University General Ethics Board, (613) 533-6081. You may also contact Dr. Linda McDonald, at the University of Alberta, at (780) 492-2389.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education and Extension Research Ethics Board (EE REB) at the University of Alberta. For questions regarding participant rights and ethical
conduct of research, contact the Chair of the EE REB at (780) 492-3751.

Thank you so much for considering participating in this study.

Sincerely yours,

Danuta Rajska, MA
PhD student
Appendix C

Consent Form: Alberta families

I, _________________________ have volunteered to participate in the study titled, Prediction of Social Competence and Social Integration in Children with or at-risk for Developmental Disability. This study is being conducted by Danuta Rajska as a PhD dissertation, and is being supervised by Dr. Maurice Feldman and Dr. Patricia Minnes at the Department of Psychology, Queen’s University.

I have read the letter of information about this study and have had any questions addressed to my satisfaction. (Questions can be sent to danuta@psyc.queensu.ca, or by phoning (613) 547-0721. You may also phone Dr. Linda McDonald, at (780) 492-2389).

I understand the nature and scope of my involvement.

I agree to:

☐ take part in a telephone interview, which will likely last about 45 minutes.

I understand that I will be interviewed about my child’s behaviour, social skills, school placement, and social activities, and the interviewer will fill out questionnaires using my responses. I understand that the purpose of the study is to investigate how early experiences may affect children’s social skills and social acceptance by peers. I am aware that my participation in the study is completely voluntary and that I may stop at any time with no impact on the services I am receiving or may receive in the future. I also understand that my confidentiality will be protected throughout the study, and that the information I provide will be available only to researchers with scholarly interests in children with or at-risk for DD. I understand that data collected from me will be grouped with that of other families from Alberta, Manitoba and Ontario for publication. I will
receive a copy of this consent form.
Should I have any further questions, concerns, or complaints, I understand that I can contact any of the following: Dr. Maurice Feldman, Brock University, at (519) 688-5550, ext. 3785; Dr. Patricia Minnes, Queen’s University, (613) 533-2885; Dr. Vernon Quinsey, Head, Dept. of Psychology, Queen’s University, (613) 533-2492; or Dr. Joan Stevenson, Chair of the General Research Ethics Board, (613) 533-6000 ext. 74579, email stevensj@post.queensu.ca.

____________________________   ______________________________
Print Name of Consent Giver        Signature of Consent Giver

____________________________   ______________________________
Date                        Relationship to Child

Just in case our records are out of date, what’s your telephone number?

(             )

What’s the best time of day to reach you?

____________________________

*Thank you so much for your help!!!*
Appendix D

Consent Form: Ontario and Manitoba families

I, _________________________ have volunteered to participate in the study titled, Prediction of Social Competence and Social Integration in Children with or at-risk for Developmental Disability. This study is being conducted by Danuta Rajska as a PhD dissertation, and is being supervised by Dr. Maurice Feldman and Dr. Patricia Minnes at the Department of Psychology, Queen’s University.

I have read the letter of information regarding this study and have had any questions I may have addressed to my satisfaction. (Questions can be addressed to danuta@psyc.queensu.ca, or by phoning (613) 547-0721. Any long-distance telephone costs will be reimbursed). I understand the nature and scope of my involvement.

I agree to:

☐ take part in a telephone interview, which will likely last about 45 minutes.

I understand that I will be interviewed about my child’s behaviour, social skills, school placement, social activities, inclusion and services. The interviewer will fill out questionnaires about my child using my responses. I understand that the purpose of the study is to investigate how early experiences may affect children’s social skills and social acceptance by peers. I am aware that my participation in the study is completely voluntary and that I may stop at any time with no impact on the services I am receiving or may receive in the future. I also understand that my confidentiality will be protected throughout the study, and that the information I provide will be available only to researchers with scholarly interests in children with or at-risk for developmental disabilities. I will receive a copy of this consent form.
Should I have any further questions, concerns, or complaints, I understand that I can contact any of the following: Dr. Maurice Feldman, Brock University, at (519) 688-5550, ext. 3785; Dr. Patricia Minnes, Queen’s University, (613) 533-2885; Dr. Vernon Quinsey, Head, Dept. of Psychology, Queen’s University, (613) 533-2492; or Dr. Joan Stevenson, Chair of the General Research Ethics Board, (613) 533-6000 ext. 74579, email stevensj@post.queensu.ca.

___________________________  ____________________________
Print Name of Consent Giver  Signature of Consent Giver

___________________________  ____________________________
Date  Relationship to Child

Just in case our records are out of date, what’s your telephone number?

(             )

What’s the best time of day to reach you?

_________________________________________________________________

Thank you so much for your help!!!
Appendix E

Interpersonal Support Evaluation List

This scale is made up of a list of statements each of which may or may not be true about you. For each statement check “definitely true” if you are sure it is true about you and “probably true” if you think it is true but are not absolutely certain. Similarly, you should check “definitely false” if you are sure the statement is false and “probably false” is you think it is false but are not absolutely certain.

1. There are several people that I trust to help solve my problems.
   _____ definitely true (3) _____ definitely false (0)
   _____ probably true (2) _____ probably false (1)

2. If I needed help fixing an appliance or repairing my car, there is someone who would help me.
   _____ definitely true (3) _____ definitely false (0)
   _____ probably true (2) _____ probably false (1)

3. Most of my friends are more interesting than I am.
   _____ definitely true (3) _____ definitely false (0)
   _____ probably true (2) _____ probably false (1)

4. There is someone who takes pride in my accomplishments.
   _____ definitely true (3) _____ definitely false (0)
   _____ probably true (2) _____ probably false (1)
5. When I feel lonely, there are several people I can talk to.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

6. There is no one that I feel comfortable to talking about intimate personal problems.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

7. I often meet or talk with family or friends.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

8. Most people I know think highly of me.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

9. If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

10. I feel like I’m not always included by my circle of friends.
    ____definitely true (3)  ____definitely false (0)
    ____probably true (2)  ____probably false (1)
11. There really is no one who can give me an objective view of how I’m handling my problems.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

12. There are several different people I enjoy spending time with.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

13. I think that my friends feel that I’m not very good at helping them solve their problems.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

14. If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

15. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

16. If I needed a place to stay for a week because of an emergency (for example, water or electricity out in my apartment or house), I could easily find someone who would put
17. I feel that there is no one I can share my most private worries and fears with.
   ______definitely true (3) ______definitely false (0)
   ______probably true (2) ______probably false (1)

18. If I were sick, I could easily find someone to help me with my daily chores.
   ______definitely true (3) ______definitely false (0)
   ______probably true (2) ______probably false (1)

19. There is someone I can turn to for advice about handling problems with my family.
   ______definitely true (3) ______definitely false (0)
   ______probably true (2) ______probably false (1)

20. I am as good at doing things as most other people are.
   ______definitely true (3) ______definitely false (0)
   ______probably true (2) ______probably false (1)

21. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.
   ______definitely true (3) ______definitely false (0)
   ______probably true (2) ______probably false (1)
22. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

   ____ definitely true (3)   ____ definitely false (0)
   ____ probably true (2)   ____ probably false (1)

23. If I needed an emergency loan of $100, there is someone (friend, relative, or acquaintance) I could get it from.

   ____ definitely true (3)   ____ definitely false (0)
   ____ probably true (2)   ____ probably false (1)

24. In general, people do not have much confidence in me.

   ____ definitely true (3)   ____ definitely false (0)
   ____ probably true (2)   ____ probably false (1)

25. Most people I know do not enjoy the same things that I do.

   ____ definitely true (3)   ____ definitely false (0)
   ____ probably true (2)   ____ probably false (1)

26. There is someone I could turn to for advice about making career plans or changing my job.

   ____ definitely true (3)   ____ definitely false (0)
   ____ probably true (2)   ____ probably false (1)

27. I don’t often get invited to do things with others.

   ____ definitely true (3)   ____ definitely false (0)
   ____ probably true (2)   ____ probably false (1)
28. Most of my friends are more successful at making changes in their lives than I am.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

29. If I had to go out of town for a few weeks, it would be difficult to find someone who
would look after my house or apartment (the plants, pets, garden, etc.).
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

30. There really is no one I can trust to give me good financial advice.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

31. If I wanted to have lunch with someone, I could easily find someone to join me.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

32. I am more satisfied with my life than most people are with theirs.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)

33. If I was stranded 10 miles from home, there is someone I could call who would come
and get me.
   ____definitely true (3) ____definitely false (0)
   ____probably true (2) ____probably false (1)
34. No one I know would throw a birthday party for me.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

35. It would be difficult to find someone who would lend me their car for a few hours.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

36. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

37. I am closer to my friends than most other people are to theirs.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

38. There is at least one person I know whose advice I really trust.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)

39. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.
   ____definitely true (3)  ____definitely false (0)
   ____probably true (2)  ____probably false (1)
40. I have a hard time keeping pace with my friends.

_____definitely true (3) _____definitely false (0)

_____probably true (2) _____probably false (1)
Appendix F

*Parent-child Interactions: Video Coding Observational Definitions*

**Caregiver Behaviors:**

*Approval* - explicitly acknowledges and approves of child behaviour (appropriate behaviour only); includes giving child verbal praise and/or physical affection; and/or providing or promising treats, and/or other desirable consequences within the coding interval of child appropriate behaviour. Also includes non-directive verbal statements said to the child in a neutral or pleasant tone of voice such as questions, conversation and compliments; engaging child in play; smiling at the child; affection to the child; rhetorical questions.

**Child Behaviors:**

*Adaptive Social Engagement:* the child is engaged in appropriate social interactions with an adult, another child, or a pet. This includes making eye contact, appropriate listening or communication (verbal or non-verbal), appropriate play or activity with another person. Note: The mere presence of another individual while the child is engaged in an activity does not constitute social engagement; the child must be acknowledging that individual and actively engaged.