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**Social Competence in Children and Adolescents with Nonverbal  
Learning Disabilities**

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**Social Competence in Children and Adolescents with Nonverbal  
Learning Disabilities**

by

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## **Dedication**

For Austin.

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# **Social Competence in Children and Adolescents with Nonverbal Learning Disabilities**

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Children and adolescents with Nonverbal Learning Disabilities (NVLD) commonly experience severe social and academic difficulties. Youth with NVLD lack social competence. They display poor social perception and find it challenging to appropriately attend to the facial expressions, prosody, and body language of others. Children with NVLD are often unable to accurately interpret social exchanges. Subsequently, they have trouble determining which behaviors to enact and tend to respond to social situations with inappropriate or atypical behaviors. As a result, they are repeatedly isolated, neglected, and ostracized by their peers (Little, 1993). These negative experiences correspond with elevated levels of anxiety, depression, and suicide attempts (Fletcher, 1989; Rourke, Young & Leenars, 1989). This study sought to gain a greater understanding of how youth with NVLD process social information as their poor

performance in this area increases the likelihood that they will experience detrimental life outcomes.

This study examined the perspectives of children with NVLD and the perspectives of their primary caretakers and teachers. Participants consisted of 12 children with NVLD between the ages nine and 13. A parent and teacher of each child also participated. Data was collected via interviews, observations, and field notes. Grounded theory methodology was used to analyze data for significant themes and trends. Data analysis generated rich theory regarding how children with NVLD understand social interactions and nonverbal communication. Key traits of those with NVLD are detailed and findings indicate that communication across parties promotes social development.

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## **CHAPTER 1: Introduction**

Social competence, the ability to function successfully in interpersonal or social situations (Custrini & Feldman, 1989), is imperative for effective daily life. Children and adolescents experiencing a lack of social competence face detrimental life outcomes including psychiatric dysfunction, school dropout, suicide, dishonorable discharge from the military, poor employment history, juvenile delinquency, and adult criminality (Asher & Coie, 1990; Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Katz & McClellan, 1997; Kinsey, 2000; Ladd, 2000; Parker & Asher, 1987; Pavri & Luftig 2000; Roff, Sells, & Golden, 1972). For populations defined by a lack of social competence, such as those with Nonverbal Learning Disabilities (NVLD), these troubles may occur frequently. In addition to demonstrating problems related to social interaction, children with NVLD experience difficulties with abilities concerning psychomotor functioning, visual-spatial perception, nonverbal concept formation, language pragmatics, language prosody, and adapting and incorporating complex and new stimuli (Rourke, 2000).

Approximately between .1 and 1% of the general population has been diagnosed with NVLD (Pennington, 1991). However, specific diagnostic criteria for NVLD have yet to be globally determined. Discrepancies regarding acknowledged diagnostic criteria have contributed to the under-identification of this population (Pennington, 1991). Furthermore, the majority of studies including children with NVLD seek to assess the “learning disabled,” a group of persons who exhibit significant discrepancy between intelligence and academic achievement. These studies perceive and treat those with

learning disabilities as a homogenous group, overlooking the individual abilities and characteristics of specific subtypes.

Voeller (1994) characterizes three subtypes of children displaying social competence deficits and encourages the treatment of their specific difficulties. Voeller (1994) describes the second, Type 2, subtype of children as generally passive, withdrawn, and devoid of aggression. Voeller (1994) observes that Type 2 children lack the ability to interpret social cues, are unaware of the feelings of others, tend to be extremely literal, and often fail to understand jokes and figurative language. She hypothesizes that troubles with social-emotional processing are the most problematic for this group and stresses that Type 2 children manifest behavior patterns similar to those diagnosed as having NVLD.

Rourke (1995) presents a neurodevelopmental model of NVLD in which deficits and assets on one level produce deficits and assets on a subsequent level. Rourke (1995) suggests that inadequate social competence in children with NVLD stems from the interaction of primary, secondary, and tertiary deficits. According to this model, insufficient visual perception leads to problems identifying facial expressions and nonverbal cues. Problems with social judgment correspond to underlying difficulties with reasoning and concept formation. The inability to appropriately problem solve evolves into troubles adapting to novel interpersonal situations. Deficits with motor and tactile-perceptual skills produce socially awkward behaviors.

Crick and Dodge (1994) propose a six stage social information processing model. Childhood failings at any of these stages can lead to later weaknesses in the areas of socio-emotional functioning, interpersonal relationships, academic achievement, and

psychological functioning (Dodge, 1980, 1989). The first phase of this model involves the encoding of internal and external cues. Successful encoding is essential for understanding the emotional messages and states of others. Children and adolescents with NVLD do not follow a typical social development trajectory. Children with NVLD consistently have a hard time perceiving social cues related to facial expressions, voice intonation, and nonverbal gestures (Rourke, 1989; Semrud-Clikeman & Hynd, 1990). These youth frequently find identifying and interpreting the nonverbal emotional cues of happiness, anger, sadness, and fear challenging. As a result they are repeatedly isolated, neglected, and ostracized by their peers (Little, 1993). Even more distressing, such negative social experiences correlate with increased levels of anxiety, depression, and suicide attempts (Fletcher, 1989; Rourke, Young & Leenars, 1989). Consequently, a greater understanding of how children and adolescents with NVLD encode nonverbal communication is critical as this first step influences all later outcomes.

This study is unique, due to its evaluation of the perspectives of youth with NVLD and the perspectives of their primary caretakers and teachers. Interviews were conducted with all participants and qualitative analysis was used to generate rich theory regarding how children and adolescents with NVLD understand nonverbal communication and social interactions. Resulting, comprehensive information provides greater insight into how children and adolescents with NVLD process social information.

This document has been organized into seven chapters. Chapter 2 reviews literature related to social competence, social perception, the function of the right hemisphere in processing social information, and NVLD. Chapter 3 details the

qualitative methods used and includes descriptions of participants, measures, and procedures. An overview of the findings of this study and an explanation of how these results evolved from the data is provided in Chapter 4. Chapters 5 and 6 explore the needs of the child, communication across persons, and social development, areas central to the results of the study. Finally, Chapter 7 discusses the implications and limitations of this research.

## **CHAPTER 2: Literature Review**

This chapter provides an overview of existing literature related to social competence, social perception, the function of the right hemisphere in processing social information, and NVLD. The first part of this review examines social competence and social perception. Models of social competence are presented and considerations for the assessment of social competence discussed. Next, the function of the right hemisphere in processing social information is explored. An outline of learning disabilities and the clinical features, diagnostic criteria, and prevalence of NVLD follows. An etiological model of NVLD is given and the developmental course of this disorder is delineated. Lastly, similarities between NVLD and Asperger's Syndrome are addressed.

### **Social Competence and Social Perception**

#### **Defining Social Competence**

Conceptualizations of social competence vary extensively. Odom and McConnell (1985) found definitions of this term to represent an array of behavioral, cognitive, and performance-based theoretical frameworks. Social competence has previously been defined as: the ability to engage effectively in interpersonal interaction (Custrini & Feldman, 1989; Oppenheimer, 1989; Weinstein, 1991); the ability to employ environmental and personal resources to attain advantageous developmental outcomes (Waters & Stroufe, 1983); normative or socially sanctioned interpersonal behaviors

(Bellack & Hersen, 1979); and as an evaluative term based on the judgments of others with regards to the adequacy of task performance (Gresham, 1997; McFall, 1982).

There are also discrepancies regarding what elements should be considered critical components of social competence. Crick and Dodge's (1994) Social Information Processing Model emphasizes the abilities of an individual to perceive, encode, and interpret social cues when choosing and enacting behavioral responses. Vaughn and Haager (1994) suggest that peer relations, social cognition, behavior problems, and social skills are primary aspects of social competence. The Affective Social Competence Framework of Halberstadt, Denham and Dunsmore (2001) proposes that core components of social competence include the ability of an individual to receive, experience, and send affective information applicable to a constantly dynamic and shifting social environment. Other researchers imply that social competence is a feature of intelligence and represent it as how effective an individual is in negotiating their environment (Greenspan & Love, 1997). However, despite this range of descriptions, it can be universally agreed upon that the definition of social competence relies on the perception of social cues and will in some way include elements relating to the efficacy and appropriateness of interpersonal behavior in relevant settings (Guralnick, 1992).

### **Defining Social Perception**

Social perception can be defined as a child's ability to understand his or her social environment in relation to their own behavior (Myklebust, 1975). This skill enables the child to interpret the social cues and body language of others (Spence, 2003). Semrud-Clikeman and Hynd (1990) describe social perception as a compilation of the following

abilities: the ability for emotional recognition and labeling, the ability to understand prosody, and the ability to understand facial expressions and gestures. The facility to identify, recognize, interpret, and respond to nonverbal aspects of communication has proven to be an essential component of social competence (Myklebust, 1975).

Furthermore, Johnson and Myklebust (1971) postulate that disruptions in social perception “are among the most debilitating of the learning disorders” as they deter one from developing basic adaptive behavioral patterns (p. 296).

Social perception of nonverbal cues has been found to correlate with social competence in preschool aged children, older children, and adults (Custrini & Feldman, 1989; Nowicki & Mitchell, 1998; Philippot & Feldman, 1990; Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979). Nowicki and Duke (1992) presented a variety of facial expressions and voice tones to 456 elementary school children. Children were asked to name the represented emotions, as well as to identify the children they liked the most and least in their class. Nowicki and Duke (1992) found children who performed well on the nonverbal identification tasks to be more popular than their lower performing peers. A lack of social perception and the failure to correctly interpret facial expressions has been linked to socio-emotional decline (Petti, Voleker, Shore & Hayman-Abello, 2003). Petti, Voleker, Shore, and Hayman-Abello (2003) found that children with such problems were two times more likely to be diagnosed with an internalizing disorder than counterparts who did not experience similar difficulties.

## **Development of Social Perception**

Infant-mother interactions illustrate that individuals employ social perception from birth. Throughout the first year of life, humans rely heavily on nonverbal communication. Infants typically use one method of nonverbal communication at a time. Social perception at this age is characterized by the recognition of simple facial expressions and gestures (Izard, 1991). However, social perception increases with age and “by the middle of the first year, face, voice, and posture form distinct patterns that are clearly related to social events” (Berk, 1998, p.179). By the end of their first year of life, children competently engage in social referencing, as well as start to develop empathy, self-agency, and perspective taking during the succeeding year (Berk, 1998; Feldman, 1982). Increasing cognitive and perspective taking skills enable children to shift from parallel to interactive play. During the second and third years of development, children begin to expand their abilities to identify basic facial expressions. A basic understanding of prosody is achieved. Children at this age are generally capable of identifying the pitch, rhythm, and tempo of a voice (Voeller, 1994). In their third and fourth years of life, children are cognizant that there are perspectives other than their own. By their sixth year of life, children are aware that discrepancies can exist between the way they evaluate their behavior and the way others do. When an individual reaches adolescence they should be fully able to take the viewpoint of another into account (Berk, 1998; Feldman, White, & Lobato, 1982; Voeller, 1994).

As the age of the child increases, so too should their skills to encode and decode social and emotional cues. Children begin understanding and differentiating between

simple emotions such as happiness, sadness, and anger at an earlier age and with much more ease (Rothenberg, 1988). Additionally, young children are more apt to identify positive emotions like happiness rather than negative emotions such as anger and sadness (Semrud-Clikeman & Schafer, 2001). Younger children frequently interchange sadness, anger, and neutrality (Felleman et al., 1983; Reichenbach & Masters, 1983). Social perception abilities quickly progress to encompass the capability to recognize a multitude of sentiments, including more abstract emotions such as embarrassment and empathy and to differentiate among gradations of emotions (Lewis, 1995). Maturing youth progressively use cause and effect and abstract reasoning to decipher the cues of social situations (Feldman, White, & Lobato, 1982). Moreover, developing children start to place a greater significance on situational cues instead of relying solely on the interpretation of facial expressions (Egan, Brown, Goonan, Goonan, & Celano, 1998). Children realize that demonstrated emotions do not always accurately align with the genuine emotion a person is experiencing. Children also become increasingly able to decode consistent and discrepant cues from multiple sources (Wells & Higgins, 1989). Table 1 depicts the typical developmental trajectory of social perception skills.

The possible impact of gender differences on this developmental trajectory may be an important variable that requires additional study. Myklebust (1975) states that males are more dependent on nonverbal function than females. He suggests that as a result it is possible that males “sustain a greater handicap than girls from nonverbal learning disabilities” (p. 89).

Table 1

*Typical Development of Social Perception*

<b>Age</b>	<b>Abilities</b>
<b>Birth-11 months</b>	recognizes simple facial expressions and gestures (Izard, 1991)
<b>1-2 years</b>	social referencing, basic understanding of facial expressions, basic understanding of prosody, begins to imitate facial expressions and actions of others, begins to differentiate between forms, becomes aware of the reciprocal nature of conversation, engages in individual play, understanding of object permanence (Berk, 1998; Feldman, 1982; Voeller, 1994)
<b>3-6 years</b>	understanding of cause and effect, begins to understand the concept of turn taking, engages in parallel play, demonstrates empathy, recognizes that others have different thoughts (but still confuses them with their own), engages in group and role play, distinguishes between diverse emotions (Berk, 1998; Feldman, White, & Lobato, 1982; Voeller, 1994)
<b>7-11 years</b>	understands that others have different perspectives, can take the perspectives of others, understanding of gradations of emotions, attends to multiple aspects of a stimulus or situation, decodes situational cues, recognizes there can be more than one method by which to solve a problem (Berk, 1998; Egan, Brown, Goonan, Goonan, & Celano, 1998; Feldman, White, & Lobato, 1982; Lewis, 1995)
<b>12-16 years</b>	recognizes that their own perceptions may be different from what is actually true, demonstrates objectivity, recognizes discrepancies among different nonverbal cues, engages in abstract reasoning, engages in multiple steps for decision making and logical thinking (Berk, 1998; Wells & Higgins, 1989)

## **Crick and Dodge's Information Processing Model of Social Competence**

Crick and Dodge (1994) propose an information-processing model depicting neurologically based functions responsible for the mediation of social behaviors. This social information processing model incorporates sensory information, past experiences, and individual differences as it conveys the six stages necessary for a child's development of competent social adjustment and social exchange. Stage 1 involves the encoding of internal and external cues. Children perceive, attend to, and encode presented social prompts. Attention to facial expressions, prosody, and body language is important and encoding during this stage may be appropriate or inappropriate. Children must select which relevant cues to encode. Children with NVLD frequently demonstrate difficulties with this encoding process. Children with NVLD often encode irrelevant cues. For instance, instead of encoding the facial expression of a peer, a child with NVLD may encode the color of their peer's eyes. Divergence from typical encoding patterns leads to deviating behavioral responses. Such behavioral responses are usually out of place and can inadvertently serve to alienate peers.

During Stage 2, these previously encoded cues are mentally represented and interpreted. Encoded cues should be assimilated in "an accurate and meaningful way" (Dodge, Pettit, McClaskey & Brown, 1986, p. 4). A set of interpretation rules are applied in order to lend meaning to these cues. A goal or desired outcome for the situation is selected during Stage 3. In Stage 4, children access or construct potential behavioral responses to the interpreted cues. During Stage 5, children engage in response evaluation and decision. A child must evaluate the efficacy of the possible responses and choose

which one is the most beneficial. The selected behavioral response will then be enacted during Stage 6. A visual representation of this model is supplied in Appendix A.

This model illustrates specifically where deficits in social competence may occur, as these stages suggest points for potential problems. Childhood deficits regarding any of the six steps can be indicative of later weaknesses in the areas of socioemotional functioning, interpersonal relationships, academic achievement, and psychological functioning (Dodge, 1980, 1989). For example, it has been noted that children who are unable to adequately interpret facial expressions experience lower peer acceptance and less social adjustment than their more normal counterparts (Barth & Bastiani, 1997). Although not formally integrated into their model, Crick and Dodge acknowledge that emotions can play a role and impact any or all of the proposed phases of information processing.

An exploration of the first step of Crick and Dodge's model, the ability to encode nonverbal cues, illustrates the challenges facing children with NVLD. Successful encoding is critical for understanding the emotional messages and states of others. Examinations of the outcomes of problems with this step indicate that a disadvantageous social trajectory may almost be a forgone conclusion for children with NVLD. In two studies involving preschool children aged three to five, Nowicki and Mitchell (1998) observed that the ability to perceive nonverbal cues was related to social competence even at these earliest levels of school. Such results illustrate that if children do not learn to successfully maneuver basic social perception tasks, they will likely experience the unfavorable results of deficits in social competence at an early age. Children

experiencing deficits in social competence are at risk for psychiatric dysfunction, school dropout, suicide, dishonorable discharge from the military, poor employment history, juvenile delinquency, and adult criminality (Asher & Coie, 1990; Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Katz & McClellan, 1997; Kinsey, 2000; Ladd, 2000; Parker & Asher, 1987; Pavri & Luftig, 2000; Roff, Sells, & Golden, 1972).

### **Voeller's Model of Social Competence Deficits**

Voeller's model (1994) organizes the essential causes and manifestations of social competency deficits to describe three distinct subtypes of children lacking in social competence. Voeller postulates that a greater understanding of these subtypes will enable others to understand how they differ from one another and how they relate to current classifications in the fields of psychiatry and learning disabilities. This model encourages the treatment of specific difficulties leading to a social competence deficit.

Voeller described Type 1 children as typically aggressive, hostile, and manipulative. Type 1 children were noted to have an awareness of others and the ability to appropriately encode social information. Instead of performing proper social responses, Voeller stated that Type 1 children usually choose a deliberately inappropriate response or use this knowledge in a non-altruistic manner. Voeller characterized Type 2 children as passive, withdrawn, and devoid of aggression. According to Voeller, such children lack the ability to read social cues and are unaware of the feelings of others. Additionally, Type 2 children have a tendency to be extremely literal and often fail to understand jokes and figurative language. Voeller depicted Type 3 children as noisy, disorganized, and unintentionally disruptive. She indicated that they are aware of the

feelings of others, but have difficulty regulating their behavior. These children are inadvertently intrusive and Voeller typified Type 3 children as those who have intact social cognition, but who are unable to effectively use this information.

Voeller suggests these subtypes correlate with diagnostic categories. She observed that Type 1 children exhibit symptoms corresponding with conduct disorder/oppositional defiant disorder. These children are usually without co-occurring attention deficit hyperactivity disorder. Type 2 children demonstrate behavior patterns similar to those diagnosed as having pervasive developmental disorder, anxiety, depression, obsessive-compulsive disorder, schizoid, nonverbal learning disability, or social-emotional learning disability. Voeller proposed that for Type 2 children social-emotional processing is the most difficult. Behavior patterns of Type 3 children correlate with those who exhibit deficits in executive functioning and those with attention deficit hyperactivity disorder. Children who have been rejected or neglected present as heterogeneous groups and the danger of linking those possessing deficits in social competence with specific diagnoses has been suggested (McFadyen-Ketchem & Dodge, 1998). Others have deemed Voeller's subtypes to be a better assessment and more illustrative of how diverse combinations of social strengths and weaknesses can converge to create various profiles of social deficiency.

### **Assessment of Social Competence and Social Perception**

Adequate assessment of social competence and social perception has been elusive. The existence of a single measure to accurately evaluate these areas has yet to be established (Trimboli & Walker, 1993; Voeller, 1994). The few measures that have been

developed generally examine one element of social competence or social perception and have proven unsuccessful in illuminating the integral social information processes of children (Schneider, 1993). Consequently, appraisal of these domains is sought with a collection of methods. Numerous sources are also utilized, including peers, teachers, primary caretakers, children and adolescents.

Sociometric rating scales and peer nominations have been valuable for providing researchers with information regarding a child's peer status (Asher, 1985). However, these measures look at an outcome and do not convey information on the processes contributing to the status noted (Schneider, 1993). Direct observations in both naturalistic and contrived settings have been employed extensively (Voeller, 1994). Observing children and adolescents in their home, school, or play areas can produce a wealth of information on natural processes, while simulated settings allow for more control by the researcher. Knowledge derived from these methods can enhance the quality of data regarding the social behaviors of children and adolescents. However, they may fail to provide details about closer, more intimate relationships (Schneider, 1993).

Data obtained directly from the child enables information to be collected about their: perception of social cues, understanding of social situations, social goals, social anxiety, social problem solving, and evaluation of their social behavior (Schneider, 1993). Primary caretakers and teachers can provide further intelligence about the social competence and social perception of the child. These persons are essential in order to “capture the disability as it affects the individual in his or her day-to-day life” (Klin, Sparrow, Marans, Carter & Volkmar, 2000, p. 310) . Primary caretakers and teachers are

able to provide unique insight into how children interact with others. Primary caretakers can provide personal, detailed information about their child and their behaviors, while teachers are familiar with peers of the same age and thereby possess normative references of the investigated behaviors (Schneider, 1993; Voeller, 1994). Klin et al. (2000) suggest that it “is critical to obtain information from parents and professionals, who as a result of their daily contact with the child, observe the child in situations that are much more challenging than the one-on-one supportive testing environment of the clinic (p. 310). Biological bases should also be considered.

### **Function of the Right Hemisphere in Processing Social Information**

Investigating the biological bases of social information processing has been extremely useful. The right and left hemispheres of the brain divide the cerebral cortex, the frontal, temporal, occipital, and parietal lobes, the amygdala, the basal ganglia, the hippocampus, and surrounding nerve fibers. These hemispheres are responsible for perceptual, motor, and cognitive skills. Hemispheres control motor skills and sensory perception for the contralateral side of the body. Bundles of fibers connect the region of one hemisphere with correlating regions of the other hemisphere (Teeter, & Semrud-Clikeman, 1997).

Goldberg and Costa (1981) review brain imaging studies concerned with hemispheric differences and the implications of these differences for information processing. From this review, Goldberg and Costa (1981) note there is a greater ratio of grey to white matter in the left hemisphere than in the right hemisphere, suggesting that the left hemisphere has less long myelinated fibers and a greater amount of

nonmyelinated short fibers than the right hemisphere. Goldberg and Costa (1981) also note that although the same amount of cortex exists in both hemispheres, greater areas of modality specific representation exist in the left hemisphere, and greater areas of associative cortex better suited to intermodal integration and processing complex multimodal information exist in the right hemisphere. Subsequently, Goldberg and Costa propose a positive correlation between nerve fibers and complexity of information processed in the area.

Goldberg and Costa (1981) advocate the existence of shifts in “hemispheric superiority.” They posit that each of the two hemispheres is better suited to a specific type of processing and that hemispheric dominance alters with regards to task requirements and the type of stimuli processed. Goldberg and Costa assert that the left hemisphere is responsible for modality specific cortical areas and integration among them. They suggest the left hemisphere is superior when employing systems, (discrete units or rules applied when processing a particular type of stimuli), relevant to specific tasks, such as when organizing cognitions into existing schemas. Given the greater amounts of associative cortex, Goldberg and Costa conclude that the right hemisphere appears superior when processing new material and with the construction of new schemas or systems. Hemispheric specialties indicate the left hemisphere is more competent when accessing previously acquired information. The right hemisphere exhibits higher proficiency when approaching new tasks and when integrating information simultaneously from multiple sources.

Although the two hemispheres coordinate for most tasks, one hemisphere may be used more predominantly for its specific abilities (Teeter, & Semrud-Clikeman, 1997). The right hemisphere has been recognized as a central component regarding facial recognition and prosody and the processing of pragmatic language (Baron, 2004; Semrud-Clikeman, 2001). Additionally, hemispheric development differs in males and females. The male brain has been observed to mature at a slower rate than that of females. Consequently dysfunction of the right hemisphere may diversely affect the two genders (Semrud-Clikeman & Hynd, 1990). A slower brain maturation rate may correlate with the finding that males are often at greater risk than females for developing behavioral and learning problems.

### **Right-Hemisphere Deficit Syndrome**

It has been proposed that nonverbal learning disabilities (NVLD) syndrome is similar to, if not synonymous with right hemispheric dysfunction, developmental Gerstmann's syndrome, left hemi-syndrome, developmental right hemisphere syndrome, and semantic pragmatic language disorder (Myklebust, 1975; Pennington, 1991; Rourke, 1995, 1989; Rourke & Tsatsanis, 2000; Semrud-Clikeman & Hynd, 1990; Teeter & Semrud-Clikeman, 1997). Children and adolescents with NVLD demonstrate deficiencies regarding the processes typically associated with the right hemisphere, such as integrating and processing new information (Gross-Tsur, Shalev, Manor, & Amir, 1995; Rourke 1989; Semrud-Clikeman & Hynd, 1991). In a study by Njioiktjien, de Rijke, and Jonkman (2001) right hemisphere EEG intrahemispheric coherences were compared between children with NVLD and children with verbal learning disabilities

(VLD). Results were found to indicate long distance white matter connectivity difficulties in the right hemispheres of children with NVLD. Blonder, Bowers, and Heilman (1991) asked patients suffering from right hemispheric damage, patients suffering from left hemispheric damage and normally developed persons to assess the emotional content of sentences describing nonverbal expressions and emotional situations. Patients suffering from right hemispheric damage were found to display more trouble assessing the emotional content of sentences describing gestures and facial and prosodic expressions. Children with right hemispheric deficits have also been found to have problems accurately interpreting the emotions of others and demonstrating appropriate emotions (Voeller, 1986).

Both children and adults with right hemispheric dysfunction manifest a pattern of deficiencies comparable to those of children with NVLD. This pattern usually contains soft left neurological signs, a verbal IQ score greater than performance IQ, and social deficiencies (Baron, 2004; Gross-Tsur, Shalev, Manor, & Amir, 1995; Heberlein, Adolphs, Pennebaker & Tranel, 2003; Semrud-Clikeman & Hynd, 1991; Voeller, 1986; Weintraub, & Mesulam, 1983). Examining adults suffering from acquired right hemispheric damage due to seizures or lesions has been useful for more thoroughly identifying right hemispheric functions and deficits. However, developmental right hemispheric dysfunction should not be indisputably equated with right hemispheric damage.

During 18-24 months of age, the right hemisphere develops at a more rapid rate than the left (Teeter & Semrud-Clikeman, 1997). It has been hypothesized that this

increased growth may correspond with greater right hemispheric involvement in infancy. During this time, normally developing young children actively engage in constructing representations of their world. In this period, right hemispheric dysfunction would be exceedingly detrimental, as derived sensory representations of the developing infant are stored in the right hemisphere (Semrud-Clikeman & Hynd, 1991). Right hemispheric dysfunction at this stage may impede a young child's ability to create new schema and may result in more pronounced visual-spatial deficits, inhibiting sensory motor exploration and subsequent neuropsychological and social development. Such children frequently exhibit learning disabilities.

### **Learning Disabilities**

A learning disability (LD) is diagnosed when one demonstrates a significant discrepancy between their intelligence and academic achievement in the absence of impaired vision or hearing, mental retardation, primary language abilities, cultural factors, adequate teaching, and/or environmental hardships (DSM-IV; American Psychiatric Association, 1994). Children and adolescents with LD have previously been viewed and treated as a homogeneous set. However, with time it has become apparent that LD subtypes exist. Each subtype has “unique, idiographic, nongeneralizable origins, characteristics, and reactions to their afflictions” (Rourke, 1989, p. 3). Rourke (1999) conveys that the goal of subtyping is to establish common characteristics for a group of individuals in a manner that ensures that, with respect to the variables being investigated, they will be more similar to others within their subtype than to others from differing subtypes. Rourke indicates that in this way subtyping will satisfy generalizability, as

well as account for the individuality of a population. Nussbaum, Bigler, and Koch (1986) examined personality and behavioral characteristics of students with LD and found notable differences when students were differentiated by subtype. Subtypes distinguish themselves through specific abilities regarding psychomotor skills, academic abilities, cognitive abilities, and socioemotional functioning (Rourke, 1989; Strang & Rourke, 1985). Such distinctions are critical and should be applied in order to avoid the overgeneralization of conclusions to differentiated populations. One subset of learning disabilities is nonverbal learning disabilities.

### **Nonverbal Learning Disability**

#### **Characteristics, Assessment, Diagnosis, and Prevalence of NVLD**

Nonverbal learning disabilities (NVLD) involve deficits in nonverbal skills such as problem solving, novel reasoning, and nonverbal communication. Myklebust (1975) first identified NVLD as the result of deficits in social perception, perception of self, and visual-spatial organization. Today NVLD is predominantly characterized by motor, visual-spatial-organizational, and social deficits. Specific difficulties occur regarding: the pragmatic use of language, reading comprehension, mathematical abilities, problem solving, organization, processing new information, abstract problem solving, concept formation, psychomotor coordination, bilateral tactile-perceptual abilities, social interaction, and perception of facial expressions, prosody, and body language (Gross-Tsur, Shalev, Manor, & Amir, 1995; Harnadek & Rourke, 1994; Johnson, 1987; Rourke, 1989; Semrud-Clikeman & Hynd 1990; 1991; Voeller, 1986). Children and adolescents with NVLD typically demonstrate serious problems with visual-motor integration and

visual-spatial tasks. Children with NVLD have particularly been found to have problems with elements of mathematics involving visualization. Such youth usually find concepts such as size, distance, and time challenging. Additionally, exercises using graphs, figures, and measuring and comparing numbers are hard for them (Johnson, 1987).

Troubles with social perception, cognitive flexibility, information integration, and complex information processing emerge as difficulties with concept formation, cause and effect reasoning, and the ability to appropriately respond to unfamiliar or unstructured social situations (Harnadek, & Rourke, 1994; Petti et al., 2003; Semrud-Clikeman, & Hynd, 1990). Children with NVLD find it difficult to understand pragmatics or figurative language. They also have trouble deciphering meaning from the prosody of others (Semrud-Clikeman & Hynd, 1990). The inability to fully grasp linguistic subtleties and interpret humor and sarcasm contributes to create even more obstacles in social settings. Sweet-Nichols (1998), in a study seeking to determine whether social competence problems were related to difficulties at the encoding level of social information processing, examined the performance of children with nonspecific LD, VLD, NVLD, and no disability on tasks requiring them to encode social nonverbal cues. Results found that children with NVLD and nonspecific LD had a harder time encoding social stimuli than the other two groups. Children in these groups were also found to have more problems processing dynamic social stimuli. Visual-perceptual and visual spatial difficulties were hypothesized to account for these results. Furthermore, a correlation was found between encoding difficulties and lower social competence ratings

from parents and teachers. Visual-spatial deficits for children with NVLD can lead to problems in maintaining appropriate spatial distance with peers (Forrest, 2004).

Children and adolescents with NVLD display relative strengths regarding auditory perception and rote memory and language skills. Due to these relative strengths, children with NVLD commonly prefer to process information through verbal-auditory modalities rather than through visual-tactile modalities. However, while at times an asset, the preference for rote material is more likely inhibit exploratory behavior and the ability to adapt to new situations in those with NVLD. Children with NVLD tend to explore their environment by asking questions rather than by physically exploring them (Rourke, 1995). Similar findings have been consistently documented. Kaminska (1994) examined emotion decoding skills in children with nonverbal impairment, verbal impairment, and no impairment. Children were asked to match representations of social situations with pictures of facial expressions displaying corresponding emotions. An analogous condition was established with verbal stimuli. Children with verbal impairment were found to demonstrate a distinct pattern of strengths and weaknesses. Strengths in decoding auditory-verbal stimuli were observed, as were relative weaknesses in decoding visual stimuli.

NLVD cannot be diagnosed with a single measure. Evidence of a discrepancy between Verbal IQ and Performance IQ on an intelligence assessment is often used as one of the primary indicators of NVLD. Yet approximately 25% of the general population exhibits this discrepancy without endorsing any other aspects of NVLD (Sattler, 1992). Subsequently, this criterion cannot be the sole determinant of NVLD and

other measures must be used. Rourke, Ahmad, Collins, Haymen-Abello, and Warriner (2002) propose that those with NVLD, once seven years or older, demonstrate the following characteristics:

1. Impaired abilities to analyze, organize, and synthesize information with associated weaknesses with problem-solving and concept-formation.
2. Significant impairments in language prosody, content, and pragmatics, regardless of high levels of verbosity.
3. Strengths in single-word reading, recognition, and spelling, but poor performance regarding reading comprehension and mechanical arithmetic.
4. Poor handwriting in early school years which can only improve to normal levels with substantial practice.
5. Predominantly phonetically accurate spelling errors.
6. Deficits in social perception, social judgment, and social interaction.
7. Poor perception and comprehension of facial expressions displaying emotion, as well as poor perception and comprehension in reading, interpreting, and providing nonverbal communication cues.
8. Preschoolers described as hyperactive, become hypoactive with age.

Despite such noted shared characteristics, formally established universal criteria for NVLD do not exist thus far. Pelletier, Ahmad, and Rourke (2001) and Semrud-Clikeman and Hynd (1990) suggest that a battery measuring motor, tactile-perceptual, visual-spatial-organizational, auditory-perceptual, attention-memory, language, academic, and psychosocial functioning should be used for diagnosis. Many clinical

settings have adopted such a battery, but comparable, comprehensive assessments remain rare within the school system and the lack of diagnostic guidelines has affected the accuracy of recorded prevalence. It is estimated that approximately between .1 and 1% of the general population (Pennington, 1991) and approximately 5-10% (Rourke, 1989) of the LD population have NVLD. Male and female populations have been purported to exhibit NVLD equally (Pennington, 1991; Rourke, 1989).

### **Rourke's Neuropsychological Model of NVLD**

Rourke (1995, 2002) represents NVLD as a neurodevelopmental disorder present from birth. Rourke hypothesized that the phenotype of NVLD is a manifestation of long myelinated fibers, or white matter, underdeveloped, damaged, or dysfunctional in the brain (Rourke 1995; Tsatsanis & Rourke, 1995). He suggests that the phenotype of NVLD correlates with three types of this matter: commissural fibers, association fibers, and projection fibers. Commissural fibers connect one's right and left hemisphere, association fibers unite areas of the same hemisphere, and projection fibers link the spinal cord to areas of the brain. Rourke proposes that the display of NVLD characteristics resulting from injury or disease is significantly influenced by the amount of relevant destruction/dysfunction, the type and developmental stage of this destruction/dysfunction, and the development and maintenance of learned behavior. Rourke believed it possible for symptoms of NVLD to present when diseases such as callosal agenesis, fetal alcohol syndrome, multiple sclerosis, and hydrocephalus damage white matter (Don & Rourke, 1995; Roman, 1998; Simth & Rourke, 1995). Toxicant induced encephalopathies can also result in white matter damage.

Rourke presents a White Matter Model, a multi-tiered model of neurodevelopment in which deficits and assets on a primary level produce deficits and assets on a secondary level. This cycle is continued and tertiary deficits and assets and later characteristics are the result of preceding deficits and assets. Rourke's model emerges from research conducted with children showing various patterns of academic achievement or verbal and performance IQ discrepancies. Rourke's model of NVLD is widely published. However, many contributing studies have not been replicated and in some cases membership in a group was delineated by only one criterion. Rourke's model is supplied in Appendix B.

Primary deficits of this model include tactile perception, visual perception, complex psychomotor abilities, and coping with novel material. Setbacks in these areas lead to secondary deficits such as problems with tactile attention, visual attention, and exploratory behavior. Rourke's model illustrates that poor tactile and visual attention results in the inability to input such information. A lack of exploratory behavior and processing of new material impedes concept formation and problem solving. Ensuing tertiary deficits include shortcomings with tactile memory, visual memory, concept formation, and problem solving. Tertiary problems foster failings with language pragmatics and content.

Deficits of social competence are a result of the integration of these primary, secondary, and tertiary deficits. Children with NVLD have difficulty with social judgment due to troubles with reasoning and concept formation. Inadequate visual perception leads to problems identifying facial expressions and nonverbal cues. Flaws

with problem solving can translate into difficulties adapting to novel interpersonal situations. Weaknesses with language pragmatics and prosody prompt children with NVLD to employ (often inappropriate) automatic verbal responses to social situations. Such behavior repeatedly garners negative feedback from others, particularly peers. Additionally, a lack of motor and tactile-perceptual skills leads to socially awkward and clumsy behaviors. Other results of this sequence of deficits materialize in the academic arena. Children with NVLD tend to find the following areas challenging: reading comprehension, due to deficits with novel reasoning; mechanical arithmetic, due to difficulties with visual-spatial organization, psychomotor skills, and concept formation; and handwriting, due to weaknesses with graphomotor skills.

Primary assets include auditory perception, simple motor skills, and rote material. Relative strengths in these areas lead to secondary assets such as auditory and verbal attention. Children with NVLD who appropriately perceive and attend to auditory and verbal information evidence the tertiary assets of auditory and verbal memory. From these abilities assets of phonology and verbal reception, repetition, storage, associations, and output emerge. These assets can develop into academic strengths. Strengths regarding rote material encourages an affinity for reading and spelling. Assets regarding auditory and verbal attention lead to better word decoding skills. Children with NVLD tend to demonstrate a strong memory of oral and written material due to strengths in auditory and verbal perception and memory. These skills, combined with other phonological and verbal assets, promote good verbatim memory abilities. The strengths and deficits represented by Rourke's model occur at various developmental stages.

## **Developmental Course of NVLD**

Developmental indicators of NVLD may be visible at an early age. Motor asymmetries and unusually early right preferences can present in infancy (Voeller, 1995). Relational difficulties for infants with NVLD may arise. Infants with NVLD were found to be less interactive with adults and less interested in verbal and nonverbal stimuli than infants without NVLD (Johnson, 1987). Infants rely primarily on nonverbal communication to interact. Consequently, a baby's failure to adequately interpret such cues can be considered a severe and all-encompassing deficit. For infants with NVLD, inadequate abilities regarding nonverbal communication can inhibit relationship formation from their earliest moments. Infants with NVLD were also found to engage in exploratory play less than their normal counterparts (Roman, 1998).

Toddlers with NVLD tend to be poorly coordinated and demonstrate minimal interest and participation in feeding and play. When engaging in play, poor visual-spatial abilities cause toddlers to be highly disruptive. During their second and third years of life children may already demonstrate poor eye contact, poor prosody and a failure to maintain appropriate physical boundaries with regular frequency. Children with NVLD typically demonstrate delays in achieving motor milestones and a normal pattern for achieving language milestones. Below average fine motor coordination causes toddlers to show less interest in toys that are characteristic for their age and popular with their peers, like blocks or basic playground equipment. A delay in the acquisition of simple pre-academic skills, such as coloring and cutting, may also be the norm for this population (Johnson, 1987). Moreover, weak motor abilities lead to problems with daily

living activities, including the tasks of eating and dressing (Johnson, 1987; Roman, 1998).

Troubles with motor coordination contribute to poor handwriting skills. Slow academic and developmental progress is made with reading comprehension, mathematics, and writing. Children with NVLD tend to display verbal strengths as their verbal abilities develop at a normal pace or perhaps, because they may be used to compensate for other shortcomings, more rapidly than usual. Adequate or advanced verbal skills may prohibit those they engage with from recognizing their struggles with spatial skills, motor skills, and social development. As children with NVLD grow older and social interactions and academic tasks become increasingly complex, their deficits become even more noticeable and pronounced (Rourke, 1989). Youth with NVLD initially appear successful in school. Early grades frequently rely on rote skills, a strength for these children. Relative strengths of auditory perception, auditory and verbal attention, and verbal memory emerge. In elementary school, children with NVLD generally show average academic performance, but as they enter middle school they have difficulty keeping up and soon fall behind other, more able peers (Johnson, 1987, Molenaar-Klumper, 2002; Roman, 1998).

During this time, struggles with understanding language pragmatics and semantics make distinguishing sarcasm and humor difficult. Social reciprocity capabilities become more noticeably impaired and by middle school it is evident that taking turns, listening, making eye contact, and the give and take nature of conversation is taxing for those with NVLD. This study chose to examine the perspectives of children ranging in age from

nine to 13, because it is during this age period that characteristics of the NVLD syndrome become conclusively evident: “NVLD characteristics...manifest themselves very clearly between the ages of 10-14” (Molenaar-Klumper, 2002, p. 47).

Problems with academics continue to occur for adolescents and young adults at the high school and college level. A lack of organization and an inability to synthesize information make achievement in advanced subjects, particularly those that require abstract or visual-spatial reasoning, such as physics, geometry, trigonometry, or calculus, complicated (Johnson, 1987). By this developmental stage, those with NVLD invariably demonstrate the ability to compensate in one or more areas (Johnson, 1987). However, such compensatory strategies do not generalize to the social arena which requires the integration of a variety of skills for successful functioning. Social interactions become increasingly complex as children progress from childhood into adulthood. Those with NVLD inevitably fall behind socially as this occurs. Children with social competence deficits often feel isolated and withdrawn from their peers. They experience a myriad of negative peer interactions that can be particularly demoralizing during adolescence and young adulthood when social encounters take on increased importance. Crick and Ladd (1993) assessed the feelings of loneliness, social anxiety, and social avoidance of 338 third and fifth grade students. Crick and Ladd (1993) found that negative peer interactions led to greater levels of loneliness. Similarly, Parkhurst and Asher (1992) in a study of seventh and eighth grade students found submissive-rejected students to display greater levels of loneliness and worry. Children and adolescents with NVLD have been found to experience higher levels of internalizing problems and to be at greater risk for

suicide than other LD subtypes (Pelleitier, Ahmad & Rourke, 2001; Rourke, Young, & Leenaars, 1989; Strang & Rourke, 1985). Youth with Attention Deficit Hyperactivity Disorder-Predominantly Inattentive Type also experience internalizing behaviors (Barkley, 2003).

### **Comorbidity of NVLD and Attention Deficit Hyperactivity Disorder**

There are three subtypes of Attention Deficit Hyperactivity Disorder (ADHD): predominantly inattentive type, predominantly hyperactive-impulsive type, and combined type (American Psychiatric Association, 1994; Barkley, 2003). Brumback and Staton (1982), Voeller (1986; 1996), and Gross-Tsur and Shalev (1995) found a high correlation between NVLD and the predominantly inattentive subtype of ADHD. It is hypothesized that this is because ADHD may be linked with dysfunction of the right hemisphere (Brumback & Staton, 1982). Maedgen and Carlson (2000) found children with the predominantly inattentive subtype of ADHD to demonstrate more problems with social knowledge and more passive social behaviors than children with predominantly hyperactive-impulsive and combined subtypes of ADHD. Additionally, children with ADHD frequently fail to demonstrate communication reciprocity. Landau and Milich (1988) found that children with ADHD tended to respond less often to peers who initiated interactions with them than their peers who did not have ADHD. However, such communication troubles in children with ADHD are thought to be the result of poor execution of normal social skills rather than as a result of a social competence deficit (Dodge, 1986; Voeller, 1994).

The co-occurrence of ADHD with NVLD can confound our understanding of NVLD, as measures of social perception and executive functioning are susceptible to the role of attention. Sustained attention significantly impacts performance on such measures and it is difficult to determine whether weaknesses in social perception accurately represent deficits in social information processing or whether they are manifestations of the inability of these individuals to control their behavior and attention. It has been suggested that this comorbidity may be the result of overlapping diagnostic criteria. Rourke (1995), in his model of NVLD, describes problems with attention as a secondary deficit. Children with NVLD have been observed to share a diagnostic profile similar to those with Asperger Syndrome.

### **Convergence regarding NVLD and Asperger Syndrome**

Features of NVLD are viewed by many as overlapping with those on the autistic spectrum. Many researchers suggest that NVLD, Asperger Syndrome (AS), and High Functioning Autism (HFA) are on the same continuum, with NVLD representative of a mild form of the disorder, AS representative of the midrange of functioning, and HFA representative of the most severe form of the disorder (Volkmar & Klin, 2000). NVLD is particularly noted to coincide with AS. Children and adolescents with AS experience visual-spatial deficits, as well as have difficulty with the domains of social competence and social perception (Rourke, Ahmad, Collins, Hayman-Abello et al., 2002). Children with AS have problems deciphering nonverbal cues and behaviors regarding tone of voice, facial expressions, gestures, and body language. Additionally, they find learning from new experiences and adapting to changes in routine challenging (Myles & Simpson,

2002; Klin & Volkmar, 1997; Wing, 1991). Like those with NVLD, children and adolescents with AS consistently approach others in an inappropriate manner, demonstrate poor social reciprocity, and appear incapable of understanding the perspective of others (Myles & Simpson, 2002; Klin & Volkmar, 1997; McLaughlin-Cheng, 1998; Volkmar & Klin, 2000; Wing, 1991). Children with AS are commonly referred for assessment because of limitations with attention (Klin & Volkmar, 1997). Co-morbidity rates of ADHD and AS have not been formally documented, but the DSM-IV (American Psychiatric Association, 2000) acknowledges that ADHD is commonly associated with the diagnosis of AS. Furthermore, both groups demonstrate relative strengths in verbal skills. Those with AS typically display superior verbal abilities and at times have been perceived as gifted (Barnhill, 2001; Neihart, 2000). Regarding etiology, Tsatsanis and Rourke (1995) advocate that AS can be explained using the White Matter Model. Others propose that AS can result from abnormalities in the right cerebral hemisphere. McKelvey, Lambert, Mottron, and Shevell (1995) found evidence to support this theory. In one of their studies, patients with AS were found to have abnormal right-hemisphere function on single photon emission computed tomographic (SPECT) imaging.

Subsequently, the profiles of those with NVLD and AS appear analogous. Both groups are defined by a lack of social competence and demonstrate deficits with social interaction, motor skills, visual-spatial perception, nonverbal concept formation, language pragmatics, language prosody, and adaptability regarding complex or new stimuli (Klin & Volkmar, 1997; Rourke, 2000). Both groups demonstrate greater relative proficiency

concerning verbal output and rote memory and exhibit a connection with right hemispheric functions. Due to these comparable symptoms and neurobiological underpinnings it has been theorized that the two diagnoses are either the same or linked, with AS representative of a more severe form of NVLD (Brumback, Harper, & Weinberg, 1996; Volkmar & Klin, 1998).

Conversely, other researchers believe NVLD and AS to be two distinct populations. One way in which AS differs from NVLD is that AS includes the development of restricted and repetitive patterns concerning behaviors, interests, and activities. These restricted and repetitive patterns must cause significant impairment in social functioning, occupational functioning, and other essential areas (American Psychiatric Association, 1994). Children with NVLD do not typically display these restricted interests. Further research is being conducted to examine the convergence between NVLD and AS. However, discussions and results have proven inconclusive so far. In order to accurately identify and treat these diagnoses, it is critical to obtain more definitive knowledge about these populations.

### **Summary and Statement of the Problem**

The diagnostic profile of NVLD is characterized by motor, visual-spatial, and social deficits. Relative strengths of auditory perception, auditory and verbal attention, and verbal memory are also present. It is the lack of social competence that is the most damaging for this population, especially as all other difficulties contribute to this deficiency. The information processing model presented by Crick and Dodge (1994) provides insight about areas where social competence deficits can occur. Children with

NVLD frequently find the first stage of this model, the encoding of internal and external cues, problematic. Children and adolescents with NVLD repeatedly encode irrelevant cues. Deviations from standard encoding patterns result in atypical behavioral responses. These responses are usually inappropriate and can unintentionally alienate peers. Nonverbal cues associated with prosody, body language, and facial expressions are imperative for daily social interactions and have been noted to account for approximately 65% of meaning in communication (Nowicki & Duke, 1992; Rothenberg, 1998). Children who have trouble encoding and understanding presented social cues are at risk for negative peer interactions and the adverse outcomes associated with a lack of social competence. Such outcomes include school dropout, suicide, juvenile delinquency, and higher levels of internalizing disorders (Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Katz & McClellan, 1997; Pavri & Luftig 2000; Pelleitier, Ahmad & Rourke, 2001; Roff, Sells, & Golden, 1972; Rourke, Young, & Leenaars, 1989; Strang & Rourke, 1985). The lack of global diagnostic criteria for this disorder poses further complications for the successful identification and treatment of such a population. It is recommended that more research be conducted in this area and a conclusive set of characteristics defined.

The majority of the social intervention programs that children with NVLD participate in have been designed to simultaneously address different LD subtypes. In a review of social interventions, Forness and Kavale (1996) did not find indiscriminant programs to be effective. Forness and Kavale (1996) suggested that future programs could be improved by targeting more specific social competence deficits. Social skill intervention programs typically model skills that can be applied to a common array of

social situations (Pfeiffer & McBurnett, 1997; Spafford & Grosser, 1993). While this is helpful for many children, children and adolescents with NVLD do not always benefit from such an approach. Due to their strengths with rote memory and their inability to process novel information, youth with NVLD often rely on pre-scripted, over-practiced verbal responses. Unfortunately their difficulty with encoding affects their ability to correctly apply these responses. Children with NVLD are usually unable to quickly and accurately interpret social situations and therefore unable to determine which social behaviors to enact. Thus, programs that provide general instruction on appropriate social responses do not adequately address the needs of children and adolescents with NVLD. A social intervention program that teaches children how to attend to the nonverbal elements of a situation would most likely be of more benefit to those with NVLD. Greater knowledge of how youth with NVLD understand their world would enable such interventions to be developed. A good comprehension of how children with NVLD interpret nonverbal communication and social interactions is crucial as poor encoding contributes to later, potentially detrimental outcomes and it is for this reason that this study aims to gain a greater understanding of how children and adolescents with NVLD process social information.

## CHAPTER 3: Methods

This chapter has been divided into six sections: *Study Rationale*, *Participants*, *Measures*, *Procedures*, *Data Analysis*, and *Conclusion and Verification*. The first section proposes a rationale for the current study. The second section includes a presentation of subject selection and exclusionary criteria for the investigated population. Details on child, primary caretaker, and teacher participants are also provided. The third section, *Measures*, elaborates on the means of data collection. A description of recruitment and data collection procedures follows. The fifth section, *Data Analysis*, describes the three coding phases of grounded theory methodology utilized by the researcher. The last section reviews components ensuring the validity and reliability of the study.

### Study Rationale

In order to best treat the specific social competence deficits of children with NVLD, greater knowledge of the encoding process is needed. A theoretical framework for understanding how children and adolescents with NVLD interpret their world would be helpful for addressing the specific social competence difficulties of these children. Such information can only be derived from the use of qualitative measures. Quantitative methods would enable investigators to acquire information regarding the frequency and perhaps the quality of the encoding process, but would do little to enlighten researchers about how children with NVLD actually maneuver their social milieu. A qualitative approach is the only methodology that fully allows one to investigate the perceptions and

experience of individuals (Patton, 1980). It is for this reason that a qualitative approach using grounded theory methodology was chosen for and employed by this study.

Grounded theory methodology has repeatedly been noted to provide original insight into investigated phenomena: “grounded theories, because they are drawn from data, are likely to offer insight, enhance understanding, and provide a meaningful guide to action” (Strauss & Corbin, 1998, p. 12). This study generated theory regarding the encoding of individuals with NVLD by examining the perspectives of the child, primary caretaker, and teacher. Encoding, for this study, was conceptualized and defined as how children with NVLD understand nonverbal communication and social interactions.

Participants in this study provided the researcher with valuable information. Interviewing, as a method of gathering data, enables investigators to obtain knowledge regarding aspects such as feelings, thoughts, and intentions that cannot be observed (Patton, 1980). Theories on the subject of enigmatic phenomena can be derived from such details. Accordingly, interviews questions sought to acquire information from children, primary caretakers, and teachers about the child’s abilities to process social information. Detailed firsthand accounts were obtained from the child, while primary caretakers and teachers provided critical descriptions of how particular deficits affected the child in his or her daily life. This study is unique in that there are currently few published qualitative studies of children with NVLD and no published qualitative studies that examine the perspectives of the child, primary caretaker, and teacher.

Interviews solicited information about how child participants interpreted facial expressions, prosody, body language, and social interactions. Observation, another

qualitative method of data collection, gave this researcher more instances to learn about the topics under investigation. Observations were an important informational source as they granted the researcher “the opportunity to see things that may routinely escape conscious awareness” (Patton, 1980, p. 125). Child interviews were videotaped so that the researcher could extensively review these afterwards in order to thoroughly examine the communication between researcher and child. Field notes consisted of any writings the researcher recorded throughout the data collection process. Field notes contained the immediate observations of the researcher and preliminary thoughts for possible data categories. These notes were a vital source of data as they frequently included the original insights and interpretations of the researcher. Information resulting from these measures were later coded and analyzed for significant themes and trends.

Qualitative studies aim to develop theories and display data, rather than to prove or disprove concrete hypotheses. Consequently, the following exploratory questions were used to guide this study:

*Question 1:* What are common characteristics of how children with NVLD understand nonverbal communication and social interactions?

*Question 2:* What common themes result from the perceptions of the child, primary caretaker, and teacher?

*Question 3:* What discrepancies result from the perceptions of the child, primary caretaker, and teacher?

## Participants

### Child Participants

Twelve children with NVLD between the ages nine and 13 were selected for this study. A primary caretaker and teacher of each child also participated. Child participants were selected from a larger group of children and adolescents previously assessed by neuropsychologists at Austin Neuropsychology, PLLC. Children and adolescents were referred to this clinic by psychologists, pediatricians, teachers, and parents. Children and parents who had previously consented to participate in research were screened for inclusion in this study.

All child participants had a Verbal IQ greater than or equal to 85 as measured by the *Wechsler Intelligence Scale for Children-Fourth Edition (WISC-IV; Weschler, 2003)*. English was their primary language and children had hearing and vision (or corrected vision) within the normal range. Child participants previously received a diagnosis of NVLD by a licensed psychologist. As there is no formal diagnostic criteria for NVLD, children receiving a NVLD diagnosis also met the following criterion:

1. Demonstrated difficulties with social perception as evidenced by the attainment of a score one standard deviation below the mean on the *Diagnostic Analysis of Nonverbal Accuracy (DANVA-2; Nowicki & Duke, 1994)* or demonstrated difficulties with social interaction as evidenced by the attainment of a clinically significant score (a T-score of  $> 65$ ) on the Social Problems Scale of the *Child Behavior Checklist (CBCL; Achenbach, 2001)* or a significant elevation (a scaled

score of > 5) on the Social Scale of the *Gilliam's Asperger Disorder Scale (GADS;* Gilliam, 2001).

And three of the following four criteria (Pelletier, Ahmad, & Rourke, 2001):

1. Exhibited nonverbal deficits, as evidenced on the *WISC-IV* by Verbal IQ > Performance IQ at the  $p=.05$  level.
2. Demonstrated a significant discrepancy (> 15 points) between a word decoding subtest and a mathematics subtest of the *Kaufman Test of Educational Achievement-Second Edition (KTEA-II;* Kaufman & Kaufman, 2004) or the *Woodcock-Johnson Tests of Achievement-Third Edition (WJ-III;* Woodcock, McGrew & Mather, 2001).
3. Exhibited difficulties with visual-spatial perception as evidenced by the attainment of a score one standard deviation below the mean on the *Rey-Osterrieth Complex Figure Test (Rey-O;* Meyers & Meyers, 1995) or the *Beery Visual Motor Integration Test (VMI;* Beery, 1997).
4. Exhibited difficulties with psychomotor skills as evidenced by the attainment of a score one standard deviation below the mean on the *Grooved Pegboard (Knights, & Moule, 1968).*

Table 2 illustrates how each child participant meets this NVLD criteria. The names of all participants have been changed in order to protect participant privacy.

Table 2

*Child Participant Data and NVLD Diagnostic Criteria*

ID#	Child	Sex	Must meet at least one of the following criteria			Must meet at least three of the following criteria			
			Difficulties with social perception as evidenced by a score one standard deviation below the mean on the <i>DANVA-2</i>	Significant difficulties with social interaction as evidenced by a T-score of > 65 on the Social Problems Scale of the <i>CBCL</i>	Significant elevation (a scaled score of > 5) on the Social Scale of the <i>GADS</i>	Significant nonverbal deficits evidenced on the <i>WISC-IV</i> by Verbal IQ > Performance IQ at the p=.05 level	Significant discrepancy (> 15 points) between a word decoding subtest and a mathematics subtest of the <i>KTEA-II</i> or the <i>WJ-III</i>	Difficulties with visual-spatial perception as evidenced by a score one standard deviation below the mean on the <i>Rey-O</i> or the <i>VMI</i>	Difficulties with psychomotor skills as evidenced by a score one standard deviation below the mean on the <i>Grooved Pegboard</i>
1	Mark	Male		✓		✓	✓	✓	✓
2	Annabel	Female		✓	✓	✓	✓	✓	✓
3	Jason	Male		✓		✓		✓	✓
4	Eric	Male	✓	✓			✓	✓	✓
5	Sam	Male		✓	✓	✓	✓	✓	✓
6	Russell	Male	✓	✓	✓	✓	✓		✓
7	Alex	Male		✓		✓		✓	✓
8	Marie	Female		✓		✓	✓		✓
9	Daniel	Male		✓	✓	✓		✓	✓
10	Lila	Female		✓		✓	✓	✓	
11	Michael	Male		✓		✓	✓	✓	✓
12	Kevin	Male		✓	✓	✓	✓	✓	

Children who had a previous history of epilepsy, head injury, an acquired neurological deficit, or progressive neurological disorder were not included in this study. Child participants included nine boys and three girls ranging in age from 9 years, 0 months to 13 years, 2 months. The average age was 11 years, 0 months. Ten of the 12 children were in elementary school and two children were in middle school. Children were in grades two through seven. Three children received educational services in the form of a 504 plan. Children with a 504 plan are typically educated in a general education setting. Their 504 plan describes the types of accommodations that are made for them in the school. Children with a 504 plan can receive specialized instruction, related services, or accommodations within the general education classroom.

Eleven of the 12 children interviewed were Caucasian. One child was Asian. Eleven of the 12 participants were from intact families in which two biological parents or two adoptive parents were raising children together. The parents of one child were separated. This child lived with his mother full-time and had ongoing contact with his father. Detailed child participant demographic data can be found in Table 3.

### **Primary Caretaker Participants**

A primary caretaker of each child participated in this study. Eleven of these participants were mothers. One father participated. Two mothers and one father were employed full-time out of the home. Four mothers were engaged in part-time employment out of the home and five mothers had no employment outside of the home.

Parents were part of intact and non-intact families and were responsible for raising one to three children. All participants were Caucasian. Demographic data for primary caretaker participants is included in Table 4.

### **Teacher Participants**

A teacher of each child participant was also included in this study. Participating teachers included 10 female elementary teachers and two male middle school teachers. Teachers taught grades two through seven. Three teachers educated in a private school setting and nine teachers educated in a public school setting.

The number of students each teacher had in a class ranged from eight to 27. The subjects that teachers instructed child participants in varied and teachers observed child participants from two to over five hours a day. Demographic data for participating teachers is illustrated in Table 5.

Table 3

*Child Participant Demographic Data*

<b>ID#</b>	<b>Child</b>	<b>Sex</b>	<b>Age</b>	<b>Race</b>	<b>Grade</b>	<b>School</b>	<b>Educational Services</b>	<b>Family Structure</b>
1	Mark	Male	9.4	Caucasian	3	Elementary	None	Intact
2	Annabel	Female	10.0	Caucasian	4	Elementary	None	Intact
3	Jason	Male	9.0	Caucasian	2	Elementary	504	Non-Intact
4	Eric	Male	13.2	Caucasian	7	Middle	None	Intact
5	Sam	Male	13.0	Caucasian	6	Elementary	None	Intact
6	Russell	Male	12.1	Caucasian	6	Elementary	504	Intact
7	Alex	Male	11.8	Caucasian	5	Elementary	None	Intact
8	Marie	Female	11.7	Asian	5	Elementary	None	Intact
9	Daniel	Male	12.1	Caucasian	6	Middle	None	Intact
10	Lila	Female	10.4	Caucasian	4	Elementary	None	Intact
11	Michael	Male	9.1	Caucasian	2	Elementary	None	Intact
12	Kevin	Male	11.7	Caucasian	5	Elementary	504	Intact

Table 4

*Primary Caretaker Participant Demographic Data*

<b>ID#</b>	<b>Sex</b>	<b>Race</b>	<b>Family Structure</b>	<b># of Children</b>	<b>Employment outside of the home</b>
1.P	Female	Caucasian	Intact	2	Part-Time
2.P	Female	Caucasian	Intact	2	None
3.P	Female	Caucasian	Non-Intact	2	None
4.P	Female	Caucasian	Intact	3	Part-Time
5.P	Female	Caucasian	Intact	2	Part-Time
6.P	Female	Caucasian	Intact	3	Full-Time
7.P	Female	Caucasian	Intact	2	Part-Time
8.P	Female	Caucasian	Intact	2	None
9.P	Female	Caucasian	Intact	1	Full-Time
10.P	Male	Caucasian	Intact	2	Full-Time
11.P	Female	Caucasian	Intact	2	None
12.P	Female	Caucasian	Intact	2	None

Table 5

*Teacher Participant Demographic Data*

<b>ID#</b>	<b>Sex</b>	<b>Grade</b>	<b>School</b>	<b>Type of school</b>	<b># of students in class</b>	<b>Subjects had child for</b>	<b># of hrs. a day taught child</b>
1.T	Female	3	Elementary	Public	21	Homeroom Science Social Studies	4
2.T	Female	4	Elementary	Public	23	Homeroom Language Arts Social Studies	4
3.T	Female	2	Elementary	Public	16	All Subjects	5+
4.T	Male	7	Middle	Public	24	Social Studies English	2
5.T	Female	6	Elementary	Private	16	Language Arts Social Studies	2
6.T	Female	6	Elementary	Public	20	All Subjects	5+
7.T	Female	5	Elementary	Public	22	All Subjects	5+
8.T	Female	5	Elementary	Private	8	All Subjects	5+
9.T	Male	6	Middle	Private	15	History English	2
10.T	Female	4	Elementary	Public	27	All Subjects	5+
11.T	Female	2	Elementary	Public	21	All Subjects	5+
12.T	Female	5	Elementary	Public	12	English Math Science Social Studies	4

## **Measures**

### **Interviews**

An in-person interview was conducted with each child at Austin Neuropsychology, PLLC. Child interviews lasted 40 to 50 minutes. A phone interview was conducted with each parent and teacher. Parent interviews typically lasted 70 to 90 minutes and interviews with teachers lasted approximately 60 minutes.

Prior to the start of data collection, pilot interviews were conducted with a 9-year-old male with NVLD, his mother, and his classroom teacher. The purpose of these pilot interviews was to clarify research questions and the focus of inquiry. This triad of interviews was useful in assisting with the development of an interview guide, as well as gave the researcher a feel for how the interviews would progress. Information derived from pilot interviews particularly indicated that in order to elicit more accurate and thorough information about the concepts under investigation it would be necessary to incorporate imaginary scenarios in the child interviews and to explicitly ask children to demonstrate their emotions. Additionally, this researcher had originally planned to conduct in-person primary caretaker and teacher interviews. Pilot interviews illustrated that the collection of data would not be impaired if these interviews were conducted via phone. Conducting phone interviews with primary caretakers and teachers allowed for more flexibility when scheduling and carrying out interviews, increased the speed of data collection, and potentially made participation in this study more attractive to busy teachers and parents.

All interviews followed a flexible, semi-structured format. Participants were asked open-ended questions about how child participants interpreted aspects of nonverbal communication. Children were also asked to demonstrate how they might convey a specific emotion or how they would respond to a make believe scenario. Interview questions loosely followed an interview guide. This guide allowed for the construction of follow up questions and was used to prompt respondents if they did not discuss all areas of interest to this study of their own accord. Interview guides are supplied in Appendix C. A list of common, actual interview questions is provided in Appendix D. All interviews were audio recorded with participant consent and transcribed for later analysis. Excerpts from participant transcripts are included in Appendix E. Child interviews were also videotaped with participant consent.

Follow-up telephone calls were conducted with parent participants six months after the full-length interviews occurred. During this phone call, the researcher summarized to-date results of the data collection and analysis. The researcher asked the respondent to verify that the presented information was correct and allowed the respondent to correct any errors in information.

### **Observations and Field Notes**

Observations of child nonverbal communication and interactions were obtained and coded from previously videotaped child interviews. When reviewing these video tapes, the researcher paid specific attention to the child's use of eye contact, facial expressions, body gestures, and prosody. Observation forms were used to note these behaviors. These forms are provided in Appendix F.

Field notes consisted of additional information the researcher documented while conducting interviews, coding data, engaging in member checks, and participating in peer debriefing sessions. Field notes were recorded on interview protocols, data coding lists, and separate pieces of paper, as well as in password protected computer word documents.

### **Researcher as an Instrument**

I first became interested in examining social competence in children with NVLD when I joined a research team at the University of Texas at Austin led by Dr. Margaret Semrud-Clikeman. This research team sought to gain a better understanding of how children with deficits in social competence function. In an effort to contribute to this principal goal I co-led, with another graduate student, a Social Competence Intervention Program (SCIP) for children with social competence deficits. This program was provided annually and I acted as a group leader for two consecutive years. Children in these groups represented a variety of developmental disorders. Many demonstrated NVLD. In working alongside these children, I became profoundly aware of how their lack of social competence influenced functioning in all areas of their lives. I also observed how the symptoms, manifestations, and responses of children with NVLD differed from those in the group who had been diagnosed with other disorders.

Working with numerous children exhibiting differing disorders in a group setting allowed me to see firsthand how each subtype reacted distinctly to the common group activities and exercises designed to improve social performance. I especially noticed how many of the difficulties displayed by the children with NVLD stemmed from problems with encoding. Often during exercises these children would incorrectly

interpret social cues from their peers or demonstrate an inability to encode the gestalt of tasks, focusing instead on particular details. As a group leader, I found myself spending a great deal of time helping children with HFA with one element of the task and helping children with NVLD on other, completely disparate aspects of the task. Invariably, a couple of children in the groups with NVLD would also have co-occurring ADHD. Group leaders would spend even more time with these children attempting to redirect their attention to the tasks at hand. Such observations led me to believe that children with NVLD would benefit more from interventions particularly tailored to address their specific deficits in social competence. Thus, I developed this study in which I aimed to use qualitative methods to generate descriptions and theory that would better inform future interventions about the areas of social competence that children with NVLD struggle with.

In order to be considered a good and reliable instrument for data collection, it is important for the primary interviewer to create an atmosphere of trust (Merriam, 1998). Creating such an atmosphere is essential, as without it, it cannot be assured that participants will respond truthfully or wholly. In all of my interactions with participants, I sought to establish and maintain an atmosphere of trust by building positive rapport and continuously demonstrating empathy and warmth. I began all interviews with an explanation of the nature of the study. Throughout each interview, I answered questions posed to me, encouraged participants to ask questions, and explained to each participant that they were under no obligation to answer all inquiries or discuss any topics that they did not wish to. If at any time participants appeared to be uncomfortable or reluctant to

divulge information, I amicably conveyed to them that choosing to respond was their right and if they did not want to respond, they did not have to.

I praised each participant's willingness to participate and communicate with me and maintained good eye contact while summarizing and reflecting presented information in order to demonstrate that I was actively listening. I particularly made a concerted effort to develop good rapport with child participants. Once an explanation of the study was given, I inquired about each child's interests and hobbies with open ended questions and encouraged them to share their experiences. I sought to interact with them at an age appropriate level, affecting an approachable and easygoing demeanor and using the language of the child. I also allowed each child to set the tone and generally direct the course of the interview. Employing such traits greatly contributed to creating an atmosphere of trust.

## **Procedures**

### **Project Approval**

This study complies with the ethics and standards of research detailed by the American Psychological Association, Austin Neuropsychology, PLLC, and The University of Texas at Austin. This study was approved by the Department of Educational Psychology and the Institutional Review Board at The University of Texas at Austin. Documentation of this approval is supplied in Appendix G.

## **Recruitment**

Individuals seeking services at Austin Neuropsychology, PLLC are given the option of allowing their assessment results to be a part of ongoing research. Confidentiality is discussed and individuals are asked to indicate via a consent form whether they wish to allow their data to be used for research purposes. On this form persons are also able to note whether they would be interested in participating in future research. Children whose guardians completed a consent form and who met participant selection criteria were offered participation in this study. A primary caretaker and teacher of each child were also invited to participate.

Primary caretakers of children meeting selection criteria were contacted by telephone by the researcher. The purpose and nature of the study was presented to the primary caretaker. The researcher described the use of audio and video forms for data preservation. Participant confidentiality was discussed in this phone call as well. Primary caretakers who displayed interest in having their child participate in the study were asked to suggest one of their child's teachers who they also thought would be interested in participating. Recommended teachers were then contacted by the researcher and given the option of joining the study. Once a child and their primary caretaker and teacher confirmed that they wished to participate, interviews with each party were scheduled. Consent and assent forms explaining the purpose of the interviews were reviewed and signed by each interviewee prior to the start of each interview. Consent and assent forms are supplied in Appendix H. At the conclusion of their interview, child

interviewees were presented with a gift card to Target as a gesture of appreciation for their participation.

### **Collection of Data**

Interview sessions began with an introduction to the researcher and study. Participant confidentiality and rights were discussed with each interviewee at the beginning of the interview. Participants were encouraged to voice any further questions they had at this time. All interviews were audio recorded for later transcription. Additionally, child interviews were videotaped. Interviews inquired about participant's perceptions of how a child with NVLD understands prosody, facial expressions, body language, and social interactions. Interviews were semi-structured and allowed participants to describe their perceptions in their own language.

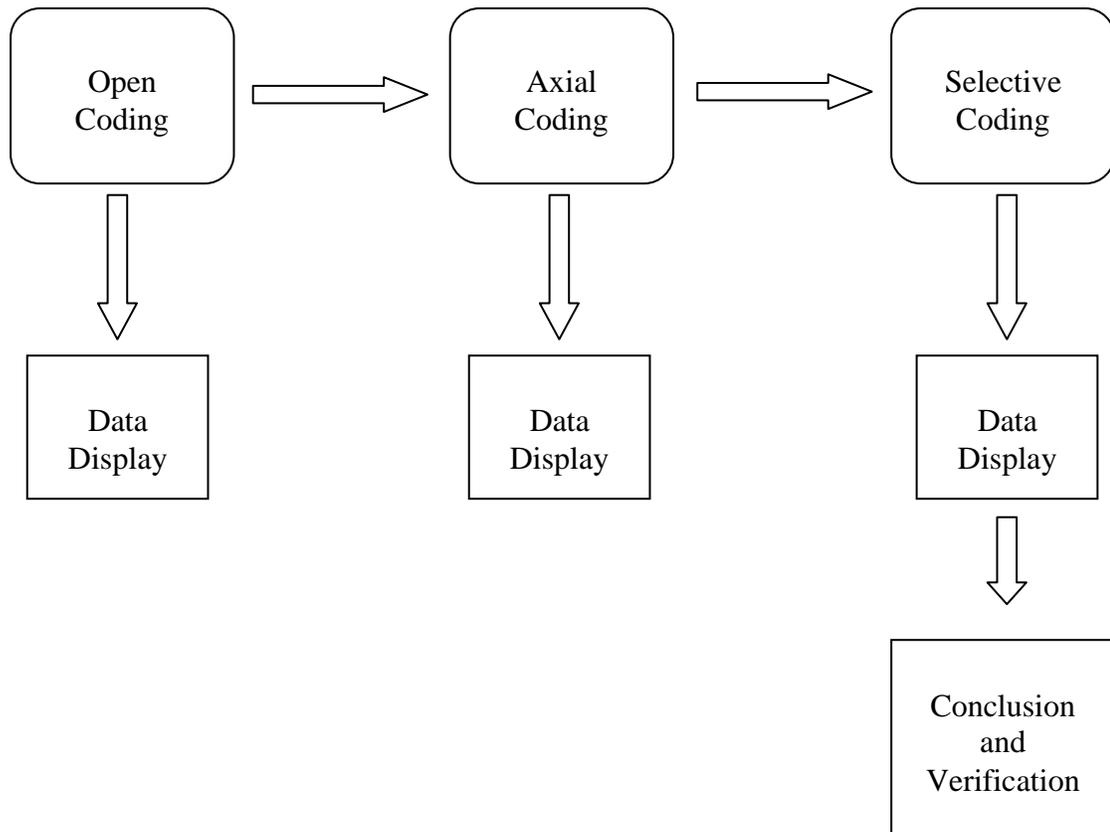
During these interviews, instead of trying to record verbatim participant responses, the researcher wrote down field notes. Field notes included observational notes, potential categories for data analysis, thoughts on areas requiring further inquiry, questions for further interviews, and notes related to the researcher's reactions, interactions, or experiences during the interview. Individual responses to interview questions were transcribed and analyzed at a later date. Participants were randomly assigned a participant ID number to ensure confidentiality. This ID number was used on all written notes, documentation, and measures in place of a participant's true name. For child participants these numbers were later replaced by the pseudonyms that appear in this document. Interview protocols, transcribed interviews, field notes, observational

notes, consent and assent forms, and audio and video tapes were secured in a locked file cabinet at all times during data collection, data analysis, and the writing of this document.

### **Data Analysis**

Data analysis was conducted using the three coding strategies of grounded theory methodology: open coding, axial coding, and selective coding (Strauss & Corbin, 1998). Grounded theory methodology aims to build rather than test theory. Such methodology provides researchers with a means for handling large quantities of raw data. Qualitative data collected via observations, field notes, and interviews was analyzed. Information derived from these measures was then used to identify, develop, and relate concepts to form the building blocks of theory. Throughout *open coding*, data was examined for significant emerging concepts. Central concepts were identified and grouped into expansive, similar categories. During *axial coding*, relationships linking categories and subcategories were explored and recorded. In *selective coding*, categories were integrated in order to find one overarching explanation or theoretical model. Organizing connecting relationships was essential for creating this model and charts and diagrams were frequently used to illustrate and help make sense of the results of each analytic process. Figure 1 depicts this process.

Figure 1. Overview of Data Analysis Procedures.



### **Open Coding**

In grounded theory methodology, open coding is the process through which concepts are identified: “Data is broken down into discrete parts, closely examined, and compared for similarities and differences” (Strauss & Corbin, 1998, p. 102). During

open coding, the transcribed interviews of this study were analyzed for similar thoughts, ideas, and meanings.

Interview transcriptions were evaluated line by line in order to detect recurring, preliminary themes. Once found, these themes or categories were given a code. Categories were determined by grouping events, happenings, objects, actions, or interactions under one common term. As open coding progressed, subsequently identified concepts that shared similar core characteristics were classified under the same code. A list of categories developed during open coding is supplied in Appendix I.

### **Axial Coding**

Axial coding served to reorganize the data categorized in open coding. This phase assessed categories previously derived from the open coding process and related them to subcategories in order to formulate more detailed theories regarding the occurrence of interest. During this coding process, connections and relationships were explored among the categories developed in open coding.

The structure: the who, what, when, and where; and the process: the how and why, of these concepts were examined for more integral relationships. The properties and dimensions of these categories were also explored. Properties served to denote characteristics of the category, while dimensions detailed the location of these properties along a continuum. An example of axial coding is supplied in Appendix J.

### **Selective Coding**

The selective coding process focused on relating categories to one another at a more conceptual level. In selective coding, categories were integrated in order to find

one explanation, or comprehensive theoretical model, for the particular phenomenon examined. A central, encompassing model was established and all significant categories were related to this overarching theoretical paradigm. During this phase, diagrams were frequently used to help track and depict relationships among concepts. This stage also included “refinement,” which ensured that unnecessary surfeit data was eliminated and additional data incorporated to support inadequately defined categories (Strauss & Corbin, 1998).

### **Conclusion and Verification**

When evaluating qualitative research, research studies should be trustworthy. In order for a qualitative study to be trustworthy four components must be addressed: *credibility, transferability, dependability, and confirmability*. These components correlate with the criteria typically used to evaluate quantitative studies and are associated with internal validity, external validity, reliability, and objectivity respectively (Lincoln & Guba, 1985). Data and research from this study was confirmed and verified according to these principles.

#### **Credibility/Internal Validity**

The credibility of a qualitative study represents the certainty with which its findings can be seen as accurate or true. Triangulation, member checks, peer debriefing, and objectivity were employed in order to ensure the credibility of this research. Triangulation, in particular, is helpful for increasing credibility (Lincoln & Guba, 1985). In this study, information gathered from interviews, observations, and field notes served as one source of triangulation. Data derived from various informants: the child, the

primary caretaker, and the teacher, served as another method of triangulation. Responses and information obtained from these sources were examined for consistency.

Member checks also took place regularly. Categories, interpretations, and conclusions resulting from triangulation and grounded theory were “checked” or confirmed with the children, parents, and teachers participating in this study. During interviews, the researcher engaged in active listening and paraphrased participants responses back to them for verification. At the end of an interview and during each follow up phone call, the researcher summarized previously determined categories and data and allowed the respondent to correct any errors in information, as well as challenge interpretations.

Additionally, the researcher engaged in peer debriefing with supervisors and other graduate students. The researcher met with a group of advanced graduate students and supervisors repeatedly throughout data analysis. As a part of this group, the researcher was able to discuss emerging categories and was encouraged to expand, explore, and think critically about the developing model. Peer debriefing sessions provided a forum for the researcher to: gain feedback regarding evolving conclusions, become aware of researcher biases, consider alternative explanations, and refine theory. Furthermore, in order to cross-check observational findings and data interpretation (and to ensure inter-rater reliability), a portion of the data from observations, interviews, and field notes was coded by a graduate student peer debriefer. Coded material was compared following this and similarities and discrepancies were discussed.

### **Transferability/External Validity**

The transferability, or external validity, of a study refers to how generalizable the study is. Transferability indicates the degree to which the results of a study can be applied to more than just those participating in the study (Lincoln & Guba, 1985). The transferability of this research is sustained by the creation of a detailed, comprehensive account of the study and its participants. Such description allows others to determine whether this research is relevant-pertinent to their own interests or life or representative of a realistic or actual life scenario (Lincoln & Guba, 1985). The use of multiple cases further reinforces transferability.

### **Dependability/Reliability and Confirmability/Objectivity**

One way this research study maintains dependability or reliability is through the establishment of an “audit trail.” Lincoln & Guba (1985) propose six categories of necessary materials. These are: (1) raw data, such as transcribed interviews or notes; (2) products of data reduction and analysis, including notes from peer debriefing sessions; (3) products of data reconstruction and synthesis, such as notes or reports utilizing grounded theory and data analysis; (4) process notes or any notes on how procedures, strategies, and decisions were made during the study; (5) materials and notes relating to intentions and dispositions; and (6) all information regarding instrument development.

These materials were assembled and organized comprehensibly in order to facilitate the reproducibility of the study. This organization allows others to see how the results of the study reflect the collected data. Good organization also enabled peer debriefers and supervisors to easily observe the researcher’s progress.

Confirmability measures how well the results of a study are supported by the data collected (Lincoln & Guba, 1985). The confirmability or objectivity of this study is maintained by the production of results that are factual and confirmable via the methods previously mentioned.

## **CHAPTER 4: Results**

The outcome of this research study is a model depicting the needs of children and adolescents with NVLD, the interactions among youth with NVLD, primary caretakers, and teachers, and the import of these communications for improving social competence. This model can be summarized as: *Multidirectional Communication: A Dynamic Process Contributing to Social Development*. This chapter explains how this representation evolved from the data, as well as describes this theoretical paradigm in detail. A diagram is presented, illustrating significant concepts of the model and the relationships among these components. Key elements of the model are *needs of the child*, *communication across persons*, and *social development*. Subsequent chapters explore these aspects in greater depth.

### **Development of the Model**

The qualitative measures of this study yielded vast amounts of information. Interview transcriptions, field notes, observational comments, diagrams, and memos produced over seven hundred pages of rich, comprehensive data. Videotaped interviews were meticulously reviewed and provided solid evidence of concrete behaviors. During the initial stages of data analysis, the process of examining and coding such a substantial volume of material was daunting. It was difficult to believe one unifying theme would ultimately, accurately convey the depth and breadth of the information shared in the interviews.

Using my exploratory research questions as a guide, I began the challenging task of analyzing this expanse of data. My first research question focused on identifying common characteristics of children and adolescents with NVLD. In open coding, interview transcriptions were thoroughly explored. Recurring themes regarding key traits of children with NVLD quickly became apparent. These themes formed the basis for preliminary categories and were given broad labels, including those of: *facial expressions, prosody, eye contact, emotion expression, cognitive flexibility, empathy, perspective taking, peer relationships/interactions, communication with others, and social development.*

During axial coding, I aimed to uncover meaningful relationships among these groups by examining the who, what, when, where, how, and why of the general categories noted in open coding. Antecedents, context, and outcomes related to existing categories were evaluated and I began to establish sub-categories. Sub-categories expanded general categories by illuminating their important dimensions. For example, information provided by participants regarding *voice prosody* was found to differentiate across emotions. Subsequently, individual sub-codes were developed for *positive, negative, and neutral* emotions. Participants were observed to elaborate on *appropriate* and *inappropriate* uses of *empathy*, which were designated with more sub-codes. The category *peer relationships/interactions* was enhanced by the inclusion of sub-categories reflecting how child participants interacted with peers *one-on-one* or in *groups*. Furthermore, the preliminary category *communication with others* was redefined into two other, more appropriate general groupings: *child-parent communication* and *child-*

*teacher communication*. Sub-codes such as *teaching*, *coaching*, *social modeling*, and *role playing* were created to delineate the distinct interactions these dyads engaged in.

The other, two exploratory questions of this study sought to investigate any similarities and discrepancies resulting from the varied perspectives of the participants. These questions were used to further guide data analysis. As examination of the data progressed, it became evident that in addition to producing information about how children and adolescents with NVLD understand their world, this study also unearthed original data on how youth with NVLD communicate with their parents and teachers. Communication between those with NVLD and their parents and teachers was found to be an essential component of daily interactions and a strong contributor to the social functioning of the child. Moreover, an exhaustive line-by-line assessment of interview transcriptions revealed a wealth of information about the interactions between parents and teachers. *Social development* was another unexpected category clearly traversing all interviews.

Compelling connections developed across categories during selective coding. For instance, strong relationships between *child-parent interactions* and categories such as *coping strategies* and *understanding of self* demonstrated that *child-parent interactions* were an integral part of *social development*. During this phase, diagrams were essential for clarifying and illustrating countless interlocking relationships and themes. Preliminary conclusions and associations between categories were verified with further examination and the use of additional data. As relationships between categories and subcategories solidified, I tried to capture the overarching theme that summarized the

core and heart of the data. Although *child-parent communication* and *peer relationships/interactions* were important elements, they did not represent the entire framework of the model. Analysis of the perspectives of children, parents, and teachers allowed novel insight to be gained regarding how youth with NVLD process social information. Factors contributing to the development of social competence in those with NVLD were exposed as well, significantly enriching the evolving theory. The resulting, encompassing model encapsulates: the characteristics of children and adolescents with NVLD; how these traits influence the interactions of children, parents, and teachers; and how communication across persons promotes the social development of children and adolescents with NVLD. This model was labeled: *Multidirectional Communication: A Dynamic Process Contributing to Social Development*.

### **Overview of the Model**

This study contributes to existing research by providing further information on how children and adolescents with NVLD navigate their social milieu. The needs of youth with NVLD are particular and often profound. Such needs are communicated via the child's observable interactions with others and their verbal and nonverbal behaviors. In addition to communicating directly with the child, parents and teachers frequently exchanged weekly anecdotes, progress updates, and other information regarding the needs of the child. As a result of fluid interactions, all participants frequently revised their expectations, goals, and perceptions of the needs of the child.

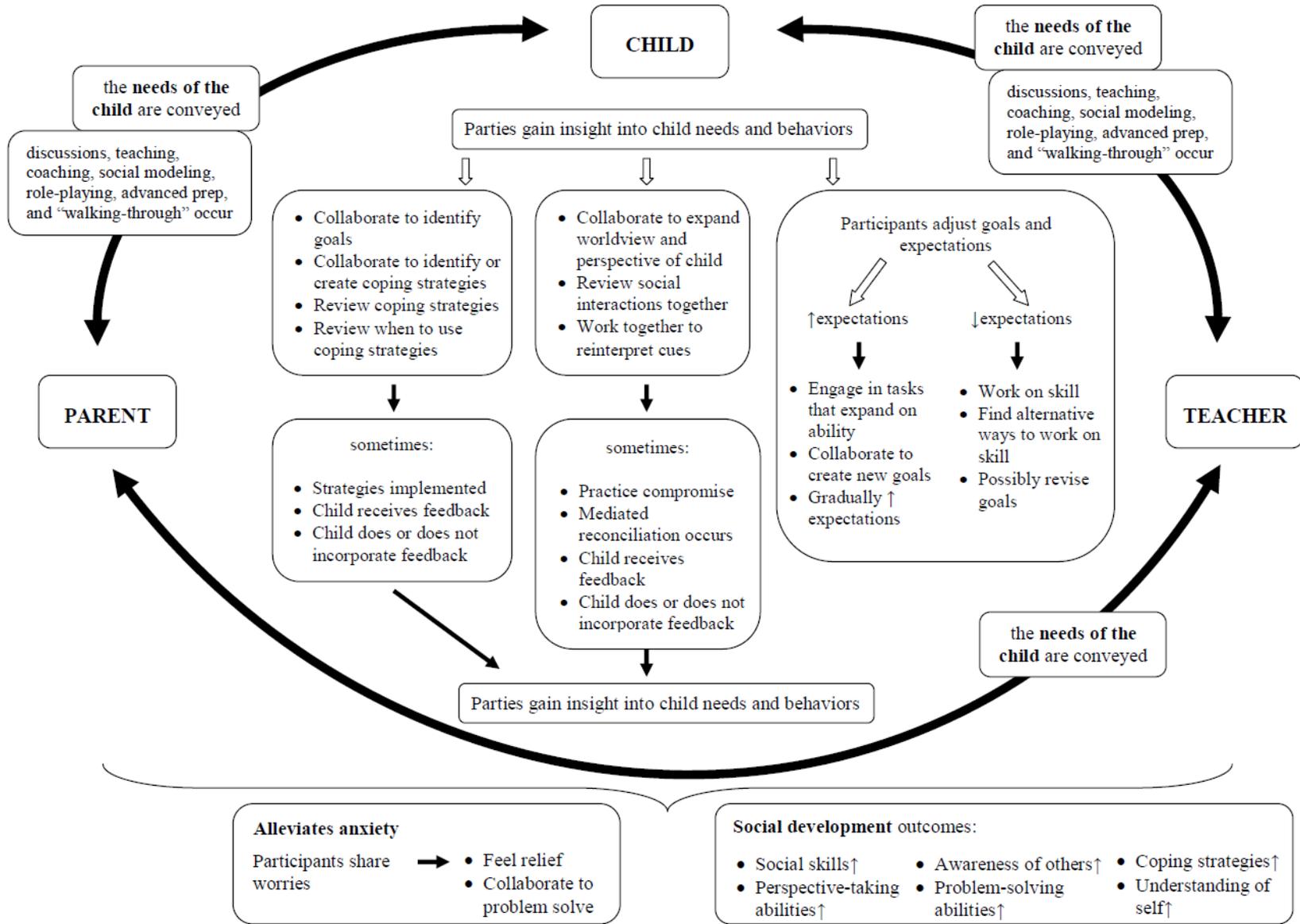
Children and adults engaged in teaching, coaching, social modeling, role playing, advanced prep, and "walking through." These exchanges increased child participant's

social skills, perspective taking abilities, awareness of others, problem solving abilities, coping strategies, and understanding of self. Youth in this study reported that as a result of this communication they were better able to identify their feelings, compromise, problem solve, utilize coping skills, and take the view point of others. Hence, *needs of the child, communications across persons, and social development* were intimately linked and identified as central aspects of the model. Communication within child, parent, and teacher triads could stem from any party and occur at anytime. Constant interactions across groups encouraged the development of social abilities in children and adolescents with NVLD. This continuous, flexible process is summarized by the theoretical model: *Multidirectional Communication: A Dynamic Process Contributing to Social Development.*

### **An Illustration of the Process**

A graphic representation of this model is provided in Figure 2. Chapters 5 and 6 elaborate on the three core elements of the model: *needs of the child, communications across persons, and social development.*

Figure 2. Multidirectional Communication: A Dynamic Process Contributing to Social Development



## CHAPTER 5: Needs of the Child

This chapter engages in an in-depth examination of *needs of the child*, one of the key concepts of the theoretical model: *Multidirectional Communication: A Dynamic Process Contributing to Social Development*. The other two main components, *communications across persons* and *social development*, are discussed in Chapter 6. Statements provided by participants are included to most effectively illuminate the connections between elements of the model and individual experiences. Statements from participant transcripts are referenced by a corresponding number in brackets. The names of all participants have been changed in order to protect their privacy.

### Characteristics of Children and Adolescents with NVLD

One critical component of the model that emerged was *needs of the child*. Children and adolescents participating in this study were found to demonstrate a shared set of characteristics regarding *facial expressions, prosody, body language, multiple or discordant sensory cues, conversation, emotion expression, cognitive flexibility, empathy, and perspective taking*. Additionally, congruent information was found across parties regarding how youth with NVLD understand and navigate *peer relationships*. *Child worries* are also detailed.

### Facial Expressions

Child participants were observed to have much difficulty interpreting and producing appropriate facial expressions. In child interviews, only seven out of 12

children were able to correctly identify and demonstrate common facial expressions such as those portraying happiness, sadness, and anger [1C, 4C, 5C, 6C, 7C, 9C, 10C]. In many of these cases, parents reported that while their child might know the proper facial expression to use in a specific social situation, they would inevitably have trouble accurately producing this expression [1P, 2P, 4P, 6P, 9P, 10P, 12P]. Russell's mother in particular expressed this:

His facial expressions don't always match up. I can give you an example: if he's really happy about something he has a great, genuine smile. If he's taking a picture or something he has to think of something silly. If I can get him really chuckling about something, he has a sweet, genuine smile, but if I ask him to smile, it's very stilted. It's kind of joker like and it just doesn't look that good. [6P]

Children were found to be more likely to correctly encode positive facial expressions versus neutral or negative facial expressions [1P, 2C, 2P, 2T, 4P, 5P, 5T, 6C, 6P, 9P, 7T, 11P]. Mark's mother, when describing her son, remarked that,

He has a terrible time with facial expressions. A smile he understands, but for him frequently surprised and angry might mean the same thing. Sad is also a hard one for him to interpret. It's just not his strong suit at all. He really doesn't get those facial cues. [1P]

Michael's mother commented, "Michael's more able to recognize if someone is pleased than displeased. Anger or sadness, frustration, these are things that are a lot more difficult for him to recognize in someone's face" [11P]. Michael's teacher concurred, "If

a person's angry it takes Michael far longer to understand that just from looking at their face than if they were happy. He has much more difficulty processing the anger or frustration of another compared to happiness and joy" [11T]. All child participants were noted to have poor eye contact, and descriptions such as, "He won't look at you when he talks" [5T] and "He typically looks away, even when you're having a conversation with him" [9T] were common.

### **Prosody**

Children in this study had trouble attending to inflections, intonations, and stress patterns in the voices of others. Child participants showed some variation in their ability to differentiate among vocal cues. Children were found to be more adept at encoding vocal cues displaying elevated degrees of emotion. The more saturated voice tones were with emotional content, the easier it was for children and adolescents to register and recognize the emotion. Sam's mother shared,

He has a really hard time with voice tones. The more obvious ones are easier for him, those with a greater level of emotion. For example, happiness and sadness, the more obvious it is for him in your voice, the easier it is for him to pick it up.

He has a harder time with neutral or more ambiguous voice tones. [5P]

Russell's mother presented, "All of those bodily cues, it's the same for him. The more emotion interjected into it, the more he can figure out what the emotion is" [6P].

Some children were observed to find it easier to attend to negative vocal cues, "He is more easily able to interpret anger or frustration. It's harder for him to interpret neutral or happy tones" [12T]. However, most child participants were described as able to

more easily recognize positive emotions based on vocal cues, “Alex can get happiness easier, because it’s more of a sound I think, laughing and giggling” [7P]. Children were noted to interpret neutral voice tones negatively. Annabel’s mother commented, “Sometimes she over-interprets, like a neutral tone, and assumes that we might be mad or I might be mad when I’m really not” [2P]. Kevin’s mother recounted:

If there's laughter, he can understand that. It's the more subtle cues he has trouble with. Neutral is very difficult to read. He'll take neutral as a negative and he's more likely to interpret neutral cues as sadness or anger or something negative. [12P]

Several primary caretakers believed their child was more likely to attend to verbal cues over facial expressions and body language when trying to decipher the moods of others [3P, 4P, 6P, 7P, 10P]. Alex’s mother conveyed these sentiments, “His ability to attend to facial expressions is not as good as his ability to recognize verbal. Facial expressions are more difficult for him than sound, like if he hears me crying...he understands that” [7P]. Other adults indicated that although vocal cues were helpful for giving the child opportunities to recognize the emotions of others, they felt that overt verbal statements were more effective for helping children to actually understand the mood of others. Sam’s mother explained:

A lot of times Sam doesn't know how other people feel and he's stuck in his own viewpoint. If for instance I'm crying, he can pick up that I'm sad, but he won't want to know why and if it's not verbalized he won't really understand. He's

pretty 'out to lunch' if it's not verbalized, especially with people that he doesn't know. [5P]

Three of the younger children, Mark, Annabel, and Lila, appeared to be unable to correctly interpret any voice tones [1P, 1T, 2P, 10C, 10P]. Finally, the majority of child participants, nine out of twelve, were found to have trouble understanding irony and sarcasm via a speaker's tone [1P, 2P, 3C, 3P, 3T, 4P, 5T, 7P, 7T, 8C, 8P, 9T, 11T].

### **Body Language**

Children and adolescents with NVLD were portrayed as "not particularly adept" at attending to body language [10P]. Encoding the body language of others was not easy for child participants [1C, 1P, 3P, 3T, 4T, 5C, 5T, 6P, 6T, 7P, 7T, 8C, 8P, 9C, 9P, 10P, 11P, 12P]. Russell's mother detailed, "He has a difficult time with body space. When someone is backing away from him because he's too close, he doesn't get it. When somebody is crossing their arms or turning away from him, he doesn't get it" [6P]. Jason's teacher illustrated how children with NVLD found it challenging to interpret positive body language:

I don't remember him picking up on how other people feel from their body language. During recess a kid could be swinging their arms, bouncing, clearly excited, and he wouldn't really seem to notice. He's more into his world and you sort of have to enter his world. [3T]

Sam's teacher elaborated on how a child's poor abilities to encode body language manifested in conversation:

He would have a conversation with somebody and you know how you might turn your body away or inch your body back or look at the door, he doesn't pick up on that nonverbal cue. You know how it is when you're with somebody, you need to go, you start looking around, you start backing up trying to leave. That's just one example. [5T]

During child interviews youth were consistently observed to demonstrate poor body language. Interviewees were often restless and fidgety. Body language ranged from inhibited to dramatic and frequently did not correlate to the questions asked or the answers given. For instance, Marie made a fist with one hand and began punching it into her other hand when describing how much she loves riding horses in the summertime [8C].

### **Multiple or Discordant Sensory Cues**

Children and adolescents with NVLD demonstrated difficulties attending to cues from multiple sources or discordant sensory cues. Child participants became distracted, overwhelmed, and shut down in instances where there was an abundance of stimuli for them to cope with, “He doesn't react well when he has too much overstimulation and that happens a lot in the classroom. There are lots of things going on. He can't attend to everything at once and he becomes overstimulated. Eventually he shuts down” [11T].

Children with NLVD were often unable to simultaneously encode multiple cues, “Following a lot of things at once is difficult for me” [5C]. Sam's teacher shared that after working with Sam for a year, she strongly felt that he was less competent than his peers when it came to attending to social cues:

Let's say in class, instead of me saying something verbally to him, I'll look at him with crossed arms. You know that look that teachers give you, well he doesn't get that. You have to verbally say, "Sam, put your feet down, get them off the desk." Some kids I could just look at or they would look at my body language, and if they were talking, they would know, "Oops, I better be quiet." He's not really good at that, those non-verbal cues. [5T]

Troubles coping with multiple cues led to decreased functioning overall. Marie's mother shared that it was easy for her daughter to become overly inundated with stimuli when many things were happening at once and that this affected her ability to process social information, "One-on-one she can sometimes do it. When you start putting together a group dynamic where there's more going on or there's lots of sounds and different things, it's very hard for her to pick up on one thing then" [8P]. Others expressed similar sentiments [1C, 1P, 2C, 2P, 2T, 3T, 4P, 4T, 5C, 5T, 6P, 7P, 7T, 8P, 9C, 9P, 9T, 10T, 11P, 11T, 12P]. Mark articulated, "When there's a lot of different things going on, a lot of noises, I get overwhelmed" [1C]. Sam said, "I really hate it when there's too much noise, like if there are many people talking at once, then I can't think" [5C]. Daniel's teacher conveyed that his academic success was at times impaired by his inability to attend to an abundance of stimuli:

When you give him multiple directions or directives he has a lot of trouble, particularly with following more than two. If the directions are given more than one way he also has a lot of trouble. Like if it's written on the board and I say it, he has a hard time following both. In reading, sometimes the group will be

working on one thing and he'll look like he's working on it, but really he'll have had a problem with trying to attend to too many inputs and won't know what he's supposed to be doing, but he'll pretend to go along with it and people will think he's working. [9T]

For Michael, assimilating multiple cues was a daily struggle, "It depends on the situation, some days he can. On other days he can't assess many inputs well" [11P]. This also affected his progress at school:

How well he does in a day depends on how much extra stimuli is going on surrounding him. If there's a lot of noise or if there's a lot of distracting activity it will take a lot longer for him to read the context clues and things will go downhill from there. [11T]

In addition to experiencing problems integrating multiple cues, children with NVLD typically failed to accurately encode discordant cues. A tendency to misinterpret incongruent cues contributed to poor social interactions, "He has lots of trouble reading social situations. He has tremendous difficulty if the tone and words don't really match. He's able to hear the term, but he'll misinterpret it if the tone and facial expression don't agree with the term" [7P]. Kevin's mother related:

His context clues are coming along, but they're not what they should be. He's unable to clearly read a situation if the person isn't demonstrating what he would consider the appropriate facial expressions for that moment. If it's a neutral face and you're humming, instead of thinking that you're having a good day, unless you said, "I'm having a great day," and there's a smile with that, he's going to say,

“Oh, are you having a bad day?” [12P]

Daniel’s mother expressed that deficits in this area made it tough for him to engage in common age appropriate interactions with others:

He has trouble reading body language and facial expressions and listening to tones of voice as a set. If somebody said something to him in jest, but made poor word choices, he wouldn’t realize it was in jest. His anger would flare. Nobody could ever tease him, you know, play around with him, because he just didn’t understand that. [9P]

Eric’s teacher provided another example indicating how an adolescent with NVLD was likely to inaccurately interpret the actions of his peers when presented with discordant cues:

It’s those cues that people use in everyday conversation to let you even know if they’re interested in what you’re saying, because he’ll go on and on and you can see that people aren’t listening to him. Like in the classroom, if you asked him who was the leader of such and such, he would say something like, “A long time ago…” and even though kids are rolling their eyes or looking bored, because they might also be nodding their heads, he would go on and on and the rest of the class would just be like, “Get to the answer.” It’s like that kind of thing. He’s not really socially adept at reading kids even when they’re irritated with him. He seems impervious. He’s just not good with non-verbals all the way around. [4T]

Across all settings, children were observed to attend to auditory cues and verbal statements more than to visual cues [2P, 3P, 4P, 4T, 5P, 6C, 6P, 7P, 8P, 9T, 10P, 12T].

## Conversation

Children with NVLD were described as youth possessing greater vocabularies than similarly aged peers [1T, 2T, 4T, 5T, 6P, 6T, 7P, 9T, 10P, 11T, 12T]. They were noted to talk excessively about specific interests and to experience much difficulty with the “give and take” or reciprocal nature of conversation [1P, 2P, 2T, 3T, 4P, 5P, 5T, 6P, 6T, 7P, 8P, 9P, 9T, 10P, 10T, 11T, 12P, 12T]. Conversations typically ended up being “one-sided” [1P, 3T, 4P, 5T, 6T, 7T, 8P, 9P, 11P, 12P] as those with NVLD were likely to become “long-winded” [4P, 4T, 5P, 7T, 8T, 9P] and speak pedantically. Qualitative descriptions given by parents and teachers correlated highly with the observations of the researcher. In child interviews, participants frequently demonstrated rambling, tangential conversation. They were often difficult to engage in dialogue and they would repeatedly run on about subjects that they were interested in such as video games, books, pets, and unrelated personal anecdotes. Younger children were found to have more difficulty than adolescents with figurative language [1C, 1P, 3C, 3T, 10C, 10T, 10P, 11P].

Eric’s teacher described his vocabulary as “phenomenal compared to other peers” [4T]. Sam’s teacher commented, “Sam is highly intelligent. Verbally, with English, he's off the charts” [5T]. Annabel’s teacher also lauded her verbal abilities, “Annabel’s vocabulary is so far advanced from her peers, it’s fantastic. She blew me away several times” [2T]. Enhanced vocabularies were evident in child interviews as well. Michael, a second grader, shared: “After reading the book, the movie *The Sith Lord* was astoundingly accurate. Most movies adapted from literature are very divergent” [11C]. Jason, another second grader, responded to an inquiry about his favorite things to do

with, “One of my utmost, all-time favorite activities is going for a relaxing swim, especially in my Pappy’s pool. There’s something immensely serene about a cool dip there” [3C].

Children were more likely to engage in conversations about their specific interests. Lila’s teacher noted, “When you got her talking about something she really enjoyed, she’d give you an earful. If you’re having conversations with her about something she’s interested in, she would definitely fill you in. She’d teach you a thing or two” [10T]. Daniel’s mother revealed, “He doesn't really know how to do light chat, particularly when it’s something he’s interested in. He’ll want to tell you everything he knows about a subject” [9P]. Kevin was, “very thorough on topics that he finds interesting, almost too thorough” [12P]. During interviews it was observed that children would talk excessively about the subjects they preferred. If they were redirected they would come back to their favored topic, even after other matters had been discussed or other questions asked and answered.

In resolutely disseminating information on preferred topics, children and adolescents would frequently fail to interact with others in dialectical exchanges. Difficulties with conversational reciprocity resulted. Sam’s teacher reported, “Conversation with him is very one-sided. He doesn’t engage the people he is with too much” [5T], and from his mother, “After the initial initiation he continues to talk about what he's more interested in. He doesn't really get that give-and-take of friendship, what the other kid’s not really interested in, what he may be interested in, it doesn't really go anywhere” [5P]. Jason became similarly preoccupied:

He gets really one-sided about things that happen or things that he saw or when telling you a story. He can get very involved in explaining something and going into detail, especially if it's something like nature stuff or about the outdoors or if it's a particular game. Something like that, he'll just continue on about the story, but I would never have him come up to me and say, "Hey, how are you doing."

[3T]

Conversations with Russell usually revolved around his current interest and he was more apt to contribute factual observations, rather than instigate interactive dialogue:

If he initiates a conversation, then it's going to be, "Hey mom, did I ever tell you about my new program" that he's thinking up in his head or his new series of comics that he's writing, some kind of fact based information. It will be an issue. He'll come and say, "Oh mom, I didn't tell you I got an A on this" or "Hey mom, I got my new strength belt for karate today." He'll say those things, but it's not really a conversation. It's him just laying out the facts. If he initiates a conversation in any way, it usually has something to do with what he's thinking about in terms of his area of focus. [6P]

Russell's teacher conveyed that although, "having a conversation about something he's interested could be a strength for him," it was always "one-sided" [6T]. She expressed, "Russell would be more prone to telling the person everything he knows about something and then when he's finished they can talk about it. It wouldn't be a natural flow" [6T].

Such behaviors could be problematic and off-putting when interacting with peers:

She has trouble interacting with friends and staying connected with the conversation on topics that they're interested in. When she wants to talk about her stuff, if they aren't interested in her stuff, she kind of shuts them out and doesn't really try hard to communicate. They usually end up walking away. [2P] Speaking in a "very rote" [4P] or pedantic manner [5T, 12T] or coming off as a "know-it-all" [4T] also served to alienate peers, "She has a way of speaking. Marie can come across as teacher-ish sounding and the other kids don't always react well to this" [8T].

While there was little mention of it in the parent interviews, teachers indicated that tangential conversation and unusual antics in the midst of conversation were common and distracting [1T, 2T, 3T, 5T, 7T, 8T, 9T, 11T, 12T]. Daniel's teacher responded, "Oftentimes the comments he makes are unconnected to what someone's actually said. He cannot draw connections to what other people have said in class and what he says can sometimes be so random it throws off the other students" [9T]. In child interviews, Eric, Daniel, and Michael frequently punctuated their responses with seemingly random behaviors. Eric spontaneously made loud roaring noises. Daniel made musical sounds. Michael responded to some questions with "fetch, fetch, fetch" [11C] and barking noises.

Many children were noted to "interpret statements very literally" [7P]. Difficulties understanding figurative language are typical of those with NVLD (Semrud-Clikeman & Hynd, 1990). In order to more closely observe this, in the last portion of the child interview participants were asked to relate the meaning of the following phrases, "it's raining cats and dogs," "feeling under the weather," and "hot under the collar."

Eight out of twelve children were able to correctly identify the meaning of at least two of the three phrases [4C, 5C, 6C, 7C, 8C, 9C, 10C, 12C]. Younger children appeared to have a harder time attending to figurative language, as Mark (9 years, 4 months), Annabel (10 years), Jason (9 years), and Michael (9 years, 1 month) were unable to correctly interpret any of the three phrases [1C, 2C, 3C, 11C].

### **Emotion Expression**

All participants indicated that youth in this study expressed basic emotions such as happy, angry, and sad in ways that were typical and expected of those their age. Child interviewees conveyed that they would smile, laugh, behave in a “silly” manner [1C, 2C, 5C, 6C, 8C, 11C], giggle, and become more talkative when they were happy. They reported that when they were angry they were likely to yell, scream, cry, become physically aggressive, or isolate themselves. Child participants shared with this researcher that when they were sad they tended to behave in a similar manner as when they were angry. However, they remarked that they were more inclined to cry or isolate themselves when sad rather than engaging in the other behaviors mentioned. Participants relayed that while the child’s methods of expressing emotions might be developmentally normal, the extent and degree to which they displayed these emotions was not always thus. Lila said:

Yelling actually shows that I am sad. I don't think I have anger issues, but I have splashes of madness wash over me. They swallow me up and I just feel like--I curl up into my pillow sometimes. I slam the door. I start yelling. I start crying and running and hitting things, and screaming, and my dad will come upstairs. I

am starting to have a little problem with getting angry. Not necessarily anger issues where I am just cursing everyone because they make me mad, but I probably have a little bit of a problem with getting mad, because sometimes I can get a little emotional, or bossy, or hateful. [10C]

Michael's mother emphasized that emotional triggers were not always clear or deserving of the reaction they produced, "Michael has a lot of trouble with emotion regulation. When he's really happy or really mad, he can't seem to regulate his feelings. It'll typically come out in some extreme or inappropriate way" [11P].

Although they could sometimes articulate the behaviors they would enact when experiencing a specific basic emotion, in child interviews younger children were observed to find actually demonstrating emotions on cue more challenging than adolescents [1C, 2C, 3C, 11C]. Mark, Annabel, Jason, and Michael were frequently unable to provide a response to interview prompts such as "What do you do when you feel (happy, sad, or angry)?" and "Show me what you do when you feel (happy, sad, or angry)" [1C, 2C, 3C, 11C]. This finding illustrates that even though young children with NVLD are able to connect the names of emotions with representative behaviors, they still experience difficulties concretely linking such associations and appropriate behavioral output. Additionally, some children demonstrated an awareness that they were not always able to accurately convey their emotions to others:

Sometimes I'll be really happy, but you can't tell. My friends will be like, "So we're going swimming," and I'll be like, "Yay," and they'll be like, "Do you not want to do that?" and I'll be like, "Yes I do." I'm like that. People can't tell when

I'm happy. At camp there's this girl, I don't even know her name, but she said, "You don't seem happy." I'm like, "Well I am." She said, "Why don't you jump up and down?" and I was like, "What?" and she was like, "Well, I can't tell," and I was like, "Okay." [8C]

### **Cognitive Flexibility**

Youth with NVLD are often rigid in their thinking, responding well to routines, limits, and structure and poorly to change, disruptions in daily patterns, new situations, and novel tasks. Such a profile is thoroughly described in existing literature (Harnadek, & Rourke, 1994; Petti et al., 2003; Semrud-Clikeman, & Hynd, 1990). Data from this study supports this characterization, as well as provides qualitative evidence that due to their troubles with cognitive flexibility the concepts of "rules" and "fairness" are extremely important to children with NVLD.

Adult interviews were peppered with anecdotes illustrating the lack of cognitive flexibility of children and adolescents with NVLD. Adults indicated that this was a prevalent, core component of their child's personality and one that had the tendency to dictate interactions between them and their child and their child and others, "He needs to know what we're doing and how we're doing it, 'This is what we're doing. This is how'. When things get out of whack they bother him and I and other students have to work around that" [11T]. Children with NVLD have difficulty "switching gears" [3T]. Jason's teacher elaborated on this:

If he has something settled in his mind, something that he thinks that he's supposed to do, like after math they're supposed to go to a certain center or

computers, and he's really excited and suddenly he finds out that they can't go to computers, he may get angry. If he thinks he's going to do something and he's looking forward to it and that changes, he's less likely to accept that than other kids in the class are. [3T]

Some data suggests that while difficulties with cognitive flexibility are still prevalent, they may lessen slightly over time or children may develop better coping skills. Sam's mother shared that he did not react as powerfully to disruptions in routine and new situations as he had in the past:

He does not like changing his plans. Spontaneity and flexibility are hard for him and the bigger the change or the more sudden change, the harder it is. Let's say that our family plans to go to a movie, then it happens to be a nice day and we want to do something outside. Well, this change of plans would be hard for him, so he'll try to argue us out of it. He used to throw terrible tantrums and it would be really hard on everyone, but he's come a long way in that department, thank goodness. [5P]

Alex demonstrated some progress as well:

He likes his routine. If he didn't know what was coming, it was an extremely, extremely stressful environment. Everything was always "no." His first answer was "No, no." He didn't want to, "No, no." He's gotten flexible the more mature he's gotten, so things have not been as dramatic as they once were, but we still go through that process a lot. [7P]

Since they do not adapt well to change and prefer routine and structure, children with NVLD tend to respond badly to disturbances or anomalies of any sort. When examining this inclination in social settings, youth with NVLD appeared to be overly preoccupied with the concepts of “rules” and “fairness.” Analysis of information provided by participants proved that such aspects were very important to child participants. Children, particularly those who were younger, reacted intensely to infractions infringing on these concepts. Annabel’s mother presented a good illustration of this:

When playing with others, Annabel always gets caught up in the rules. She becomes outraged if someone doesn’t do things exactly right. It’s because she’s inflexible, but she comes off as critical and instead of saying, “I’m not going to worry about it, we’re just going to play,” she can’t get past that someone did something out of the ordinary. [2P]

Mark too exhibited a strong reaction when others didn’t play by the rules or when he perceived conditions around him to be unequal:

If we’re playing ball or Frisbee, he’ll count the number of times it goes back and forth, the number of catches, to see if it’s exactly even. If it’s not, then Mark gets really upset and will sometimes storm off out of the game. [1P]

His teacher commented, “That’s his favorite phrase: ‘It’s not fair’. He gets much angrier than other kids if everyone doesn’t play by the rules. It’s almost like he can’t handle that there are deviations from the norm” [1T].

## **Empathy**

Parent participants reported that many people often confuse *empathy* with *perspective taking*. All parents made a distinction between the two concepts and shared that the level of their child's skills were surprisingly disparate in these two arenas. Empathy was defined by parents as being aware of and responding to the feelings of others. Perspective taking was characterized as the ability to perceive social or emotional situations from the viewpoint of another. Although teachers did not detail these distinctions as explicitly as parents, they appeared to similarly differentiate between empathy and perspective taking. Child participants did not demonstrate an overt awareness of either concept. Children and adolescents with NVLD were depicted as youth capable of successfully demonstrating empathy. However, they were unanimously observed to have great difficulty with perspective taking. Qualitative information derived from this study suggests that children with NVLD have more ease encoding visible cues of pain and sadness. Child participants were found to be more likely to display empathy when they saw someone crying or becoming physically harmed or when they encountered someone suffering from a sickness or medical problem.

Situations of pain, sadness, illness, death, and physical injury of varying degrees were quick to engender an empathic response from children with NVLD. Lila replied:

My teacher she's 60, she was dancing and she did a somersault. She did a roll and she hit her head on a sharp rock in the bushes. She had to go to the ER. That was really sad. It scared some of us. We were afraid because she hurt her back once and they had to give her some metal to hold it up and she fell on her back again

and couldn't get up. I told her I was sorry she was hurt and asked how her how her head felt. [10C]

Eric's mother commented, "Suppose he accidentally stepped on my foot and I pulled away with a little shriek or something. He would quickly say, 'Oh, I'm sorry I didn't mean to'" [4P]. Marie's teacher conveyed, "She was particularly empathic with a girl in the class that had diabetes. When Marie would see her checking her insulin, she would always ask if she was alright or how she was feeling" [8T]. Daniel's mother recounted a moment with her son that she'd found particularly poignant:

A very dear friend of mine died last week and Daniel just came in one night, a couple of nights after my friend had died, and said - he sat on the bed and said how sorry he was that my friend was dead. He came in just to make a point of saying that he knew that I was upset and that he was sorry and asked if there was anything he could do. [9P]

Examples of times when Sam and Michael showed concern for others experiencing pain were given:

One day I was roughhousing with some of the other kids. We were playing and my neck started to hurt. Sam could tell that it was really hurting and even though he was really excited to play and everything, he went and started treating me more gently and he really got after the other kids to treat me more gently, because he understood that my neck hurt and he could tell that I needed some help. He was pretty protective. [5P]

Michael's teacher relayed:

I have severe arthritis and if I talk about it he'll demonstrate empathy. When my hands have hurt or I've had a bad headache, he'll tell me about his hands hurting or when he has had a headache. He'll ask me how I'm doing, it does tend to become a little bit about him, but he shows concern. [11T]

Michael's mother also described an instance in which Michael expressed care, "When I was ill...he has these special stuffed animals of his and he put one of those on my bed with a get well note, a handwritten note and tied it with a bow. He's very thoughtful" [11P].

Russell's mother hypothesized that her son was more likely to demonstrate empathy in situations where others were suffering, because these situations were typically accompanied by more recognizable cues, "I think when a feeling is fairly obvious, like if someone is hurt or someone is crying, he's very sympathetic. If someone gets hurt, he immediately--he really seeks to comfort them" [6P]. Alex's mother indicated that her son was more likely to attend to overt, highly visible cues as well, "If anybody in the room came in and they were visibly upset or visibly teary eyed or whatever, he would totally say, 'What's wrong, what's up? Tell me what's wrong' or something like that" [7P].

### **Perspective Taking**

All parties viewed *perspective taking* as a substantial problem area for those with NVLD. Child participants showed considerable difficulty understanding social or emotional situations from the perspective of someone else. They were described as children who had "a very hard time putting [themselves] in other people's shoes" [4P, 5P,

7T, 8P, 12T]. Mark's mother revealed that examining the viewpoint of others was something Mark deeply struggled with:

Perspective taking is incredibly difficult for him. Mark will sometimes play really roughly with his brother and when his brother gets upset, Mark doesn't understand why that is. Even if it's explained to him or even if it happens the other way around and his brother gets really rough with Mark. Then Mark's really upset, but still unable to grasp that that's how his brother feels when the situation's reversed. [1P]

Parents shared their concern that this was their child's biggest flaw and the one most detrimental to their development of friendships. Sam's mother attested, "His lack of ability to understand where others are coming from, that's the thing that really narrows the playing field in terms of friendships" [5P]. Teachers also viewed the inability to take the perspective of others as greatly limiting:

There's a lot of fine tuned social stuff that I'm just not sure he's capable of. Like his actions, making someone else angry, he can see that the person is angry, but he's not associating that with something he may have done to the person. His inability to do that, to make those connections, that's his biggest weakness. [3T]

Child participants were even more unlikely to recognize the viewpoints of others when they were feeling many emotions or were overwhelmed, "He has the most difficult time taking another party's point of view when he's stressed or anxious" [6P]. Eric's teacher expanded:

When someone gets upset with him he has a hard time understanding why they might be upset with him. He can't understand why they wouldn't think the way that he does, and if I disagree with him, he sometimes has a difficult time understanding how I could think that way. He has a harder time than any of my other kids understanding how I could possibly think something different than him and when his emotions are higher it's almost like there's a wall that goes up that he really can't pass over. [4T]

Michael was observed to have an especially hard time taking in the perspectives of others when participating in discussions surrounding a subject that he knew a lot about:

His ability to take the viewpoint of others is particularly poor when the topic is something he's interested in or he has a lot of knowledge of. Then he'll have the tendency to say, "Well, actually..." and he'll tell you what his opinion is rather than try to see someone else's. [11T]

Oftentimes children could understand the viewpoint of characters in stories, however this ability did not transfer to real life scenarios, "She could see viewpoints from others in terms of characters in a book. She was less able to with other peers" [10T].

Sam's mother stated, "He was unable to see things through someone else's eyes, unless we were talking about characters in a book. He was very good at understanding how a character might feel or react, but not so much real people" [5T]. Annabel's mother elaborated:

The other day she was watching a show and she was able to connect that it was kind of a Cinderella story and she explained why it was a Cinderella story, and

she was able to talk about the characters motives and why they were doing what they were doing. So I think that she picks up some of that stuff, but not when it's happening directly to her. [2P]

## **Peer Relationships**

### **Initiating and Maintaining Friendships**

Children and adolescents in this study expressed a desire to have friends, but demonstrated an inability to effectively accomplish this. Nine out of the 12 children interviewed stated that they wished they had friends, but that they did not know how to initiate friendships [1C, 2C, 4C, 5C, 6C, 7C, 9C, 10C, 11C]. All members of this study seemed troubled by child participants' lack of expertise with these tasks, and parents reported that they frequently talked with their youngsters about the worries they had regarding peer relationships.

When asked the question, "What do you do when you meet someone for the first time?" many children indicated that they did not know an appropriate way to proceed [2C, 4C, 5C, 7C, 9C, 11C, 12C]. Eric replied, "I say, 'Hi, my name is Eric', and then I go back to whatever I was doing" [4C]. Annabel responded, "I sort of wonder what they look like" [2C]. Children were aware that making and keeping friends was not a strength for them. Annabel openly expressed concerns about her abilities to make friends, "She put it as one of her goals at school and wrote that she wanted to make more friends, but that she doesn't always know what to do. She wanted to learn how to be better at making friends" [2T]. Sam expressed frustration when answering the question, "What do you do when you want to be friends with someone?" He replied, "I get really close to them, and

I say---Oh, I don't know. That would explain why I have exactly one friend who sticks by me” [5C]. Kevin, in response to the inquiry, “Is it easy, medium, or hard for you to make friends?” shared, “Sometimes making it last is hard” [12C]. Russell, Alex, and Michael said that it was “very hard” for them to make friends [6C, 7C, 11C]. Eric’s answer to this question was, “I don't actually go out and make friends. If someone is talking to me I’ll talk to them, but I really do not generally make friends” [4C].

Children demonstrated difficulties engaging with peers for the first time. They tended to follow a rote script when introducing themselves, often coming off as stilted or strained, “He’s very formal. He’ll literally walk up to other kids and say, ‘My name’s Mark. Let’s be friends’. It’s not like he’ll play with them or talk with them for a while and let things happen organically” [1P]. Communication following initial introductions did not become easier. Unfortunately, even if child participants were able to successfully begin an exchange, their predilection for problems with conversational reciprocity made having a dialogue challenging:

He’s got some built in conversations, but most times he has a difficult time initiating a true conversation. He can say, “Hi, my name is Russell, I’m twelve,” and say some very basic facts, but once it dives into anything more than that he has a difficult time. [6P]

A preference for talking about specific interests also posed problems:

Daniel’s not very good at initiating friendships. He’ll go out and talk to somebody, but he doesn't have chitchat, he wants to talk about something. He

wants to have a topic, and he wants to talk about the topic. He doesn't want to just talk for the sake of talking. [9P]

Eric's mother had taken him to camp recently and observed him many times with peers, "He would go up to people if he was interested in playing with them and ask to play the game that they were playing and start playing with them" [4P]. She saw him do this on numerous occasions and revealed that at first she was pleased. She soon learned however, that although he could successfully begin interactions with others, he was not building friendships:

I found that if I asked him what the name of the person he was playing with was, he wouldn't know it. There had been no formal introduction and there was no follow up. They would play a game for that day and that was it. [4P]

Figuring out how to approach others was hard for Michael, who responded that he did not know how to join others in play [11C]. Michael's mother expressed some concerns about this as well:

If there are three kids shooting baskets, Michael will not know how to enter in, to shoot baskets with them. He might stand around and chat them up, but he doesn't always know how best to integrate himself into play with board games, play, or on the playground. His greatest weakness would be his inability to interject himself into a group. He'll stand around with his hand at his side and look forlornly at the ground and he'll try to determine what he needs to do to join them. [11P]

Annabel was described as able to initially play well with others, but it was noted that she had trouble maintaining relationships, “Anytime we’re at a playground or McDonalds or a place like that, she’s good at playing with the kids that are there. She has more trouble with turning it into a repetitive friendship” [2P]. Almost all children specifically articulated that maintaining friendships was an area of weakness for them [1C, 2C, 4C, 5C, 6C, 7C, 9C, 10C, 11C, 12C]. All parents, except for Annabel’s mother, emphasized that their child had significant difficulties with both initiating and maintaining friendships. Teachers observed that child participants had more trouble maintaining friendships than initiating friendships [1T, 4T, 5T, 7T, 9T, 11T].

### **Age of Friends**

Children were typically better friends with those younger and older than them and had one or two close friends. Older child participants were found to be more accurate in naming and numbering the amount of friends they had. Most older children reported that they had one to three close friends [6C, 7C, 9C, 10C, 12C]. However some children expressed that they did not feel they had many friends. Eric remarked, “I don’t have many friends. I have three closest acquaintances” [4C]. Sam shared, “Maybe I have two friends. I think one is in Colorado. I haven’t talked to him in forever and I don’t know if he’s even still alive” [5C]. Daniel replied, “I think I could say one” [9C]. Younger children were found to be less accurate when describing how many friends they had. Younger children tended to say that they had many friends. However, when listing these friends, these persons were found to be only casual acquaintances or people they knew “peripherally” [1P] and who they did not interact with very often [1P, 1T, 2P, 3P, 3T, 7P,

8P, 11P]. Jason commented, “Everyone in my class is my friend,” and stated that it was “easy” for him to make friends [3C]. His mother and teacher disagreed, indicating that he had only one close friend and that he did not interact with others often. Marie claimed, “I have one million friends,” and “It’s easy for me to make friends. It’s really easy” [8C]. Marie’s mother and teacher provided evidence that strongly contradicted this. Regardless of the number of friends a child had, all parties conveyed that child participants rarely had peers over to play at their home and that interactions with ‘friends’ occurred predominantly at school. In response to, “What do you do with your friends outside of school?” Eric replied, “Most of them never come over. I’ve only had one come over in the last two years I think” [4C].

Children and adolescents with NVLD were observed to have good rote memory and to be “great with facts” [9P]. Such traits were found to be helpful when interacting with those older than them. Parents and teachers hypothesized that children were able to relate to adults better because they were well read, had strong vocabularies, and possessed advanced knowledge about the topics they were interested in [4P, 4T, 5T, 6T, 9P, 9T, 10P, 10T, 12P]. Daniel’s mother suggested that these qualities were his greatest strengths and expressed that she was very proud of him for being able to interact well with those who were older than him, “He’s willing to carry on serious political conversations, economic conversations, social problems conversations, and you tend to forget that you’re talking with a kid. He can sit down at a dinner table with adults and be a charming dinner party partner” [9P]. Lila’s father attributed her positive relationships with those older than her to the fact that she was well-educated, “She’s really well-read

which enables her to communicate better with older kids and adults because she can talk with them about a variety of topics” [10P].

In-depth comprehension of certain subjects also helped those with NVLD interact favorably with those younger than them: “He does really well with younger kids, because he likes to teach them and they’re willing to learn” [4P]. Kevin’s mother expanded:

I think that with those who are younger he feels nurturing and he feels that he has something to offer, and I think that with adults, they see a broader picture of Kevin’s abilities and they make more accommodations for him, so he feels more comfortable and does better in those interactions. [12P]

### **One-on-One Interactions**

Children and adolescents in this study preferred to be alone than interact or work in groups. Sentiments such as, “I like to be by myself” [2C, 4C, 5C, 12C] and “I don’t like working in groups” [4C, 5C, 9C, 11C, 12C] were commonly expressed. During unstructured events at school, teachers observed child participants choosing to sit by themselves. This created a “remote” [2T] and “aloof” [4T, 11T] appearance. Sam’s teacher elaborated:

I used to have lunch duty three days a week. I would go into the cafeteria and there would be Sam by himself, perfectly content reading a book. There would be groups around him, it would be loud, it would be noisy, it would be boisterous and there he would be sitting reading a book by himself and he was fine with that. [5T]

During lunch and at recess, Russell indicated that he would preferred to “read a good book and go to the computer lab by myself” [6C]. Kevin behaved similarly, “Even at lunch the lunch lady would prompt him on where to sit. If he could he would sit at a table on his own with a book and he would be more comfortable with that” [12T].

Daniel’s teacher remarked, “I don't see a lot of social interaction with Daniel, between him and his peers. He pretty much sticks to himself. He’s somewhat of a loner” [9T].

When children with NVLD did participate in one-on-one interactions, their interactions were often filled with parallel play [2C, 3C, 3P, 4C, 4P, 4T, 5T, 7P, 8P, 9C, 9P, 11P]. Many child responses to the question, “What do you like to do with your friends?” included activities that did not require much peer engagement such as “watch tv,” [9C, 12C] “read,” [2C, 5C] and “play video games” [1C, 3C, 5C, 9C, 11C, 12C].

Eric replied, “Sometimes I play Star Trek and then it’s not interactive. I’m just staring at the screen” [4C]. Marie’s mother reported that on the rare occasions when Marie would have a friend over they would be in a room together, but they would be doing something separate. Sam’s teacher relayed, “He had one friend that he’d have lunch with all the time, but even then he and his friend wouldn’t speak to each other. He’d have a book, the other boy would have a book and they’d sit there in silence” [5T]. Daniel’s mother expressed frustration that the few times her son had someone over he would only play computer games with a friend side by side, “That’s all he’ll do. That’s the extent of his interaction” [9P]. Parents believed parallel play was more common than interactive play with their children, because game playing was generally problematic due to their cognitive inflexibility. Jason’s mother expounded:

He has a problem playing by the rules and being overly concerned that others play by the rules. He repeatedly tries to monitor others with the rules, although he doesn't always necessarily follow the rules. He'll say stuff like, "No, you need to play like this," or "No, you're supposed to go back here." He's really controlling during games and if he can't get others to follow his way, he'll get frustrated, maybe call them a cheater, "You can't do that, it's not fair." He'll shut down and leave the game. It's tough for him and whoever he's playing with. [3T]

### **Specific Interests**

Children and adolescents in this study were found to possess "exhaustive knowledge" [6P] on subjects that interested them. They displayed a tendency to become extremely preoccupied and deeply immersed in these interests. The few friends they had were also likely to share their interests. When describing what he and a friend would do for fun, Sam responded, "We both enjoy online games and bionicles. Have you heard of bionicles? They use a very elaborate ball and socket system. This allows for a movable action figure that you can construct and move" [5C]. Russell shared about one of his friendships, "We are really into learning information. We play Wikipedia wars, which is when you choose a page to start on, on Wikipedia and you try to use the links on the page to get to another certain other page" [6C]. The friendships of older children appeared to be particularly centered on specific interests [4C, 4P, 5C, 5P, 5T, 6C, 6P, 8C, 8P, 9C, 12C, 12P, 12T]. Sam's mother identified having similar interests as crucial for her son to sustain a friendship, "If he finds someone with the same interests as him, he's very caring about making the friendship last, because he doesn't have a lot of friends. It has to be

based on mutual interests, that's key for holding his friendships together" [5P]. Sam reported that he had one friend at school [5C]. His teacher intimated that it was having similar interests that made this friendship work:

The two of them have very eccentric personalities and when they're together talking, I don't even know what they're talking about. They're talking about policies, they're talking about things they're doing on the computer and these different fantasy characters that they're into. That's the only friend I ever saw him interact with and it definitely helped that they were two peas in a pod. [5T]

Russell's mother illustrated how related interests formed the basis of her son's sole friendship:

He has one friendship that seems to be kind of blossoming. He met him this year at school and they both have the same kind of quirky personalities. They're both very smart and they have some common ground. They were able to talk about whatever his latest obsession was and since it was a shared interest they were able to have a pretty long conversation about this area of focus. Afterward, I think he did initiate appropriate ways to follow up with the friendship. He did ask about the child a couple of times later. [6P]

### **Difficulty with Social Norms**

Children and adolescents participating in this study were prone to alienating their peers. This was due to their problems with encoding social cues, discerning the viewpoints of others, and adhering to social norms. Unable to successfully encode, child participants found it challenging to attend to the feelings of others and to accurately

understand their social milieu. Child participants would commonly provide unusual responses to social situations that would manifest as inappropriate and immature behaviors. They had much trouble understanding the concept of “personal space” and recognizing when others were annoyed with their behaviors. Their inadequate mastery of voice tones and social nuances contributed to the likelihood that they would make statements that others would find tactless, inappropriate, offensive, or hurtful. Furthermore, a lack of cognitive flexibility made engaging in game play difficult. Such tendencies caused children with NVLD to perform poorly in peer interactions and as a result they were, unfortunately, considered to be less desirable playmates by other youth.

During child interviews, participants were observed to demonstrate many atypical behaviors. These behaviors are detailed in the *conversation* section of this chapter. Child participants commonly displayed inappropriate or immature behavior. One of Annabel’s statements, “I guess I just like to laugh at my brother. It’s not funny to him, like if he gets hit with a rock,” illustrates how she might have responded inappropriately to the actions of others [2C]. Mark’s mother mentioned that he might react in a similar inappropriate manner, “For instance, if he’s playing with other children and someone gets hurt, he might laugh. It’s not that he’s laughing that the person got hurt, but he’s laughing because he thinks that the person who got hurt looks funny” [1P]. Such responses were not received well by peers who viewed children as unkind and insensitive as a result [1P, 1T, 2T, 5T, 8P, 10P, 11P, 12P]. Due to difficulties with social perception, children and adolescents with NVLD are frequently unable to understand and follow basic social norms. Sam’s teacher felt that in comparison to his peers, his abilities to

respond appropriately to ordinary, everyday social situations fell short. She explained that he struggled with even the most simple of social interactions, including those which required him to greet others:

If he sees me anywhere outside of class...in the hall, in the lunchroom, or on the playground, he acts like he doesn't notice my presence, even when I speak to him first. Some people would say something like, "Hello, Ms. So-and-so," and talk to me, but he really didn't do that. Even if we ran into each other outside of school, he would never say, "Nice to see you, how are you doing?" or even a hello. [5T]

Michael was described as "very, very socially immature," and as a child who was "not really sure how to act around others. Sometimes he'll run and hide like kindergarten or first graders do. Not that he's afraid, but he'll hide just to be silly" [11T]. Michael's mother conveyed, "He just doesn't know how to be a kid. How do I explain it? He's more likely to make an observation about something that he and his friends are doing and he'll state those rather than just acting on instinct" [11P]. This correlates with Rourke's (1995) postulation that children with NVLD are more likely to explore their social environment with verbal inquires rather than physical exploration due to their preference for processing information through verbal-auditory modalities over visual-tactile modalities. In his interview, Kevin indicated that he sometimes has problems responding appropriately to social situations. When asked the question, "What do you do when a friend is crying?" he replied, "I just walk away" [12C].

Child participants had a hard time perceiving when others were annoyed or bothered and they would often inadvertently do something to incite the annoyance of

their peers. Their difficulties with encoding the facial expressions, vocal cues, and body language of others prevented them from noticing that they had done so and they tended to continue with their provoking behavior. Mark frequently showed a lack of awareness that his actions were frustrating his peers:

He had this phrase that he would say over and over and over again and it would clearly be annoying the other person. We would ask him to stop and he would continue to say it over and over and over again. He didn't quite understand why the person would get so upset about it. [1T]

Sam also repeatedly engaged in undesirable behaviors:

He annoys people, he annoys kids. He would poke people. If he was sitting next to someone, he could not leave them alone. Like if we were sitting anywhere in a group, he would poke somebody and sort of do this humming and look around, and then he would look at you again. The person would say, "Scoot over," or you know when someone is in your space and you scoot over, they would scoot over and then they would start to get angry. It would escalate and the other person might be yelling, "Stop it now! Stop it!" but he still wouldn't stop it until I or another teacher intervened. This kind of stuff he did a lot. It would really annoy the kids. [5T]

Others were particularly bothered when they could not differentiate between when a child with NVLD was oblivious to how their actions were affecting others or when they were deriving pleasure from irritating others:

We've had repeated times over the years where he would kick or punch or elbow his brother or sister, particularly if we were on a car trip. It'd become worse when everyone would tell him this was annoying us and when asked to stop he'd say, "You're not letting me have any fun. I'm just having fun." He wouldn't even think to acknowledge that what he was doing was hurtful to others, and I could never tell, I still can't, if this is because of his trouble with social perception or if he's being spiteful. [4P]

Children with NVLD are noted to have difficulties with personal space. It has been hypothesized that deficits in this area stem from problems with spatial reasoning (Forrest, 2004). Child participants habitually failed to maintain an appropriate distance from peers and did not appear to understand the concept of personal space. This was evident in child interviews and supported anecdotally by study participants. A child participant's tendency to get too close to others when talking, combined with their inability to notice when others were bothered, would at times cause severe problems in the classroom [2T, 6T, 9T, 11T].

Child participants could be "tactless" [2P, 4T, 5P, 5T, 7T, 12T] and "tone deaf" [8P] about the things they said. Unusual responses to social situations from children and adolescents with NVLD are common. Their inability to effectively attend to social cues causes them to misinterpret situations and by responding to their skewed interpretations they produce deviant responses. Alex's mother elaborated, "He's awkward, because he can't read the body language or facial expressions of people sometimes. A comment may come out of his mouth that's inappropriate and it's only inappropriate because I don't

think he's read what's actually happening in the social situation" [7P]. Jason frequently made verbal blunders, "hitting the wrong note, verbally, and then socially" [3P].

Although they were unaware of it, their strange or terse statements typically offended peers: "She can come across as mean or critical and socially inappropriate a lot of the time" [2T]. Marie's teacher stated, "She's very blunt to the point sometimes where it's not acceptable. It can hurt people's feelings" [8T]. A failure to correctly interpret social cues was not the only cause for such statements, impulsivity was considered another contributor, "She'll just say the first thing that comes out of her mouth instead of stopping and thinking" [8P]. Lila's father elucidated:

Sometimes she says things without contemplating what the implications or ramifications of saying those things would be. She sometimes leaps before she looks, both physically and in speech. She will say things without realizing that some of these things are better kept to herself. So one of her social weaknesses is not quite thinking far enough down the road about her own behavior and how it might be perceived by others, because a lot of the times her words are perceived badly by those who are around. [10P]

Poor cognitive flexibility made interactive game play a difficult undertaking for this group of children. Children interpreted rules very literally and reacted poorly to deviations from these rules. They did not appear to recognize or listen to the perspectives of their playmates. Child participants were often unable to take turns or compromise when engaging in activities with others. Moreover, they did not appear to employ good conflict resolution abilities, as indicated by responses to the imaginary scenario, "What

do you do when a friend wants to do something that's different from what you want to do?" Nine out of twelve children replied that they would proceed to do what they wanted to do and that they would let their friend do what he or she wanted to separately instead of trying to compromise or continuing to play together [1C, 2C, 3C, 4C, 6C, 7C, 9C, 10C, 11C]. Eric's reply to this make believe situation is illustrative of this, "Well, then he does something and I do my thing" [4C], as is Sam's, "I tell them, 'Look, you do what you want to do and I'll do what I want to do'" [5C].

### **Child Worries**

All children indicated that they were frequently teased. Many worried that others did not like them [2C, 4C, 5C, 7C, 9C, 10C, 11C, 12C]. Physical education, writing, and math were other sources of stress for child participants. Older children verbalized more worries that they were not performing well in academic and social arenas than younger children did [4C, 5C, 6C, 7C, 9C, 10C, 12C]. Being bullied and teased were common problems for children and adolescents with NVLD. Eric stated, "I hate eating in the cafeteria so much, because everyone is mean to me, so I don't sit there" [4C]. Daniel shared, "Other students will insult me. They are just not very intelligent" [9C]. Children conveyed that they were hurt by these actions, "I will cry some nights after people make fun of me" [10C]. Alex commented, "My dad might tease me. He'll joke with me. My dad will do it for fun, but other people might do it to be mean to me and that makes me feel bad" [7C]. Jason offered:

I am bullied by one boy a lot. He's actually a bully to everybody and he only has about three or four friends. We have a bully club which is everybody that is

bullied by him, which pretty much all of the second grade is in. He'll say stuff like "You're wearing tightie-whities," and stuff like that. He thinks it's funny. He's laughing and I walk off, but when I walk away he just follows me. You can't do anything about it. I hate him and I want to cry. He even bullies his sister.

[3C]

Sam suffered from repeated teasing and sometimes responded strongly:

I've gotten used to it. Only occasionally when I am in pain does it bother me or do I lose my cool. Once I got accidentally stabbed with a pencil and I yelled out, "Hey that hurt!" Someone mocked me and I'm not sure to this day who it was. I thought it was Thomas so I took my lunch box and I whacked him on the head repeatedly and got suspended. That would be my third suspension in three years. Yeah, I really need to control my temper. [5C]

Children in this study expressed dismay that their peers did not like them and this impacted their ability to enjoy school. When asked "What do you like about school?" Eric responded, "Nothing. I just try to survive" [4C]. Michael answered, "The end of the day, because I don't have to worry about other kids beating me up because they don't like me" [11C]. Kevin replied, "I don't really know. The only good year I had was kindergarten and fourth-grade, because no one there was ever really cruel to me. Now no one likes me" [12C]. Children were sometimes worried that their peers would reject them and as a result they shied away from trying to engage others, "I don't think people really like me, so I don't go up to them. Mostly I play by myself or watch a kickball

game” [2C]. Marie verbalized similar fears, “If I ask someone to play they can very easily say, ‘Oh no,’ and hurt my feelings” [8C].

Peer altercations produced further anxiety for child participants. Children did not have many friends and were fearful that disagreements with peers would cause them to lose those they had. Children displayed concerns that they did not know how to successfully resolve disputes with others and that they did not want to harm their friendships. Lila explained:

Sometimes me and my friend Rebecca fight and she will be very happy and I will be very sad or I will be very happy and she will be very sad. It really worries me when we fight, because I’m not good at making up. [10C]

Child participants who were not confident in their social skills did not attempt to use them, “She’ll throw a fit if she’s not happy. She’ll say I’m not her friend or she’ll say things that are really mean. I don’t want to lose her as a friend so I don’t do anything” [8C]. Children and adolescents with NVLD already have less friends and social opportunities than their neuro-typical counterparts (Little, 1993). Fears of rejection and a lack of confidence in their abilities make it likely they will have even less chances to hone and expand their social skills.

Some child participants found educational exercises anxiety provoking. These children felt that, academically, they did not perform as well as they should [2C, 5C, 6C, 9C, 10C, 12C]. Daniel remarked:

School is very stressful. It's hard for me. I do pretty well in school, I just don't do as well as I think I should. I get almost straight A's, but I got some B's, and those are the lowest grades I have ever got. I definitely have never gotten an F. [9C]

Performing poorly in the areas of physical education, writing, and math created additional anxiety for the children in this study. Nine out of 12 children reported that they did not like physical education classes [1C, 2C, 4C, 5C, 8C, 9C, 10C, 11C, 12C]. Six child participants responded that creative writing was hard for them [1C, 2C, 5C, 7C, 9C, 12C]. Ten child participants indicated that they did not like math [1C, 2C, 4C, 5C, 7C, 8C, 9C, 10C, 11C, 12C].

### **Summary of Needs of the Child**

The traits detailed in this chapter provide clear representation of the needs of a child with NVLD. Children and adolescents in this study had much difficulty attending to the facial expressions, prosody, and body language of others. Child participants found positive facial expressions easier to encode than neutral or negative ones. They displayed poor eye contact and had trouble attending to the vocal inflections, intonations, and stress patterns of those around them. Children were more likely to attend to vocal cues containing elevated levels of emotion. They demonstrated a tendency to encode auditory cues and verbal statements over visual cues like facial expressions or body language. They sometimes interpreted neutral vocal cues negatively. Irony and sarcasm were also hard for child participants to understand. Additionally, youth with NVLD found attending to multiple and discordant sensory cues extremely challenging.

Child participants possessed advanced vocabularies for their age. However, they were described as poor conversationalists, due to their troubles with the reciprocal nature of conversation. In conversation, children were tangential, long-winded, and one-sided. They tended to talk about their specific interests excessively and did not pick up on cues redirecting them or encouraging them to solicit the input of others. While children expressed basic emotions, such as happy, angry, and sad, in ways that were typical of those their age, they had trouble with emotion regulation and exhibited extreme behaviors. Cognitive flexibility was especially problematic for children and adolescents with NVLD. Child participants responded adversely to change and disruptions in their daily routine and were frequently overly preoccupied with the concepts of rules and fairness. Children in this study particularly demonstrated appropriate empathy when they observed someone who was crying or in physical pain.

Acknowledging and understanding the perspectives of others is a significant problem area for those with NVLD. Child participants were unable to take the viewpoints of others. Their weak perspective taking abilities were noted to deteriorate even further when they were upset or overwhelmed. Children in this study expressed a desire to have friends, but found initiating and maintaining friendships stressful. Their facility for cultivating friendships was severely inhibited by deficits with conversation, cognitive flexibility, and perspective taking. Child participants typically had one or two friends. They rarely communicated with peers outside of school and when they did they were more likely to participate in parallel play than in actual interactions. At school, children seldom engaged with others during unstructured play times.

Children and adolescents with NVLD retained advanced knowledge on subjects that interested them. They had a propensity to be preoccupied or deeply immersed in these interests. The few friends they had were likely to share these interests. Superior comprehension of certain subjects enabled child participants to have better relationships with adults and young children. Child participants could thoroughly converse with adults about the topics that interested them and were able to teach younger children about these subjects. Younger children were less likely than older children to correctly interpret voice tones, understand figurative language, demonstrate emotions when prompted, and accurately list the amount of friends they had.

Troubles with encoding ensured that it was challenging for children and adolescents to attend to the feelings of others and to accurately understand and navigate their social milieu. Youth with NVLD were often unable to recognize and adhere to common social norms. They repeatedly produced atypical responses to social situations that came across as inappropriate and immature behaviors. Child participants failed to maintain appropriate personal space and did not realize when others were annoyed with them. Peer altercations were common, because children were unable to recognize or understand the perspectives of their playmates and to appropriately engage in reciprocal conversation, turn taking, and compromise. Furthermore, a lack of cognitive flexibility made interactive game play tough for child participants, who were prone to interpreting rules literally and who reacted poorly to deviations from these rules. Such behaviors contributed to the likelihood that youth with NVLD would alienate their peers and experience ostracization. Child participants were frequently teased and worried that

others would not like them. Such feelings impacted their ability to enjoy school. Physical education, writing, and math were other areas of stress for them. Older children articulated more social and academic worries than younger children did. Participants' knowledge of the specific needs of the child influenced the ways in which they communicated with the child and one another. Interactions among children, parents, and teachers allowed each party to gain a better understanding of the child. Chapter Six explores multidirectional communication across child, parent, and teacher participants and its implications in greater detail.

## CHAPTER 6: Communication and Social Development

*Communication across persons and social development* are two other elements central to the model: *Multidirectional Communication: A Dynamic Process Contributing to Social Development*. Communication across persons, social development, and related processes are explored in this chapter. *Teaching, coaching, social modeling, role playing, “walking through,”* and *advanced prep* were notable types of interactions between child-parent and child-teacher dyads. Interchanges between parents and teachers also occurred frequently. Communication across all parties was flexible and continuous. Such interactions were found to promote social development in children and adolescents with NVLD by improving their *social skills, perspective taking abilities, awareness of others, problem-solving abilities, coping strategies, and understanding of self*. Additionally, communication was instrumental for *alleviating anxiety* in participants.

### Child-Parent Communication

#### Insight into Child Needs and Behaviors

Ongoing communication between children and parents provided each party with insight into the needs and behaviors of the child. Children communicated with their parents daily about how their day had gone and what happened in it. Several days of the week children and parents engaged in discussions about things that had gone wrong [1C, 2C, 2P, 3C, 3P, 4P, 5P, 8C, 9C, 9P, 10C, 11P, 12P]. Child participants were most likely to discuss academic or friend worries and concerns with teasing. One afterschool pattern

that was enacted at least once a week in each triad, began when a child came home upset. After calming down slightly, the child would articulate the problem. Parents gained insight into the issue and discussed the problem with their child. Children and parents collaborated to examine and possibly reinterpret the situation and formulated a plan about what to do next. This process was very important for the well-being of the child, because it gave them the opportunity to let their feelings out instead of bottling them up: “I need to talk about things otherwise I’ll explode later” [12C]. Michael’s mother shared, “The second he’s in the car, it’s like he’s been holding it together till then. There’s an entire flush of emotion. By the time we’ve gotten home and gotten to the conclusion, it’s like he puts it away and he’s okay” [11P]. By talking about the events in their day, children were able to gain practice articulating their feelings and developing healthy coping strategies and potentially understand themselves better. Daniel’s mother shared that having these later opportunities was particularly important for her son, because frequently his actions in social situations were incongruent with his feelings:

If someone’s teased him, he might come home and cry about it, but at the time that it’s happening, if they’re teasing him, he’ll laugh at himself in front of them and laugh with them about himself and then he might feel bad. That night he might say that it actually made him feel really bad, but at the time he’ll go along with it. [9P]

Parents stated that when their child was upset it was hard to get them to articulate what was the matter and that this was something they worked with their young one on, on a daily basis [1P, 2P, 3P, 4P, 5P, 6P, 7P, 8P, 9P, 11P, 12P]. Mark’s mother elaborated:

He's not verbalizing his frustration, which is what we've been working towards in terms of verbalizing, but if he's not verbalizing it, the first thing he'll start doing is getting directly aggressive with other people around him. So he might start shouting or throwing things at his brother or he might get angry with me and kick me, and it's only by talking to him that I discover that something else's happened.

[1P]

Jason's mother described a similar experience with her son:

He gets teased and it usually hurts his feelings. He'll either do one of two things, he'll either start acting out behaviorally and then when I start talking to him about what's going on, he'll say, "Well, so-and-so teased me today," or "So-and-so was making fun of something." The other thing he might do is he might just come out and tell me, "So-and-so was being really mean to me today and he's not my friend anymore. [3P]

Children indicated that communication with their parents was important to them because it was not always easy for them to accurately convey their feelings. Alex shared,

"They'll [my parents will] knock on the door and they'll asked me what's wrong. So they'll find out if I'm sad or mad, because it's hard for me to show it sometimes" [7C].

Older children were more likely than younger children to share that expressing feelings was difficult for them [4C, 5C, 6C, 7C, 8C, 10C].

Daily child-parent communication enabled all parties to continuously gain and assimilate up-to-date information about the needs and progress of the child. Parents adjusted their expectations for the child and their parent agenda accordingly. Adult

participants reported that they often made adaptations for specific situations. Incidents involving criticism fell into this category. Child participants did not take criticism well. In perceiving criticism they would shut down, withdraw, and become “hard on” [4P, 5P, 10P, 11P] themselves [1P, 2P, 2T, 4P, 5P, 5T, 7P, 8P, 8T, 9P, 9T, 10T, 11P, 12T]. Russell’s mother relayed that she would modify her behavior when critiquing Russell more than she would for her other children because of this, “He doesn’t do criticism well. It really, really depends on how we initiate that criticism. If we positively explain it, he does much better” [6P]. Michael’s mother remarked that he was “excellent” at following rote instructions. She shared that instead of giving her son directives, she tried to engage his strengths to help him complete tasks:

You cannot say, “Go clean your room.” You have to go in and be very specific, “I want you to pick up this left corner of Legos and I want you to put those here.” He has to have everything outlined. He can't clean his room, but he can do a 15 page Lego project. I'm seriously thinking about putting together a booklet about how to clean your room. [11P]

Eric’s mother modified house rules in an effort to promote growth in areas that he showed weaknesses in, “If he has a play date or someone come over, we don’t restrict his videogame access at that point, because it’s sort of a social tool that he can join in with” [4P]. Children were encouraged to identify goals and steps to achieve them. Eric and his mother discussed activities and actions that he could do when his friend came over in order to facilitate successful peer interactions. Daily child-parent communication also gave children the chance to develop realistic expectations for themselves and others.

Parents indicated that children with NVLD were often tough on themselves and unaware of their strengths and limitations. Parents reported that they consistently tried to promote their youngster's understanding of self by helping them to realize when they needed assistance and that they should ask for it when they did. Alex's mother constantly told him, "We're the support system for you, we're here to help you and you may as well take us up on it" [7P].

### **Teaching**

*Teaching* and *coaching* are sometimes considered synonyms. However, in this research a distinction is made. *Teaching* is defined as the act of disseminating knowledge and refers to giving someone verbal instruction on how to do something. *Coaching* is identified as a more cyclical, ongoing interaction in which feedback is given. With coaching, one may be observed and given feedback. A person may make modifications to their behavior as a result of this evaluation and given new feedback on these modifications.

Parents in this study were found to do much teaching in the areas of social skills and peer relationships and thus, were crucial for furthering the social abilities of the child. Children and parents engaged in countless discussions related to peer interactions. Topics ranged from concrete elements to more abstract concepts:

We're always working on social aspects..just talking about how people like to take turns and that sometimes he gets to choose the game, then other times someone else gets to choose the game...and on another level that when your

friends get angry with you it doesn't mean that they're no longer your friend. If you think they're angry, they may just need some distance and space. [1P]

Children were encouraged to think critically. Russell's mother offered, "We've had some conversations where we're really trying to teach him how to be a friend. We talk about, 'What does that mean to you? What do you need to do to maintain that friendship, to really have a true friendship?'" [6P].

Such conversations allowed children and parents to collaborate to identify goals and strategies to achieve these goals. These conversations also provided a forum for the child and parent to express their thoughts and feelings to one another. Children reported that conversations about their concerns reminded them that they were loved, "My parents really care about me. I know, because they always ask about my day and help me with my problems" [1C]. Children and parents believed child participants were better off than they would have been without these talks or "teaching moments" [1P, 2P, 11P]. Alex's mother shared an example of how teaching had been beneficial for him:

He's had trouble expressing he's sorry as he's grown up. If he accidentally hurt someone, trying to teach him the skill that you still need to say "sorry," even though you didn't mean to do something, that's been a long and hard road. We've spent a lot of time talking to him about it, saying things like, "I know you didn't mean to do that, but this is still a time you need to say, 'you're sorry', because when you either hurt someone physically or verbally, you need to make that person feel better and be sincere about it." So we've talked about it over and over and he's gotten a lot better. Now when he gets angry and yells and screams, he'll

come back down and apologize because he realizes that that affects other people.

[7P]

## **Coaching**

From the perspective of the parent, coaching was essential for enhancing the social skills of the child. Parents reported coaching all of their children, both those in this study and their siblings, from a very early age. Parents viewed coaching as critical for the success of all of their offspring, but particularly for children with NVLD. Children with NVLD demonstrated in their early years that they needed more help in certain areas than other children. Daily child-parent communication helped parents recognize and remain flexible about their child's current skill level and needs. Parents initially coached their child on basic tasks, such as eye contact, personal space, and emotion labeling. They provided their youngster with concrete instruction in these areas and feedback, "When I need him to acknowledge exactly what I'm saying I ask him to look at me. He'll look at me and give me some eye contact, if it's not great, I comment on it and help him fix it" [6P]. A combination of teaching, coaching, and modeling best helped child participants learn emotional labeling, "I'll say, 'I'm getting really angry right now.' I'll verbalize it with him. Sometimes I'll ask him, 'Can you see that I'm really angry right now? How would you show me that you're angry?'" [1P]. Children's abilities increased with repeated interactions such as these. Once some progress was made with basic abilities, children collaborated with their parents to work on other areas:

We work on social skills in general, friend shaping, realizing fair isn't always equal. It used to be things like body space, we still have a little bit of body space

issues, giving people body space, keeping your hands off of people all the time. He used to just run up and try and pick people up or give them really huge hugs and it gets disconcerting. Most people don't want that. So, yeah, we've kind of moved beyond that level and gone to a more abstract level, to working on more what's appropriate in certain situations with people. [1P]

Considerable amounts of coaching was employed to help children with one of their most problematic areas, *initiating and maintaining friendships*. Parents coached children on how to approach other children and gave them advice about what to say to friends. Inevitably peer interactions would end poorly and parents took on the role of "cheerleader" [2P]. They would encourage the children to persevere with the acts they found challenging and worked with them to overcome these challenges:

We've been asking him to pick two to three people that he feels that he could meet with, that have some interests that he does. He's struggling with it, yet he understands the need for it. For example, when a friend was over, Kevin accidentally did something on this friend's gaming system, and instead of asking questions, Kevin continued doing whatever it was, because he didn't want his friend to know that he didn't know what to do. He was afraid it would cost him the friendship. He said, "All I have now is my puppy and my books," and we explained to him, "No, your friendship base can be as large as you want it to be, but you have to be willing to step outside that comfort zone." We're working really hard on exploring what areas he might be able to do that with. [12P]

Children revealed that this parental help was essential to them:

Without my mom, I wouldn't have a single solitary friend. I would have less than an iota of one. She makes me talk to people. At first I was furious, but then it really worked out with one and now he's my best chum. [5C]

Russell shared:

It used to be really hard for me to make friends, because I wanted to do everything my way, but I told my parents and they helped me loosen up a lot over the years and now friends are easier for me to make. I ask them what they like to do and I tell them what I like to do and then I ask them if they want to be my friend. [6C]

Parents stressed that although children and adolescents with NVLD expressed a desire for friendships, they were unable to "bridge the gap to get them" [4P] alone. Parents found themselves coaching and monitoring their child's social interactions, as well as intervening on their behalf. Michael's mother described reaching out to other mothers and social groups to find potential friends for her son [11P]. In addition to locating peers, Michael's mother tried to arrange structured activities or activities centered on a specific interest with these peers, so that Michael would have a greater chance to interact successfully. Parents indicated that experiencing small measures of success helped their youngster develop greater feelings of self-efficacy and made it more likely that they would interact with peers again. Providing encouragement to children with NVLD was imperative for warding off overwhelming feelings of failure and inadequacy. After failures in the social arena, which unfortunately were common, children were likely to become overwhelmed, shut down, and demonstrated a reluctance

to approach peers again. In an effort to avoid this, parents found themselves monitoring their child's peer interactions and coaching them in the midst of these. Eric's mother described herself and her husband as "a hem on the fringes." She elaborated:

I might be doing the laundry or doing dishes, and visually see from a distance or hear how things are going, and if it's specifically Eric insisting they do one thing or if I notice that there's not a lot of exchange, I'll suggest that they try something different, "Why don't you guys go down to the pond?" or my husband and I will make suggestions about different things that they might want to do. [4P]

Alex's mother intimated that she sought to walk the line between "being there too much and not enough" [7P]. She expressed that while it was important for Alex to have successful peer interactions, it was necessary for the growth of his self-esteem that he did not feel as though she was "babying" him or that he was in need of extra attention:

When he interacts with friends, as long as I keep it to no longer than two hours it's ok. I don't moderate it, but my husband or I will sporadically check in to make sure that Alex's not closing himself off too specifically. He used to have a lot of trouble with what he expects and wants that friend to do. We've talked about it quite a bit with him and he's gotten much better at being conscious of that. [7P]

Child-parent coaching interactions were also vital for the development of good coping skills. Sam's mother shared:

He used to only be able to have structured activities. It used to be that we'd have outbursts. But through coaching he knows to remove himself from the situation

and use his coping strategies. He'll go to his room sometimes or he'll turn to reading to calm down. He takes his book pretty much everywhere. [12P]

Lila's father described working together to further her coping abilities:

She becomes overwhelmed sometimes by large tasks. She has a tendency to be unable to break down difficult tasks into elements, simple elements that would enable her to metaphorically "not eat the elephant in one bite." We've really tried to coach her over and over on what she can do when she feels overwhelmed.

We've had some success. [10P]

### **Social Modeling and Role Play**

Social modeling was particularly practiced by children and parents in the areas of *emotion expression* and *conversation*. Parents often intentionally modeled emotions for their child or used naturally occurring instances as teaching moments. They would name the emotion they were expressing out loud and call attention to their facial expressions, voice tones, and body language. In this way primary caretakers illustrated to children which behaviors corresponded with a specific emotion and provided them with a template of how these emotions might physically manifest. Parents used linking statements such as, "I'm smiling, because I'm happy" [3P], "When I'm sad this is what I do" [8P], and "You can tell that I'm angry, because I'm frowning" [9P] to help children identify correlations between feelings and actions. Annabel's mother engaged her daughter's strengths to help her develop better social abilities. She noted, "When you get Annabel in the right direction she can work robotically at something and on her own in kind of a real self disciplined way. We did that with emotions, she would model after me and

practice imitating the basic ones over and over” [2P]. Parents also made an extra effort to model good eye contact for their child [1P, 2P, 3P, 6P, 7P, 8P, 9P, 11P].

A combination of coaching and social modeling helped children develop better conversational abilities. Children and parents typically had conversations about the events that occurred in their day. These talks were used to model appropriate conversational skills and gave parents the opportunity to provide their child with targeted feedback, “If we’re talking about emotions or what happened today, I ask a lot of direct questions to get specific answers from him and remind him that he needs to give me a chance to talk” [6P]. Sam’s mother explained that she especially tried to model the give and take nature of conversation and encouraged Sam to do the same:

Once he starts talking it's really hard for him to stop. I'm pretty overt about saying that he needs to slow down and wait for a response from me. I make it a point to say, “You say something and I say something.” He's gotten a little bit better at it. [5P]

Role playing facilitated the development of better social skills for the child. The following is an excerpt from Russell’s transcribed interview. This excerpt illustrates how role playing helped Russell learn how to compromise:

Researcher: What do you do when a friend wants to do something that’s different from what you want to do?

Russell: We compromise. We play rock paper scissors to see who gets to do their thing first and then we split the time to play things. My mom taught me how to do that. She pretended to be my friend and we did it over and over and over. I

started doing it for real in third grade, because that's when I started making lots of friends. [3C]

Likewise, role playing allowed Mark to develop and practice skills more advantageous to peer interactions:

We can tell him things like, "Take turns with your friends." He can memorize stuff like that all day long, but he can't generalize. So that has not been very effective. It's been more effective to put him in a situation targeting the problem and even kind of setting up situations and role-playing it through. That's more successful. [1P]

### **"Walking-Through"**

Reviewing past situations step-by-step was the most common method of communication employed by children and parents to examine the perspectives of others. Children and parents frequently collaborated to review what had happened in a specific situation. At each step adults would encourage the child to expand their perspective and comprehend the other person's point of view. Eric's mother labeled this process "*walking-through*" [4P]. Such communication was imperative for facilitating the child's awareness of the thoughts and feelings of others. Sam's mother replied that reviewing an incident step-by-step was key, because without this discussion Sam might remain oblivious to what had caused the situation or to how an exchange might have escalated:

The big thing for him is that he's not going to figure it out just by signals. You have to tell him or explain to him your point of view. It's hard for him to figure

out what your point of view is with no words. So we go through things step-by-step a lot. [5P]

The walking through process was noted to be more helpful when children were calm or in control of their emotions, “It’s impossible to reason with him when his emotions are high, he would have incredible difficulty understanding or accepting what another person’s feelings were when he was upset” [9P]. Subsequently, if child participants were involved in an altercation, parents would usually let some time go by so that their emotional volatility would decrease and they would be more apt to participate in a discussion about what had happened:

After the heat of a particular moment or some time has passed, we can go back and analyze certain situations to see how the other person may have been feeling or what may have led to the outcome of something. That accomplishes much more than going over things right away. [12P]

Walking through situations was an approach that was repeatedly used to help children and adolescents with NVLD understand how they may have inadvertently offended someone with an offhand comment. Marie’s mother described an incident in which Marie’s words came across as unkind to a peer. She reviewed the episode with her daughter and explained to her how her friend could have interpreted her comment in another, more unpleasant way. This conversation made an impact on Marie and she walked away with a better understanding of her friend’s reaction. Marie’s mother shared that she and Marie were constantly working on “putting herself in her friend’s shoes” [8P]. Russell’s mother provided an example of their walking through process:

There was an adult sitting on a swing in our neighborhood and a sign specifically says that the swings are for twelve and under. Russell told the lady that she might break it. She was very upset and I explained to him, “Russell, you basically just called that woman fat, you know that’s how she’s hearing it and now do you see why she’s upset?” He was able to understand that with help. [6P]

All of the children in this study had siblings, except for Daniel who was an only child. Parents listed their child’s inability to take the perspectives of others as one of the main sources of sibling conflict and much time was spent walking through the steps and perceptions that led to sibling spats. As a result of these exchanges, child participants were able to better understand why others might be angry with them and how situations evolved as they did. Hence, child-parent communication proved to be highly influential for helping children with NVLD increase their perspective taking abilities and understanding of others.

### **Advanced Prep**

Disruptions in routine, group activities, and peer interactions were scenarios likely to cause problems for children with NVLD. Preparing for such events in advance was advantageous for avoiding conflicts in these areas. Children and parents collaborated to identify situations that could potentially cause child participants to become upset or anxious. Once probable “triggers” [10P] were identified, children and parents communicated to create concrete coping strategies that youth could easily implement when they felt themselves becoming upset:

We discuss situations after they've happened and prior to going somewhere we discuss what those expectations are. If there are multiple things that might make him upset, we're going to outline those. We'll talk about what coping strategies we might be able to use. For Michael it's a book. If things get out of hand, that's when he takes out his book or a DS and we'll use that to help us maintain or transition. [11P]

Alex's mother suggested that reminding him of success in previous, similar encounters was as important as constructing coping strategies with him ahead of time:

Reminding him, "Hey, look we did this before, and you had a good a time with it, shouldn't we try this, because you may end up liking it again." Nine times out of ten he ends up agreeing. A lot of it's just getting over that initial hump for him and reminding him that he was successful and that things are not as scary as he originally thought. That helps make things go more smoothly for him. [7P]

Child participants were not always able to accurately detect or articulate the emotions they were feeling. Parents reviewed emotions and their physical manifestations with their youngsters. During these conversations, children were encouraged to use their emotion labeling abilities, recognize when they were getting upset, and become aware of situations that would make them agitated. Through advanced prep, children and adolescents with NVLD were able to develop better problem solving abilities, coping skills, and a greater awareness of their emotions (understanding of self). Kevin's mother stated that Kevin had friends over so rarely that advanced prep was a "must" before these encounters [12P]. She and Kevin worked diligently to envision the possible pitfalls of

peer interactions [12C, 12P]. Identifying potential problems allowed this dyad to prematurely brainstorm ways in which to address them:

Before a friend comes over, we'll typically go over what we might expect from the encounter. We'll talk about the things we can do with that friend while they're here. We'll also talk about what to do if the friend has something else that they want to do. [12P]

Creating and reviewing coping strategies in advance made it more likely that children would effectively recall these strategies under duress [1P, 4P, 5P, 6P, 8P, 9C, 9P, 10P, 12P]. Children said compliments made them feel "very good" [1C, 2C, 5C, 8C, 10C, 11C, 12C] and "happy" [3C]. Parents complimented their children in instances where they successfully used their coping strategies in order to positively reinforce these skills and facilitate greater self-confidence in their abilities:

Another example of things we've worked on is that he really hates large groups, like in the theater. So we'll talk about a plan in advance. In this case it's that if he starts to feel really agitated he can rotate to a different seat in the theater. If he has to implement this plan, I make sure to compliment him, because then he's more likely to correctly use it in the future. [6P]

## **Alleviating Anxiety**

Children and adolescents with NVLD displayed high levels of anxiety regarding peer interactions and academic worries. Watching their child or adolescent contend with anxiety was stressful for parents, who put much effort into mitigating their fears. Adults believed children bottled up their feelings either because they could not articulate them or because they did not readily recognize them. Parents of younger children reported that their child was still unable to voice what was worrying them to a great degree and that this was something they worked on together [1P, 2P, 3P, 11P]. Mark would often act out when he was nervous and Mark's mother would "do a lot of investigating to figure out why" [1P]. Since he was frequently worried about school, she often checked his schedule to see if he had any upcoming tests or asked him what was happening during his day in round about ways [1P]. Alex's mother believed that his inability to identify and verbalize his feelings contributed to his anxiety:

The kid lived on Tums last year. His stomach was so upset, because he was so nervous. So, we had to talk about, "Okay, you can't go through life taking these, because it will tear up your stomach, we need to talk about what it is that you're worried about and see if we can't find another way to handle it." So, he's getting better at labeling his feelings, because I think he realizes that it's not good to hold it in and if you take the five minutes to talk about something, it's much better than the stomach cramping in class. [7P]

For children with NVLD, anxiety commonly manifested itself via stomach troubles. Six out of twelve child participants indicated that they experienced

stomachaches when they were nervous [6C, 7P, 8C, 10C, 11C, 12C]. All of these children listed school worries as the cause of their distress. Marie explained:

I have these awkward stomachaches. I call them stomachaches, but they don't really hurt, they are just this uncomfortable feeling in my stomach. I have one pretty much every night and I have one in the morning and all through the day and it's just whether I'm nervous about school. [8C]

Michael described poor peer interactions at school as the reason for his stomach problems:

I love summer, because I don't have stomachaches, because I don't have to worry about school work. I don't have to worry about getting sand in my eye. I don't have to worry about someone I don't know throwing a rock at my head. I don't have to worry about people walking on me. [11C]

Lila conveyed that her physical symptoms of stress interfered with her ability to complete her school work:

School gives me a lot of stress because last year I had tons, literally tons of stomachaches. It was extremely difficult. I can almost never get my work in on time. My parents would have to write a note almost every day so I wouldn't have to sit out at recess. [10C]

Children's anxiety materialized in other ways as well. Mark and Jason picked their finger nails when they were stressed or nervous [1P, 3P]. Annabel pulled her hair [2P]. Sam's mother expressed that she was becoming increasingly concerned about the way he externalized his anxiety, "He has a freak out or a meltdown. He gets so tearful, it's

socially stigmatizing” [5P]. Sam’s mother feared that his anxiety over poor peer relations would contribute to a negative feedback cycle in which his erratic behavior would cause him to lose even more friends, “Anyone who might have been his friend is staring at the fact that he just freaked out and probably won’t be his friend anymore, because he’s just too odd, too unusual and it scares them you know” [5P].

Several parents intimated that they held fears similar to those of Sam’s mother. Primary caretakers expressed concerns that their child’s inability to effectively cope with anxiety would detrimentally impact their child’s self esteem, as well as cause them to produce more behaviors that peers would find off-putting. Consequently, children and parents worked very hard to alleviate child worries and facilitate greater coping skills. Adults relayed that over the years they had seen improvement in how their child coped with stress. Child-parent communication was instrumental for the development of these abilities. As a result of repeated child-parent communication Alex learned better coping skills and by implementing them his anxiety decreased over time:

He’ll sit there and he’ll say, “You know, mom, I’m nervous.” Which a year ago he wouldn’t have, and we’ll say, “What are you nervous about?” So we’ll talk about it and we’ll come up with a plan. We came up with a little signal and a lot of it is positive self-talk. I’ll go up to him and I’ll whisper in his ear PST, PST, PST, and he laughs at me and sometimes that just helps get his mind off of the anxiety. [7P]

Eric also made much progress over the last year:

The anxiety...he would have stomach problems, it would affect him physically, and now that we figured out, “Well, if we start talking about it and we figure out how to deal with it, the stomach problems will go away.” All through sixth grade we had problems with his stomach, because it was the anxiety. Now that he’s in seventh grade, he knows what to expect and he’s been able to cope with it a lot better. [4P]

Child participants indicated that this outlet was very important to them. Lila shared, “I talk to my mom quite a bit about friend troubles, worries on tests, test scores. It really helps. She’s someone that I can vent my feelings to and honestly express myself to” [10C]. Daniel commented, “One of the things I like about my parents is that they are understanding, especially if something’s worrying me, I can always count on them to try to help me” [9C]. Daniel’s home and school functioning significantly improved with the development of better coping strategies and problem solving abilities:

When he started using some better problem solving skills, he started having successes and getting happy and not being anxiety driven. When he was anxiety driven, Daniel used to suck all the oxygen out of the air. It made you tense to be around him. Now, he’s able to accomplish more at home and at school. With his success and his happiness, he’s been able to relax more and everybody’s been able to relax, so the environment at home is phenomenally more relaxed and easygoing and normal. I can only describe it as normal interactions and we had a whole lot of years where it wasn’t normal. [9P]

This illustration highlights the importance of healthy self-esteem for children with NVLD. Children and adolescents with a strong sense of self are less likely to experience negative life outcomes. Compliments, praise, and focusing on the positive were elements frequently used to boost the self-esteem of the child. Children typically responded well to compliments. Parents reported that their child would brush off a compliment or praise if they did not feel as though they had earned, but if they did feel it was justified, it would visibly enhance their self-confidence, self-efficacy, and pride in themselves. Kevin's mother shared, "I always try to make sure that we end the day on a positive note, with something that he's accomplished and that he should be as proud of as we are proud of" [12P].

Child-parent communication greatly expanded a child's understanding of self. Daily child-parent communication gave children the opportunity to identify and label their feelings and to recognize when they were angry or in need of help. Children and parents also collaborated to establish goals, strategies, and reasonable expectations for themselves and others. Teaching, coaching, social modeling, role playing, and walking through were essential for advancing a child's social skills, perspective taking abilities, and awareness of others. Advanced prep facilitated the development of coping strategies and problem solving abilities. By helping improve a child's capabilities in these areas, child-parent communication played an invaluable role in promoting social development in children and adolescents with NVLD.

## **Child-Teacher Communication**

### **Insight into Child Needs and Behaviors**

Teacher participants tried to assess the skill level of individuals and their class as a whole in the first few weeks of the school year [1T, 2T, 4T, 6T, 7t, 8T, 9T, 11T]. During this time, group activities, math, writing, and physical education were found to pose specific difficulties for children and adolescents with NVLD. Teachers modified their views regarding how they expected child participants to perform in these areas. Teachers relayed that when addressing all student's skills they employed a scaffolding approach. With this approach, they established a baseline of the child's abilities at the beginning of the year and sought to expand and build on these capabilities over the course of the year. Daily child-teacher communication helped teachers continuously gauge the skill level of the child. After witnessing decline or growth, teachers adjusted their expectations and agendas accordingly. Children and teachers collaborated to identify goals for the child. If child participants showed some improvement in their trouble areas, teachers encouraged them to gradually extend their expectations or to "set the bar a little higher" [4T]. Constant child-teacher communication regarding goals and expectations enabled child participants to best achieve their potential.

Teachers believed the ability to continuously adapt to a student's needs was critical for the success of the student. Child participants demonstrated early in the school year that they had a unique set of needs and that problems with peer interactions was a central component. Teachers incorporated this knowledge into their teaching agendas and children and teachers worked together to create social goals. When children with

NVLD were able to effectively interact with classmates, they were more likely to display slight boosts in self-confidence and to engage with peers again:

He came to me at the beginning of the year saying, “I don't work with groups, I don't do group work.” Once he got over the initial, “I can't do this,” he was great. He communicated with the kids, he added to the discussion, he was more self-confident, he was getting over that hurdle of, “I don't do these things”. [9T]

Subsequently, teachers tried to help children experience small measures of success with peers [2T, 3T, 4T, 5T, 6T, 7T, 8T, 9T, 11T, 12T]. Teachers expressed that conveying expectations clearly and consistently was key for facilitating good communication skills in children with NVLD. Over the course of the school year children and teachers repeatedly redefined goals together. Daily child-teacher communication gave participants the opportunity to discuss these goals. Sam's teacher explained, “I didn't let Sam get away with things like I did in the beginning of the school year. As the year progressed, I would always require a little bit more and I would clearly articulate this to him” [5T]. Such communication promoted social development:

By the end of the year he was playing with other kids on the playground, he was working much better in groups. He would almost always initially throw up resistance doing it, but the turnaround time really decreased over the year. I told him early on that I wasn't going to accept that he wouldn't make an effort to participate. He knew that was my expectation, so while he initially would try to refuse, he knew that I at least expected him to make an attempt. [6T]

Teachers described children with NVLD as likely to keep to themselves and unlikely to ask for help. Teachers remarked that there were always some students who were more reluctant than others to ask for help. Child participants fell into this category and were commonly described as “one of the ones who wouldn’t ask for help” [1T, 3T, 5T, 6T, 8T, 9T, 10T, 12T] and as “one of the ones that you would need to seek out and make sure he was on the right track” [7T]. Children and teachers collaborated to set realistic expectations for child participants. During child-teacher interactions, teachers tried to help children understand their limits by fostering a healthy awareness of their strengths and weaknesses.

Child-teacher communication was essential for participants to recognize and fully understand the assets and limitations of the child. Teachers advocated that remaining flexible about the restrictions of the child was important for furthering their academic and social functioning. Child participants frequently had very poor reactions to classroom situations. These instances almost always involved group activities and their responses could include intense or extreme verbal and physical explosions. Teachers were repeatedly confronted with the dilemma of whether to encourage the child to engage in these activities or not. Teachers would assess the situation and the state of the child. Based on the output and feedback of the child, teachers would modify their expectations and requirements. Russell’s teacher provided an example of this:

One of the things that he had a lot of trouble with was being able to work successfully with other kids. He would initially say, “I can't do this,” and I felt that it was my challenge to gradually bring him to a place where he would

participate in some way. That was my goal for him, that he at least try to participate in some way if not fully. If he'd participated for a good part of the activity or at least showed that he was trying to be an active participant, I'd be more inclined to let him opt out of it if it got too stressful for him. [6T]

Daniel's teacher detailed a similar process:

There were times when I would think about what he'd done that day already and if there were three previous subjects where he'd participated in a group activity and it was the end of the day and he was tired and he was having difficult time, then I would say, "You did a great job today, you worked really well with the other kids, you can do this one on your own." [9T]

Modifications for child participants were also commonly made in physical education classes. Youth with NVLD did not typically do well in this setting [1C, 2C, 2P, 2T, 3T, 4P, 4T, 5C, 5T, 8C, 8T, 9T, 12T]. They were physically clumsy, preoccupied with rules, and inevitably responded poorly to competition. Kevin's classroom teacher and gym teacher discussed ways to promote his self-confidence in an athletic environment and address his needs at the same time. They agreed that Kevin did not have to participate in events where students engaged in "head-to-head competition," as one-on-one competition made Kevin emotionally volatile and prone to lashing out at other students [12T].

However, his teachers concluded that he did have to partake in competitions where he was part of a team, because team work was conducive for the development of his social skills [12T].

## **Teaching**

Teachers noted that when teaching classroom material they had to present directions and multi step tasks carefully to children with NVLD. Child participants displayed difficulty processing multiple directives at once [1C, 1T, 2T, 3T, 4T, 5C, 5T, 6T, 7T, 9T, 10C, 10T, 11T]. As a result, teachers would break exercises requiring multiple steps into smaller steps for them. Children were encouraged to write each component of the task down so they could complete them and cross them off their list one at a time [2T, 4T, 5T, 6T, 7T, 9T, 10T, 11T]. Child participants reported enjoying structured activities more than open ended assignments or ones that required imaginative thinking [2C, 4C, 6C, 8C, 9C, 10C, 11C, 12C].

Teachers found themselves teaching child participants more about social skills than their peers [1T, 2T, 4T, 5T, 6T, 7T, 8T, 9T, 10T, 11T, 12T]. Compromising, perspective taking, group interactions, and social norms were discussed at length in the child-teacher dyads of this study. Classroom exercises relied heavily on group work and teachers tried to capitalize on the strengths of children with NVLD, such as their strong vocabulary or advanced knowledge of specific interests, when placing students in groups. Teachers would match child participants with students that they thought they would get along well with or with ones who they thought could benefit from their expertise. Teachers remarked that putting child participants in groups when they had a good understanding of the subject under investigation provided the child with an arena that they “could shine in” [4T] and thus develop greater self confidence. Teachers felt that this was particularly important given that children with NVLD were often hard on

themselves and inadequate in other areas. Annabel's teacher elaborated on an instance when giving her the chance to showcase her intelligence was beneficial:

I really tried to pull out the best in her, I would have her work on projects and stuff that she was really, really interested in. She started standing up and sharing about the things that she knew and she really blew the class away. Once the other students started to see that side of her, they were into her, and they started wanting to working with Annabel. They started saying things like, "Hey, why don't you come over here and work with us," and she really grew tremendously as a result. [2T]

However, placing children in circumstances where they could display superior knowledge did not always guarantee success:

I would try to put her in situations where she might be able to use her expertise. Most times that worked really well, but sometimes it didn't, because on topics that she knew a lot about she could come off as bossy or a know- it-all. [8T]

### **Coaching**

Children and teachers particularly engaged in coaching in the areas of initiating and maintaining friendships, self expression, and compromising. Daily child-teacher communication provided educators with ample opportunities to give those with NVLD feedback on peer interactions. Teachers found that not only did child participants need to be prompted to approach their peers, but they also needed assistance figuring out the exact words to say to them. Teachers coached children on how to use phrases such as,

“May I join you?” [3C, 3T, 7T, 10T, 11T] and, “Hi, can I play with you?” [1T] to initiate peer interactions. Russell’s teacher elaborated:

Sometimes on the playground we would give him conversation starters to go and talk to another kid about, “Hey, why don't you go ask so-and-so about this,” or “Some of the cartoons you’re working on today, those are awesome, you should go show those to so-and-so.” If he had a cue or a little starter like that, it would help tremendously. [6T]

During lunch, recess, and unstructured classroom activities, child participants appeared to favor being alone. Teachers, who observed child participants apart from the group at these times, would encourage them to join the others. In an effort to bolster their social skills, teachers would sometimes orchestrate group peer interactions that they could coach youth with NVLD through [1T, 2T, 3T, 4T, 5T, 8T, 9T, 11T, 12T].

Annabel’s teacher shared:

I made a point to go into the cafeteria during their lunch and when she was sitting alone I would gather some of the girls and say, “Let’s go sit with Annabel.” We’d sit with her and I’d make sure that she used the skills that we’d worked on. [2T]

Kevin’s teacher commented:

I would have to go up to him and give him suggestions of how he could contribute with other students otherwise he would keep to himself. Sometimes just having him sit with other students, that was half the battle. We would just try to get him to sit close to the group at lunch or recess. If he was there it was more likely

someone would talk to him or we'd be able to give him suggestions of what to do.

[12T]

Children and teachers also engaged in coaching on basic elements such as how to modulate their voice tones and how to say they were sorry. Marie's teacher reported that in the beginning of the year she repeatedly went over how to correctly use one's tone of voice with her:

She can get very preachy and sometimes her voice tone can just come out not very friendly. She doesn't mean it that way at all, because later we will talk about it and she'll say, "That's not what I meant," and I'll say, "Well, honey, that's the way it sounded." We really worked on trying to temper that and getting her to note if others reacted poorly to her voice tone. I think she improved, because I didn't see as many fallouts at the end of the year as I was seeing earlier. [8T]

Michael and his teacher discussed appropriate ways to express "I'm sorry" [11T]. Even though Michael had learned the mechanics of how to say he was sorry, he still had trouble figuring out when to express this sentiment:

In the classroom, a lot of times he won't know when to say he's sorry. For example, he'll say something that's disrespectful to another student. The other student will clearly be upset and I'll say to him, "Michael, do you feel that what you just said was respectful? It looks like it hurt someone's feelings." He'll say, "No, I didn't mean it like that, I'm sorry." He really needs prompting to do that.

[11T]

Situations where compromise was needed was another area in which coaching

proved useful. Children and adolescents with NVLD were more likely to walk away from their peers or shut down than to compromise. Older children were described as more likely than younger children to solicit adult support in situations requiring reconciliation. Teachers of Eric, Sam, Russell, Alex, and Daniel relayed that these students approached them multiple times over the course of the year to ask for advice on peer relationships [4T, 5T, 6T, 7T, 9T]. During these conversations, the child recounted how a peer interaction had gone awry and expressed a desire to right this. Teachers conveyed that the original misunderstanding usually stemmed from the child's poor ability to recognize the viewpoints of others. Since perspective taking was a particular area of need for these students, these opportunities were used to increase the self-esteem and social competence of the child [4T, 5T, 6T, 7T, 9T]. In child-teacher interactions, teachers would give child participants advice about what to do, role play the altercation with them, or physically mediate a resolution between the child and their peer.

### **Social Modeling and Role Play**

Teachers reported that they tried to provide good social modeling for all students in their class. When modeling behaviors for child participants, teachers attempted to call specific attention to the non verbal cues that they were demonstrating, so that children could attend to them more easily [1T, 2T, 3T, 4T, 7T, 8T, 11T, 12T]. They typically did this when giving directions, during conversation, or when they saw that child participants were having difficulty interpreting multiple or discordant cues. Teachers encouraged child participants to notice the reciprocal nature of dialogues by modeling appropriate conversational patterns. Teachers would talk and then pause. While waiting for the

other person to respond they would highlight their actions to those nearby, “I’ve just asked a question and now I’m waiting for a response. Good conversationalists wait for the other person to respond” [9T].

Teachers sought to compliment any student demonstrating excellent social behaviors. Teachers especially praised child participants when they displayed a positive social behavior, in order to increase the likelihood that they would repeat this prosocial behavior. Teachers reported that providing students with public praise was the best method for highlighting good social behaviors, reinforcing these good behaviors, and promoting the self-confidence and self-esteem of a child.

Child participants provided examples of times when they modeled their behaviors after their teachers. Russell shared, “If someone interrupts me when I’m talking, I feel bad but I say, ‘No questions or comments until I’m finished,’ because that’s what teachers always say” [6C]. Mark replied, “If I don’t know what someone means, I ask them to explain like my teacher does, I tell them, ‘Can you please say that again?’ [1C]. Children and teachers did not engage in role play as much as children and parents did. Teachers stated that they while they did participate in some role play, they were more likely to engage in *walking through* or *advanced prep* with children in this study.

### **“Walking-Through”**

Problems with perspective taking repeatedly came up in school settings and children and teachers spent much time discussing the viewpoints of others. Again, children were found to be more receptive to the perspectives of others if they had some time to cool down before participating in a review of an incident:

I would have to let her emotions subside, then I might say to her, “Okay, can you understand why so-and-so is feeling this way?” We’d go through what happened step-by-step, and she would say, “Yeah I do, actually I can see that.” It was a good process, but one we were only able to do after she’d calmed down. [10T]

Children in this study displayed difficulty comprehending how their behaviors evoked reactions from others. The child-teacher walking through process was particularly valuable for illustrating to younger children how their actions could be perceived as irritating to their classmates. Jason’s teacher stated that revisiting events that transpired “step-by-step through his eyes and through the eyes of the other child” was an extremely beneficial approach for reviewing peer altercations with Jason [3T]. Child-teacher interactions going over incidents in minute detail and in a factual way helped Ben more fully understand why his actions were inappropriate:

There was a phrase he would say that would really annoy people. His response was, “Well it doesn’t bother me, why should it bother them?” and I had to explain to him that even though things that annoy other people might not annoy him, he has to respect that they’re asking him to stop. We had very long discussions about how when somebody asks you to stop doing something you should stop. I’d have to go through all of the “whys” with him, why it was important, why his classmate was upset, why he should stop, and if I went over it in enough in that way, he would finally get it. [1T]

Subsequently, child-teacher communication was an enormous asset for facilitating the development of problem solving and coping skills of children and adolescents with

NVLD. Educators were in the unique position to monitor and coach real peer interactions on a regular basis. After an incident occurred and the students involved calmed down, children and teachers would engage in problem solving and walking through. Children and teachers would walk through the events that happened and reexamine the situation. Sometimes parties involved in the altercation would be encouraged to talk with one another about what had happened. Child participants were prompted to share their point of view and recognize that of others. Marie's teacher detailed, "What I usually do is pull them aside and listen to both sides and have them listen to the other person and have sort of a conflict resolution session" [8T]. Alex's teacher remarked, "If there was a group activity and something happened, he would go out and cool down. After a few minutes his classmate and I would go talk to him and we would all problem solve together" [7T]. Russell's teacher disclosed:

Being willing to compromise and negotiate was a real challenge for him that we had to work on throughout the year. He had to learn to be willing to listen to other people's opinions and there were many times when I would stand with him and the other student while they would work things out to make sure he did that.

[6T]

Reconciliations monitored by teachers allowed child participants to practice their listening skills as well as their abilities to compromise and take the perspectives of others. Children were able to receive on the spot feedback. If they veered off topic or remained steadfast in their viewpoint, teachers verbally prompted them or coached them on how to

correctly proceed. In this way, child-teacher communication enhanced a child participant's awareness of others.

Child participants were sensitive to criticism and the words of their peers. Teachers indicated that there were many times when children would perceive neutral words from others as negative. The walking through process was used to review these instances with children and adolescents and to illustrate to them that others were not angry or thinking poorly of them:

Sometimes the kids would laugh at something and he would think they were laughing at him, but they weren't. He would instantly think they were laughing at him, and I would say, "No, Russell I can see how you thought that because you had just said something, but what they were laughing at was..." I would explain to him what it was the other kids had found funny and why they thought it was funny. [6T]

The walking through process was used to help Annabel and her teacher resolve a miscommunication:

When I'm teaching a lesson, I might ask, "What do you think the answer to this is?" and if she got it wrong, I'd say, "That's a nice try Annabel, you're on the right track though, but no, that's not it," and she would cry. She'd get tears in her eyes and she'd get really mad. I'd have to explain to her, "Annabel, I said you were on the right track sweetheart. There were specific answers I was looking for, but you were on the right road." Later, I would go through what I'd said to

her with her and what I meant when I said it, so she would see that it wasn't a criticism of her. When I did that she could see that. [2T]

### **Advanced Prep**

Certain scenarios had a high propensity to upset child participants. Game play, group activities, and an unexpected change in their schedule were some of these events. Preliminary outlines of what the class would do each day and advanced organizers decreased the likelihood of adverse reactions from child participants: "I definitely think any time I could give him to think about an upcoming group activity or schedule change helped him" [4T]. Children and teachers communicated about these:

We would prep him as much as possible if we knew a group activity was coming up. Telling him ahead of time, just talking to him about it, usually I would do this in the morning. I would talk to him one-on-one and I would say something like, "Well, Russell today in science we're going to be doing an activity where you're going to have to work with other kids," and I would kind of tell him a little bit about it so he could mentally prepare before he had to actually attempt it. [6T]

Child and teacher participants collaborated to identify and create personalized coping strategies. When teachers discussed upcoming events with children in advance, they would review the coping strategies they had available to them and encourage them to implement these plans when they felt themselves becoming angry. Teachers indicated that, because much of their troubles stemmed from peer interactions or participating in groups, allowing the child to have some time and space away from the group usually helped [1T, 2T, 3T, 5T, 6T, 7T, 9T, 10T, 11T, 12T]. Jason's teacher commented:

When he gets frustrated, I take him aside and give him a cooling off period. I just ask him to sit down and I try talking to him. If he can't focus on the problem at hand in that minute I just give him some time. If he thinks something unfair is going on in the game that he's playing, I encourage him to ask for a time out instead of yelling at the child, "You cheated!" [3T]

Consistent child-teacher communication about coping strategies helped youth advance their abilities:

At the beginning of the year he would yell things like, "No, no, no I'm not going to do that," and he would stomp around the room and slam the door. The system that we have now is that if he starts to get upset about something that he doesn't want to do and starts showing signs of stress I say, "Okay, Russell take a minute in the hallway to cool down and think about what you're going to do and come back in," and that's usually pretty successful. By the end of the year he knew, "Okay, I have this time to cool down outside, but I'm going to be expected to come back in and at least make an attempt," so towards the end of the year the in-the-hallway plan worked really well. [6T]

Reading was a coping strategy that Kevin wished to use:

When he was angry, all he wanted to do was remove himself from the situation and to read his book. We talked about this and he said it helped calm him down, so we let him use that as a coping strategy in the classroom. [12T]

Many child participants employed reading as a coping strategy [1C, 2C, 2T, 4P, 4T, 5C, 5P, 5T, 6T, 7T, 9C, 9T, 10C, 10P, 10T, 11C, 11T, 12P, 12T]. Eric reported that he liked, “feeling obsessed or in oblivion because of a book I’m reading” [4C]. Daniel shared:

One time I was at camp and I kept laughing at anything. I just had laugh attacks and they called me rude names and I got mad and I kind of like stalked off and kept leaving and then they were playing marshmallow wars and I said I didn’t want to play. I wanted to go back up to my cabin and read, because that calms me down...So I did. [9C]

The use of coping skills by child participants mitigated aggressive behaviors and prevented a “domino effect” in the classroom, which was when other children would display similar behaviors after observing the extreme reaction of a child participant [1T, 2T, 3T, 4T, 6T, 9T, 11T]. Identifying and implementing coping skills also helped children develop greater emotional awareness. Children and adolescents with NVLD displayed increased coping and problem solving abilities and were more likely to ask for help when they knew they would receive advanced prep and attention to their specific needs. Jason illustrated how this transpired between him and his teacher, “I tell the teacher, because usually people are making fun of me and I feel embarrassed about it. She tells them to stop and we talk about what we can do when people tease me” [3C].

One notable difference among adult perspectives was that teachers did not perceive as much child anxiety as parents did. Teachers rarely noticed children manifesting physical symptoms of anxiety. Another distinction was that teachers witnessed more interactions between those with NVLD and their peers than their parents

did. Educators engaged in teaching and coaching with the children in this study and communicated to them immediate feedback on their interpersonal interactions. Teachers modeled social skills for children and adolescents and collaborated with them to develop skills for compromising and coping. Hands-on, direct mediation provided opportunities for children and teachers to work together to better explore the viewpoints of others. By addressing the individual needs of the child, child-teacher communication furthered the social skills, perspective taking abilities, problem solving abilities and coping strategies of the child, as well as their awareness of others and understanding of self. Subsequently, child-teacher communication proved to be instrumental for promoting those with NVLD to effectively navigate their social milieu.

### **Parent-Teacher Communication**

#### **Insight into Child Needs and Behaviors**

The frequency of contacts varied, but most parents and teachers reported that they communicated with one another on a monthly basis and whenever an incident occurred involving the child. All parent-teacher dyads had at least four interactions over the course of the school year. Typical adult communication included phone calls, emails, and parent-teacher conferences. These communications enabled adults to provide one another with their perspective on the child's needs and behaviors. Primary caretakers conveyed the worries their child expressed at home. Teachers shared their observations of the child's social and academic functioning and relevant recommendations. Parents informed teachers if there were any new developments or changes in their child's life. Similarly, teachers notified parents if their child displayed extreme behaviors or

participated in classroom altercations. Parents sometimes highlighted specific skills they were working on with their child and asked educators to reinforce these. By maintaining continuous communication with each other and with the child, adults were able to obtain a more complete, accurate assessment of the needs of the child. Parents and teachers adjusted their expectations and adapted their parenting and teaching agendas accordingly.

### **Advanced Prep**

Communication between adult groups usually began early in the school year. All parents in this study chose to tell their child's teacher about their specific difficulties. Parents explained that they wanted the child's teacher to be aware of their problems so that he or she would be able to better address their unique deficits. Teachers appreciated this "heads up" [1T], as they often found it overwhelming to effectively attend to the distinct needs of all the children in the class [1T, 2T, 6T, 7T, 8T, 9T, 12]. Adult participants discussed modifications that could be implemented to facilitate the success of the child. Parents detailed the types of situations their child was likely to struggle with. Early knowledge allowed teachers to preemptively brainstorm ways to contend with these events that would not further agitate the child or disrupt other students. Teachers believed that with prior knowledge they were more likely to employ effective teaching and behavioral strategies from the outset:

In the very beginning of the year, I was informed by her mom that she had had some social issues in the past. This was good, because I really wanted to get to know my students beforehand, just so I would know if there were certain situations that I needed to work on with them or keep a look out for. After

speaking with her mom, I knew firsthand that that's where we were going into the school year and that was good, because the whole year I was better prepared and able to be there for her. [2T]

Eight teachers reported that they made it a point to review coping strategies with child participants at the start of the year [1T, 2T, 5T, 7T, 8T, 9T, 10T, 11T]. Teachers felt children with NVLD would be more apt to learn good problem solving and coping skills if they were encouraged to develop them “from day one” [5T]. Eric's teacher commented, “The quicker we got those coping skills in play, the more he would benefit from them during the year” [4T]. Teachers hoped that by enhancing the coping abilities of the child with advanced prep they would also prevent them from experiencing social embarrassment or peer ostracization.

The areas that adult participants most wished to help children with were: emotion labeling, initiating and maintaining friendships, compromising, and developing problem solving and coping skills. Parents and teachers often made use of naturally occurring events to reinforce and shape positive social behaviors. Adult participants communicated with children to identify ways for addressing their anxiety, concerns, and emotional triggers. Parent-teacher dyads discussed coping plans that worked for each child. Coping strategies commonly used by child participants included: taking some time by themselves, usually in the hallway at school or in their bedroom at home; opting out of group activities; and distracting or soothing themselves with a video game or book. Mothers of Mark, Russell, and Michael shared that they taught their child to use the game ‘rock, paper, scissors’ to help them compromise. They relayed this information to their

child's teacher so that they could encourage their child to practice this strategy in the classroom [1P, 6P, 11P]. As a result of this communication, teachers complimented child participants when they saw them using this skill or prompted them to use them when they could [1T, 6T, 11T]. In this way, adults sought to provide consistency across the home and school settings. Parent-teacher communication was frequently used to generate consistency across settings:

He really enjoyed reading and drawing and we met as a committee with his parents to try and decide, "Was this a good mental break for him or was he just checking out in the middle of class?" We decided that during class he would be able to draw to relieve some stress or tension. His parents said they would also try to encourage him to do this when he was stressed at home, so he would get used to using this to help him deescalate his feelings. [9T]

Encouraging children to use the same strategies for coping with extreme emotions and for compromising in the home and school increased the likelihood that they would: remember to use these strategies, become more adept at using them, and employ them in future situations.

Additionally, primary caretakers found it beneficial to tell educators about methods that had worked or failed to work with their child. Adults used this information to create modifications for the child prior to the school year. Tailored accommodations in place at the beginning of the year best addressed the individualized needs of the child and fostered continuity across teachers and grades:

Over the years, we've had to work with her teachers to make some adaptations for her. Having those in place at the beginning of the year, I can't tell you, it's really made a difference. Rather than have her really struggle, get angry with the other children for being loud, flustered because she has no outlet for her stress, it's much easier to put her at the front of the class or let her type her some of her work. [8P]

Alex's mother suggested that knowing the best ways to present information to him helped him learn better and relieved some of his anxiety:

How the material is presented to him, that really influences his ability to be able to interpret it. They could be studying the Constitution. He's got the whole thing memorized. He would be able to tell you anything about the Constitution and on the first two assignments he may get high A's. The third assignment could be a multiple choice and the same material may be presented in a different manner. He'll make a 50 on it, but it's just that he can't interpret it, because of the way it's presented. Telling his teacher can really change that, because then they're not starting from scratch with him. We don't have to wait until the end of the year or when he's overwhelmed to figure out how to best communicate with him, because then it's too late academically. [7P]

Modifications were not only discussed at the beginning of the year. Adult participants were in continuous contact with one another and the child and remained flexible about reacting to the child's changing needs. Kevin's mother revealed that he

often displayed distress at home because he had been holding in his feelings all day. She spoke with his teacher and together they came up with the following plan:

We now have worked it out that Kevin is asked during his day, “On a scale, zero percent to one hundred percent, with one hundred percent being the worst possible day ever, how is your day going?” So now the school is much better able to track where he's derailing and we can encourage him to do something to stop that from happening. [12P]

Sam's teacher described a modification she made for him after input from Sam and his parents:

Large groups are very difficult for him. A lot of it depends on the noise level. If there's a high amount of volume or if he feels there's too many people, he starts to panic. Now he has the opportunity to go to the library instead of pep rallies or large events like that. [5P]

Having accommodations in place for the child improved their chances for academic and social success and reduced the amount of stress they experienced [2P, 2T, 3T, 4C, 4P, 5C, 5P, 5T, 8P, 9C, 9P, 9T, 10C, 10T, 11P, 11T, 12P]. Consequently, parent-teacher communication was highly advantageous for the daily functioning of the child and greatly advanced their problem solving and coping skills.

### **Alleviating Anxiety**

Parent-teacher communication reduced anxiety for all adults. Throughout their interviews, parents expressed worries that their child would “slip through the cracks” [3P,

6P, 7P, 8P, 11P] and fail to get the attention they needed. Parents cited this as the reason they initially told their child's teacher about their difficulties. Eric's mother expressed:

You need to be aware of his issues, because if you don't he'll be the one that you'll miss over. You'll miss him because he doesn't want to be seen. Even if he doesn't understand, he'll never let you know that he doesn't understand, because he doesn't want unnecessary attention brought to him and that's why it's even more important that people be aware of his issues. [4P]

Youth with NVLD hardly ever invited others to their home to play. As a result, parents were often unable to observe their child's abilities to interact in a group setting. Parents in this study reported experiencing high levels of helplessness, frustration, and sadness that successful friendships were rare for their child [2P, 3P, 4P, 5P, 6P, 8P, 9P, 11P, 12P]. They indicated they did not always know the best ways to teach them appropriate communication skills. Teachers, however, were able to provide primary caretakers with valuable insight about the social aptitude of their child. Teachers could give parents detailed accounts of the child's interactions with others, as well as could offer suggestions about what they might benefit from extra work with:

His teacher commented that he would like to see him work on listening to the opinions of others and engaging in conversation around other people's thoughts and opinions. He gave me examples of current hot topics in the class, so that we could really work on that at home. [4P]

In this study parents frequently solicited the opinion of the teacher. In some cases parents were found to use teachers as a resource to locate friends for their child. Parents,

hoping to provide their child with more positive peer relations, asked teachers if there were any students in the class that their child got along especially well with or if any children had similar interests [1P, 2P, 5P, 7P, 12P]. Parents would urge their child to interact with these peers, suggest conversation topics, and point out interests they had in common. In a few instances, parents extended after school invitations to these students [2P, 5P, 7P].

Teachers were sometimes nervous about whether they were adequately meeting the needs of the child [2T, 3T, 5T, 6T, 8T, 9T, 10T, 12T]. Parent-teacher communication alleviated these fears, as adults were able to explicitly discuss the ongoing, changing needs of the child and tactics that were or were not useful for addressing these:

Throughout the year it was a really fine balance between knowing where he was, what his state of mind was, and being sensitive to that and also pushing him and making sure that he was going outside of his comfort zone. I wasn't always sure that I was doing the right thing and it was good to talk to his parents and hear their take on things. [6T]

Like teachers, parents exhibited worries about their abilities to successfully contend with the needs of their child. Primary caretakers particularly desired information about which areas they should help their child with. Parents relayed that this was the primary reason they were eager to participate in this study:

A lot of things I've talked to you about are things that he's had a lot of trouble with over the years. Some of the things he's gotten better with, but I would be interested in hearing the outcomes of your study and what can be done. We spend

so much time working on so many things, it's hard to pick what to work on. If he expresses wanting to work on anything, I would love to hear about it, I would jump on it! Anything I can gather from this study that will help me work with Eric would be really welcome and really wonderful. [4P]

### **Appreciation of Multidirectional Communication**

All groups viewed multidirectional communication as important. Multidirectional communication enabled adults to feel more confident that the child's needs would be met. Lila's father regarded communication between the home and school as essential for creating "a secure safety net for the child" [10T]. Marie's mother expanded on this sentiment:

Her teacher and I talk about how sometimes children make mistakes when they're this age. They're still being watched closely by teachers, parents, the community, so they get to practice screwing up or being hurt and they get to see it talked through. We've had to help Marie work through a lot of issues with other kids. Having adults mediate and monitor these stressful times, kids see that these things don't have to be permanently traumatizing, you can move past them, you screw up, you move on, and you try to do better. [8P]

Child participants particularly conveyed their appreciation of this support network.

Daniel viewed child-parent and child-teacher communication as indispensable for helping him overcome his academic anxiety:

When I get nervous about math or grades, I might get jittery or not be able to sit still. I could kind of space out on what I was thinking about, what made me

nervous, or I could keep asking someone to resolve the thing that made me nervous like my mom or my teacher. They always help me and have really taught me to calm down a lot. [9C]

Lila shared that child-parent and child-teacher communication was extremely important to her and made her to feel better, as well as alleviated her anxiety:

I've been bullied at least a couple of times. Some of it kind of did hurt my feelings, but some of it didn't. Either I would tell my parents or I would tell my teacher. If they weren't there for me I'd have no one to talk to and I'd be devastated. [10C]

Michael explained how multidirectional communication was helping him address his needs and develop his coping skills:

I want to have support time and we're going to be working on that, so I can feel more comfortable. It will be okay to take off my shoes and put my feet on a calm mat with spikes on the top. My mom and teacher are helping me and we're gonna get some Velcro to put under my desk. Yeah. [11C]

Parents were also appreciative of teachers and the time they spent with their child. They acknowledged the significance of child-teacher communication and noted how it was influential for enhancing the self-esteem of the child, "Her teacher was good at accepting her voice and making her feel better about herself" [2P]. Alex's mother remarked, "His teacher really recognizes unique children and makes provisions for their comfort, safety, and overall participation in the community. So he's made tremendous

personal growth in her class” [7P]. Kevin’s mother expressed gratitude for communication across parties and the child-teacher interactions he had:

He has a fabulous teacher and she's trying to pull him into participate more. We talked about it at the beginning of the year and a couple of other times when it's been rough, and she's really made an extra effort to work with him on his participation. It's worked wonders for him, he's much happier about school now. I don't know where we'd be without her. [12P]

This study found communication to be a dynamic process that occurred continually across parties. The individual needs of the child were conveyed via these exchanges. Adult participants communicated about the needs of the child and the best ways to meet them. Parents shared previous knowledge about effective and ineffective strategies with teachers and parties collaborated to create beneficial accommodations for the child. Classroom modifications improved a child’s chance of success in areas they typically found challenging. Primary caretakers and educators exchanged details about what they were working on in the home and school settings. Adults sought to provide consistency across these environments in order to reinforce prosocial behaviors and good problem solving and coping strategies. In this way parent-teacher communication created a “safety net” [10T] or multiple layers of support for child participants and promoted the development of their social skills. Additionally, parent-teacher communication reduced adult anxiety.

## **Summary of Communication and Social Development**

Daily communication across persons enabled all parties to gain distinctive insight into the child's needs and behaviors. Child participants shared concerns about academic performance and peer interactions with their parents and teachers. Daily conversations with adults encouraged children to better identify, label, and understand their emotions. Such communication allowed all study participants to review healthy coping strategies and to gain up-to-date information about the needs of the child. Adults adjusted their expectations and agendas accordingly and conveyed these expectations to the child and to one another.

Child-parent communication was critical for the social development of the child. Primary caretakers and youth engaged in much one-on-one teaching and coaching regarding specific abilities the child found troubling. Skills ranged from basics involving emotion labeling, eye contact, and personal space, to the more complex, including those needed to initiate and maintain friendships. Child-parent communication was very important to the children in this study. Child participants recognized that their parents cared about them and felt that child-parent interactions allowed them to voice their concerns as well as taught them to express themselves.

Parents tried to locate playmates for their children and discussed with them how to approach their peers. On the rare occasions that child participants had peers over to play, parents monitored their interactions and guided them gently through these. Parents arranged structured activities for children and their friends to engage in, in hopes of promoting positive peer interactions. Primary caretakers believed that successful peer

interactions would build their child's self-efficacy and encourage them to interact with others more often. Social modeling occurred regarding emotion expression and conversational skills. Child-parent dyads sometimes role played scenarios in which compromise was required.

Children and parents frequently reviewed past events together step-by-step in order to better understand the viewpoints of others. Children and parents examined why the actions of the child had offended or upset someone. Collaborative explorations such as these increased the child's perspective taking abilities and their awareness of others. Children and parents worked together to identify situations that caused children stress. Following this, child-parent pairs tried to construct preventative strategies that the child could use to calm themselves down. Conversations about emotions and their physical manifestations took place. When parents observed their child becoming upset, they prompted them to label their emotions and employ a previously listed coping strategy. With advanced prep, children in this study were able to develop better problem solving skills, coping abilities, and a greater understanding of self. Children experienced a large amount of anxiety due to social and academic worries. These fears commonly materialized in the form of physical symptoms, such as stomachaches. Child-parent communication created a forum where children could express some of their anxieties. This outlet was a source of comfort for child participants. Parents used compliments, praise, and focused on positive traits to bolster their child's self-esteem.

Children, parents, and teachers displayed some differences in perspectives. Teachers observed much lower levels of child anxiety than children and parents did.

Children and parents indicated that child participants were often anxious and worried. Children and parents relayed that these worries frequently manifested via somatic difficulties. Teachers did not note these symptoms. Parents shared that children rarely invited friends over to play outside of school and subsequently were unable to provide much information on how they performed in group settings. Teachers were able to view many such instances. Children and teachers reported that they participated in less one-on-one interactions involving teaching and coaching than children and parents did. Instead, children and teachers interacted more within group settings. Children and teachers especially worked together and with peers on initiating and maintaining friendships, self expression, and compromising. When peer conflicts occurred, children and teachers reviewed these. Sometimes teachers mediated and monitored reconciliations between the child and their peer. Children and teachers conveyed that they were more likely to communicate via walking through or advanced prep. Children and parents were more likely to engage in teaching and role-playing about specific skills than children and teachers were. Children and parents particularly participated in one-on-one teaching and coaching regarding specific abilities the child had trouble with, such as emotion labeling, eye contact, personal space, and those needed to initiate and maintain friendships.

Educators possessed normative references for typical age appropriate abilities. They shared information with parents regarding how the child's abilities compared to other similarly aged peers and encouraged the child to develop such abilities. Continuous interaction between children and teachers enabled child and teacher participants to gain

more insight into the individual needs and behaviors of the child. Children and teachers collaborated to identify and set realistic goals for the child. Once these goals were met, child and teacher participants reviewed the progress of the child and worked together to gradually extend goals and expectations. These processes improved the child's social skills, problem solving abilities, coping strategies, and understanding of self. Teachers tried to capitalize on the strengths of youth with NVLD to cultivate successful peer interactions. For group activities, teachers placed child participants with students who they thought would benefit from their advanced knowledge or who they thought they would work well with. Good social modeling promoted better social behaviors and conversational skills in child participants. Children responded well to positive feedback, and teachers particularly used compliments and praise to highlight correct social behaviors.

Children and teachers reviewed peer altercations together once child participants cooled down. Child-teacher dyads walked through the events that occurred and discussed the perspectives of the others involved. Sometimes students talked with one another about what transpired. These exchanges gave child participants the chance to express their point of view and recognize that of others. Teachers monitoring these encounters could prompt those with NVLD to demonstrate the correct skills and could supply them with immediate feedback on their actions. These interactions promoted the development of the child's perspective taking abilities and their awareness of others. Classroom incidents involving child participants were common. Group activities, an unexpected change in routine, physical education, and math and writing assignments were especially

troublesome for children in this study. Children and teachers frequently reviewed coping strategies in advance and children were encouraged to implement these skills when they noticed that they were becoming distraught.

Parent and teacher participants communicated on a monthly basis and whenever a child participant was involved in an incident at school. Parent-teacher communication generally consisted of phone calls, emails, and parent-teacher conferences. Adults exchanged perspectives on the child's needs and behaviors. Parents conveyed some of the worries their child expressed at home. Teachers recounted observations regarding the child's social and academic functioning. Persistent interaction with one another and the child allowed adults to constantly reevaluate the progress of the child and to gain a more complete assessment of their functioning. Adults adapted their expectations and agendas to best meet the current needs of the child. They continuously shared these expectations and goals with each other and the child. At the beginning of the school year, parents usually informed teachers of their child's specific needs. Teachers appreciated this foreknowledge, as it enabled them to envision problematic situations and solutions in advance. Children and adults identified and reviewed successful coping strategies for the child. To foster continuity across the home and school settings children were encouraged to use the same coping strategies in both environments. This consistency enhanced the problem-solving and coping abilities of the child. Adults repeatedly discussed which accommodations would best meet the individualized needs of the child and arranged for these to be put in place. Adult communication also alleviated parent and teacher worries. Parents verbalized concerns that the specific needs of their child would be overlooked.

Teachers sometimes wondered if they would be able to effectively address the deficits of the child. Explicitly communicating about the changing needs of the child and the best ways to manage these mitigated adult fears.

All participants viewed communication as highly beneficial. Communication across parties created a greater support network for children and adolescents with NVLD and increased the likelihood that their needs would be adequately met. Communication was a dynamic process that occurred continuously and consistently across children, parents, and teachers. The individual needs of the child were conveyed via these interactions and knowledge of the child's current needs influenced future communication across all parties. Children, parents, and teachers engaged in daily conversation, teaching, coaching, social modeling, role playing, walking through, and advanced prep. Multidirectional communication was instrumental for the social growth of the child as these interactions greatly expanded the child's social skills, perspective taking abilities, awareness of others, problem solving abilities, coping strategies, and understanding of self.

## **CHAPTER 7: Discussion**

The implications of the resulting model are described in this chapter. The findings of this study are related to existing literature in order to conceptualize the model within the context of current theoretical and clinical perspectives. Limitations of the study are discussed, as is the study's import for research and practice.

### **Summary and Integration of Findings**

Those with NVLD struggle with deficits in social competence daily. Social competence has been described in a variety of ways. All definitions have included the ability to interact successfully with others (Guralnick, 1992). Children and adolescents with NVLD frequently engage in ineffective social interactions. As a result they are often teased, bullied, and ostracized by their peers. These youth have been found to experience higher levels of internalizing problems and to be at greater risk for suicide than other LD subtypes (Pelleitier, Ahmad & Rourke, 2001; Rourke, Young, & Leenaars, 1989; Strang & Rourke, 1985). Additionally, children and adolescents who lack social competence are more likely to experience the negative life outcomes of juvenile delinquency, school dropout, suicide, psychiatric dysfunction, dishonorable discharge from the military, poor employment history, and adult criminality (Asher & Coie, 1990; Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Katz & McClellan, 1997; Kinsey, 2000; Ladd, 2000; Parker & Asher, 1987; Pavri & Luftig 2000; Roff, Sells, & Golden, 1972). Current social intervention programs typically place those with NVLD in groups

with other LD children. Such indiscriminant programs have not proven to be effective (Forness & Kavale, 1996). In order to further previous research and the efficacy of future programs, this study provides more information about how children with NVLD understand and navigate their social milieu.

Existing research relies heavily on behavior rating scales completed by primary caretakers and teachers to assess the social functioning of children with NVLD. Children's perceptions of their social interactions have rarely been evaluated or reported (Semrud-Clikeman & Fine, 2008). This study extends prior research on NVLD by examining the perspectives of youth with NVLD, as well as the perspectives of their primary caretakers and teachers. Study results detail unique information regarding how children and adolescents with NVLD perceive social cues, process social information, and understand social situations. A model, *Multidirectional Communication: A Dynamic Process Contributing to Social Development*, was developed based on the data. Key characteristics of those with NVLD are illuminated. Moreover, the model illustrates how communication among children and adolescents with NVLD and their primary caretakers and teachers furthers the social development of the child. Findings of this study are relevant to youth with NVLD, their primary caretakers, educators, psychologists, psychiatrists, and researchers.

This study found children with NVLD to exhibit a profile consistent with that described in existing literature. Children and adolescents with NVLD typically have difficulties with language pragmatics, cognitive flexibility, reading comprehension, mathematical abilities, problem solving, organization, processing new information,

abstract problem solving, concept formation, psychomotor coordination, bilateral tactile-perceptual abilities, social interaction, social perception, and interpreting facial expressions, prosody, and body language (Gross-Tsur, Shalev, Manor, & Amir, 1995; Harnadek & Rourke, 1994; Johnson, 1987; Rourke, 1989; Semrud-Clikeman & Hynd 1990; 1991; Voeller, 1986). The theoretical model resulting from this study converges on and expands these findings. This model in particular highlights the specific needs of those with NVLD. Child participants demonstrated a shared set of characteristics regarding facial expressions, prosody, body language, the processing of sensory cues, conversation, emotion expression, cognitive flexibility, empathy, and perspective taking. These traits closely match those displayed by Type 2 Children in Voeller's model of social competence deficits (1994) and those depicted in Rourke's (2002) neuropsychological model of NVLD. Child participants found the first phase of Crick and Dodge's (1994) social information processing model problematic. Child participants were repeatedly unable to accurately interpret the facial expressions, prosody, and body language of others. They found positive facial expressions easier to encode than neutral or negative ones, and they were more likely to attend to vocal cues that displayed greater levels of emotion. Correlating with previous literature, youth with NVLD were found to display relative strengths regarding auditory perception and rote memory and language skills. Child participants demonstrated a preference to process information through verbal-auditory modalities rather than through visual-tactile modalities. Difficulties maintaining eye contact and understanding irony and sarcasm were also evident.

The model, *Multidirectional Communication: A Dynamic Process Contributing to Social Development*, proposes that communication occurs constantly and consistently across children, parents, and teachers and promotes the social development of the child. This study found that multidirectional communication helped to mitigate some of the difficulties the child encountered and facilitated their development of skills in areas they had trouble with. The individual needs of the child were conveyed via the verbal and nonverbal behaviors of the child and their interactions with others. Knowledge of the immediate needs of the child influenced future communication across children, parents, and teachers. Children, parents, and teachers participated in daily conversation, teaching, coaching, social modeling, role playing, walking through, and advanced prep. Such exchanges were instrumental for the growth of the child as they expanded their social skills, perspective taking abilities, awareness of others, problem solving abilities, coping strategies, and understanding of self.

In daily conversations, child participants shared their thoughts and feelings. They were asked to express themselves and label their emotions. Through these interactions children developed a better understanding of self. Children and parents engaged in one-on-one teaching and coaching about specific abilities including emotion labeling and eye contact. Participants reported that over time and after repeated practice children's abilities improved in these areas. These findings support those of Kransy, Williams, Provencal, and Ozonoff (2003) who found that multiple learning opportunities maximized the development of social skills in young children with developmental disabilities. Children and adults in this study collaborated to identify and set realistic

goals for the child. After initial objectives were met, children and adults worked together to create new goals and to gradually extend the abilities of the child. Youth with NVLD sometimes interpreted neutral vocal cues negatively. Children, parents, and teachers collaborated to review and reinterpret these interactions.

Similar to Sweet-Nichols (1998), this study found children with NVLD to have a hard time processing dynamic social stimuli. Attending to multiple and discordant sensory cues was challenging for child participants. Primary caretakers and teachers frequently discussed the needs of the child at the beginning of the year. Adults tried to identify and implement modifications that would address the specific deficits of the child. Common modifications typically included those targeting processing difficulties. Conversation is another notable problem area for children with NVLD (Rourke, 1989; Semrud-Clikeman & Hynd 1990). Children and adolescents with NVLD usually possess advanced vocabularies. At times a superior vocabulary enhances the child's ability to communicate with adults. However, children with NVLD are inevitably unable to appropriately demonstrate conversational reciprocity. Opportunities to observe and imitate the positive social behaviors of others facilitates the generalization and maintenance of new social abilities (Garfinkle & Schwartz, 2002). Observing good social modeling from parents, teachers, and peers helped children to develop their conversational skills. Adults praised children when they displayed prosocial behaviors in order to increase the likelihood that they would retain and employ these behaviors again.

Those with NVLD lack cognitive flexibility (Harnadek & Rourke, 1994; Petti et al., 2003; Semrud-Clikeman & Hynd 1990). This model illustrates how multidirectional

communication can promote social development in this area. Children and adolescents in this study were found to respond poorly to change, disruptions in their daily routine, and new situations. Children and adults participated in advanced prep to enhance the coping skills of the child and to prepare youth for stressful situations they might come across. Children and adults collaborated to identify situations that were anxiety provoking for the child. Participants then worked together to construct strategies that the child could use to calm themselves down when encountering the taxing situation. Children and adults reviewed when to use these strategies. Reading was a coping skill that was frequently used. Children were able to manage negative emotions, such as anger and anxiety, better with advanced prep. When children were able to contend with their emotions more effectively, or when they had had some time to calm down, they were more likely to engage in successful problem solving or compromise. This finding correlates with the theoretical framework of Halberstadt, Denham, and Dunsmore (2001) which views affect regulation as an important component of social competence.

This study and its resulting model provided much information regarding how youth with NVLD understand and navigate their social interactions. Children and adolescents demonstrated appropriate empathy when they observed someone crying or in physical pain. They did not demonstrate good perspective taking skills. Children and adults often walked through previously occurring events step-by-step in order to better understand the viewpoints of others. During these interactions, the perspectives of the others involved were discussed. When peer conflicts occurred at school, teachers sometimes mediated or monitored reconciliations between the child and their peer. In

these exchanges, child participants were encouraged to express their point of view and to recognize that of others. Child participants could also receive coaching or feedback on their actions and were given opportunities to modify their behavior. Peer communication, conflict, and role playing can lead to improvements in a child's perspective-taking abilities and to decreases in aggression (Burns & Brainerd, 1979). Studies have found that children with NVLD are likely to become withdrawn and sad after negative experiences with their peers (Little, 1993; Rourke & Tsatsanis, 2000). Child-adult communication reviewing peer interactions improved children's perspective taking abilities and their awareness of others. Building the child's capabilities in these areas allows them to potentially have more positive social interactions and to avoid unpleasant peer experiences.

Peer interactions and relationships in the school setting are important because they play a significant role in the social and emotional development of children (Nabuzoka, 2000). This study found that while child participants expressed a desire to have friends they were unable to successfully initiate and maintain friendships. Deficits with conversational reciprocity, cognitive flexibility, and perspective taking severely inhibited their ability to cultivate or sustain peer relationships. Children and adolescents with NVLD have trouble recognizing and following social norms (Johnson, 1987). Due to their inability to appropriately encode social cues they often respond to common social situations with atypical, inappropriate, or immature behaviors. Child participants had difficulty maintaining appropriate personal space from others. They frequently failed to realize when others were annoyed with them and would continue with their irritating

behaviors. Child participants usually had one or two friends. They seldom had friends over to play at their home and when they did they tended to engage in parallel play rather than in dynamic interaction. Children were viewed as remote and aloof at school. They preferred to be alone and rarely interacted with others during unstructured play times. In addition to superior vocabularies, children and adolescents with NVLD often possessed much knowledge on the topics that interested them. Many of the friendships of the children in this study centered on specific interests. Similar interests helped child participants preserve the few friendships they had. This is useful information and indicates that for children with NVLD forming friendships with peers who share similar interests may contribute to longer lasting friendships and provide them with more comfortable relationships where they can test and advance their social skills.

The model, *Multidirectional Communication: A Dynamic Process Contributing to Social Development*, also illustrates how multidirectional communication alleviates anxiety for children, parents, and teachers. Children in this study experienced high degrees of anxiety related to social and academic worries. Children with NVLD were frequently teased and expressed many concerns that others did not like them. Physical education, writing, and math were found to be other sources of stress for child participants. Existing literature suggests that children and adolescents with NVLD will find physical education and writing challenging due to deficits with psychomotor coordination, visual-motor integration, and visual-spatial abilities (Harnadek & Rourke, 1994; Johnson, 1987; Rourke, 1989; Semrud-Clikeman & Hynd 1990). Children with NVLD find math troublesome due to an inability to synthesize information and a lack of

organization (Johnson, 1987). Child fears usually manifested via physical symptoms, such as stomachaches. Older children verbalized more social and academic worries than younger children did. Multidirectional communication created a forum where child participants could share some of their worries. Child participants indicated that this outlet was important to them, and children and adults commonly worked together to problem solve and create coping strategies regarding the areas causing child anxiety. Children and adults reviewed successful coping strategies for the child. Child participants were prompted to use the same coping skills in both the home and school environments. Consistency across settings made it easier for the child to remember and use previously discussed strategies. Multidirectional communication also mitigated adult worries. Parents were often fearful that the specific weaknesses of the child would be overlooked. Sometimes teachers were apprehensive that they might not be able to effectively address the needs of the child. Explicit communication across parties about the current needs of the child and the best ways to address these decreased adult misgivings.

The model, *Multidirectional Communication: A Dynamic Process Contributing to Social Development*, maintains that children, parents, and teachers engage in various modes of multidirectional communication, including teaching, coaching, social modeling, role-playing, advanced prep, and walking through. As a result of such interactions, children in this study enriched their coping strategies, problem solving abilities, awareness of others, and understanding of social norms and self. Children were better able to recognize and label their feelings, regulate their emotions, manage their anger,

identify and implement coping strategies, and compromise. Continuous communication across parties also improved the social skills and perspective taking capabilities of the child. Youth with good problem solving and coping abilities are more likely to demonstrate positive self-esteem and self-confidence (Berk, 1998). Those with NVLD commonly experience internalizing disorders, loneliness, peer ostracization, and victimization (Little, 1993; Pelleitier, Ahmad & Rourke, 2001; Rourke, Young, & Leenaars, 1989). This study and its resulting model provides primary caretakers, educators, and researchers with valuable insight regarding the needs of the child, multidirectional communication, and social development. It is hoped that this information will be used to facilitate the social growth of children and adolescents with NVLD, as well as help them avoid the aforementioned negative life outcomes.

### **Limitations of the Study**

One limitation of this study was that it employed a fairly homogenous sample with regards to race, ethnicity, gender, and family structure. Eleven of the 12 child participants were Caucasian. Nine of the 12 children in this study were male. Eleven children came from intact families. All child participants had good cognitive abilities and English was their first language. These demographics should be taken into account and may limit the applicability of these findings to others with NVLD. Male and female populations have been found to exhibit NVLD equally (Pennington, 1991; Rourke, 1989). This study was comprised of three females and nine males. Thus, the perspectives of female children with NVLD may be underrepresented in this research.

Additionally, subjects in this study were drawn from a clinically referred population. All child participants previously received a neuropsychological evaluation. This evaluation may have influenced some of the findings of the study. As part of this neuropsychological assessment, primary caretakers may have received more education about NVLD characteristics and strategies to help their child than others. Furthermore, all parents chose to inform teachers about their child's specific deficits at the beginning of the year. Subsequently, these results may not be generalizable to children identified through a more limited assessment or to those whose teachers were not immediately educated about their strengths and weaknesses. Lastly, it is possible that children in this study represent a more severe end of the diagnostic spectrum due to the fact that they were clinically referred by parents and teachers for exhibiting significant problems and as in need of assessment and intervention.

Other limitations stem from the fact that children and adults in this study may have been more engaged with one another than those in the general population. Adult participants, particularly primary caretakers, expressed a strong desire to participate in this study. Three parents in this study were employed full-time out of the home. Four parents had part-time employment out of the home and five parents were not employed out of the home. All parents indicated that they were heavily involved in the life of their child. Consequently, this sample may be more representative of a population with greater resources and involvement than others. These characteristics may have influenced the way that participants interacted with one another and the information that they provided this investigator with.

Another limitation of this study was that there was one researcher, data collector, data analyst, and writer. Although numerous measures were taken in order to minimize bias, my thorough involvement may have influenced the objectivity of the research. Future similar studies may wish to assign several people to varying roles. Also, this study was time consuming for one investigator. Conducting, transcribing, coding, and analyzing 36 interviews was a lengthy process. Limited resources prevented me from involving others, but those replicating this study may wish to include more persons to conduct interviews, transcribe, and code.

### **Implications for Research and Practice**

The findings of this study imply that future social skills interventions for children and adolescents with NVLD would benefit greatly by including parents and teachers. This study found children with NVLD to be in need of education regarding emotion labeling, the encoding of social cues, cognitive flexibility, perspective taking, and peer relationships. Many current social skills interventions that do include primary caretakers incorporate “homework” or aspects that children and adults can work on at home. By providing the child with learning opportunities and role-playing and social modeling for the child in the home environment, youth would be more likely to learn the target skills. Social skills interventions could: give parents instruction on skills to practice with the child at home, include a corresponding parent manual, and invite parents to attend intervention sessions or ongoing workshops. Interventions could supply parents with more knowledge about its current aims and encourage them to discuss correlating goals and strategies with their child. Parent training groups and children, parent, and teacher

manuals could also be developed. This study provided many details about the unique needs of children and adolescents with NVLD, their manifestations, and when they were likely to occur. With such description, future social intervention programs should be able to better target the specific limitations of the child.

This study found child-teacher communication to offer original opportunities for the social development of the child. Subsequently, child-teacher communication would be a useful resource for future social skills interventions. Teachers were frequently able to observe children in group settings and could communicate information to them and others about their peer interactions. Coaching and walking through real life altercations allowed children and teachers to practice previously reviewed problem solving and coping strategies while enhancing the child's social skills, self-expression abilities, perspective taking abilities, and awareness of others. Adult collaboration is another way of ensuring that children have a greater chance for success. Landreth (2002) advocates that children will experience more advantageous outcomes in supportive, positive environments. Intervention leaders could collaborate with parents and teachers to generalize skills across the home and school environments.

Children in this study particularly built their skills of eye contact and compromise by engaging in teaching and coaching. In these instances, children were able to draw on their assets of rote memory to help them develop better social skills. This study found that employing pre-scripted verbal responses did not work well for child participants in dynamic situations, such as when approaching or interacting with peers. On the other hand, this study did find that when children recognized common antecedents they were

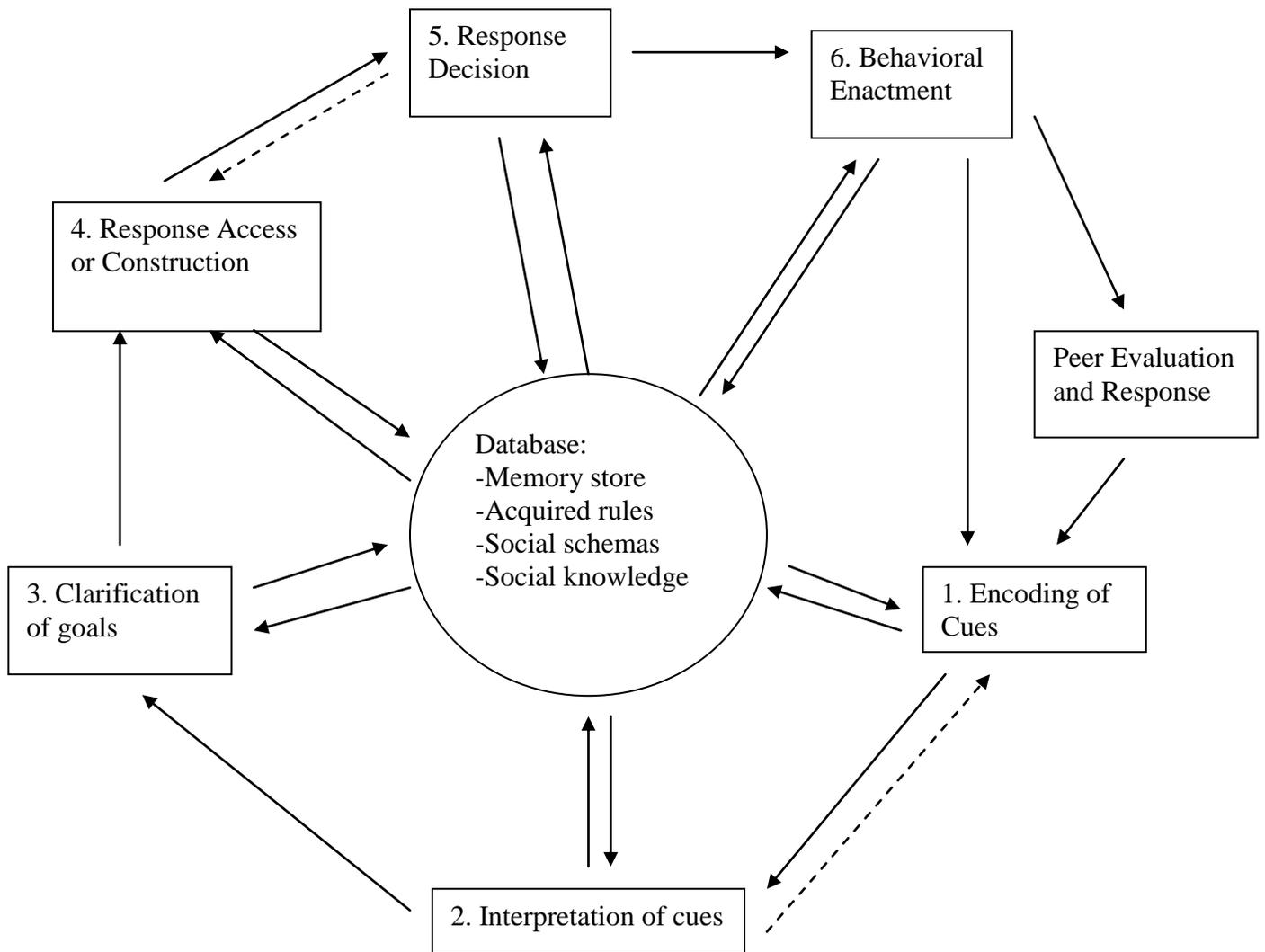
able to enact and follow a previously determined plan of action. Children and adults identified specificities for the child to anticipate. Two scenarios children tended to look out for were 1) when they were getting very emotional and 2) when a friend wanted to do something different than what they wanted to do. Children learned that in these situations they needed to employ a strategy for cooling down or compromise. Utilizing these strategies helped children avoid melt downs and have smoother peer interactions. These strategies may not be as successful for adolescents, because as children grow older social situations will become more complex. However, these findings may help younger children with NVLD avoid some negative peer interactions. Social skill interventions should incorporate these findings to better address the specific needs of young children with NVLD.

Child participants especially expressed social and academic worries. These anxieties commonly manifested via stomach problems. Multidirectional communication created an outlet where children were able to relieve this burden and practice self-expression, emotion labeling, and conversational skills. This is a good element for parents, educators, and researchers to note. This area could also benefit from further research. This study sought to investigate a broad amount of information about how children process social information. It would be interesting to complete multiple interviews with more children and adolescents with NVLD to observe if they have similar worries and to find out if these anxieties stem from specific interaction patterns. Explicitly addressing a child's perceptions of their worries may decrease the amount of

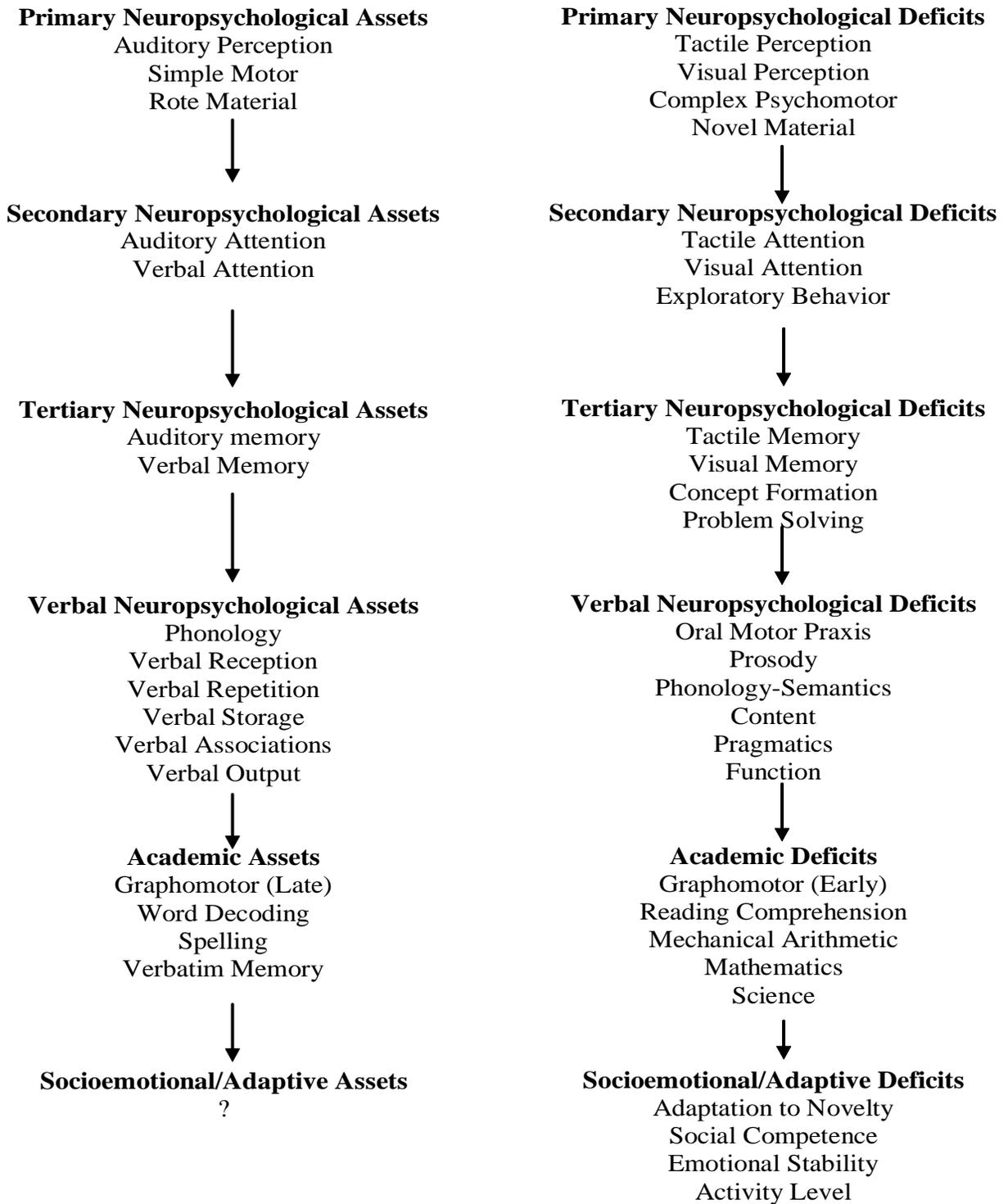
internalizing disorders and negative feelings they experience and lead them to be less likely to experience detrimental life outcomes.

There is currently no formal diagnostic criteria for determining NVLD. This lack of global diagnostic criteria hinders the successful identification and treatment of this population. Discrepancies regarding existing acknowledged criteria have contributed to the under-identification of those with NVLD (Pennington, 1991). Extensive research should be conducted in order to conclusively define a set of characteristics and diagnostic guidelines. Additionally, many studies that include children with NVLD aim to evaluate those with LD. The individual traits of specific LD subtypes should not be overlooked. More studies that take into account these variations and discrepancies are needed. Also, little research has been conducted to examine the perceptions of children with NVLD. Further investigation is necessary to better understand the perspective of children with NVLD and their perception of their needs. Future studies could focus on developing this area of research. In sum, this study, by exploring the perspectives of children and adolescents with NVLD and those of their parents and teachers, provided much new information regarding the specific needs of youth with NVLD, their communication with others, and their social development. However, a more thorough understanding of NVLD is still needed. The results of this study contribute to this goal and inform future directions of research, as well as those with NVLD, primary caretakers, educators, clinicians, and scholars.

Appendix A. Crick and Dodge's (1994) Information Processing Model of Social Competence



Appendix B. Rourke's (2002) Model of NVLD



## Appendix C. Interview Guides

### **Child interview:**

Hello, thank you for meeting with me. My name is Ayiesha. (Researcher shakes hands with child participant. Child participant introduced him/herself. If they did not, the researcher prompted them to. Researcher provided an introduction to the study, issued an assent form and reviewed confidentiality).

\_\_\_\_\_ that is a very nice \_\_\_\_\_. (Researcher complimented the interviewee while smiling).

### Conversational Openers:

- I'm really interested in learning what you think about \_\_\_\_\_
- How is \_\_\_\_\_ for you?

### General Interview Areas:

- Prosody (various emotions)
- Facial Expressions (various emotions)
- Eye Contact (inappropriate vs. appropriate)
- Body Language
- Gestures
- Emotion Expression
- Empathy
- Perspective Taking
- Specific Social Situations (i.e. Greetings, Sorry, Receiving Compliments, Teasing)
- Peer Relationships
- Activities/Social Interaction

- Difficulties/Strengths

**End:**

Is there anything else that you would like to share with me?

Do you have any questions for me?

(Researcher briefly summarized interview to interviewee).

\_\_\_\_\_, thank you very much for speaking with me today. I enjoyed our conversation (researcher smiled at interviewee).

### **Primary Caretaker and Teacher Interview:**

Hello \_\_\_\_\_, thank you for meeting with me. My name is Ayiesha Cottrell. (Researcher provided an introduction to the study, issued a consent form, and reviewed confidentiality). I'm interested in learning more about how \_\_\_\_\_ interacts with others. How does \_\_\_\_\_ interact with others?

### **General Interview Areas:**

- Prosody (various emotions)
- Facial Expressions (various emotions)
- Eye Contact (inappropriate vs. appropriate)
- Body Language
- Gestures
- Emotion Expression
- Empathy
- Perspective Taking
- Specific Social Situations (i.e. Greetings, Sorry, Receiving Compliments, Teasing)
- Peer Relationships
- Activities/Social Interaction
- Difficulties/Strengths

### **End:**

Is there anything else that you would like to share with me?

Do you have any questions for me?

(Researcher briefly summarized interview to interviewee).

## Appendix D. Interview Questions

### **Child Interview:**

#### **Exercises (facial expressions, body language, prosody)**

What kinds of things make you happy?  
What do you do when you feel happy?  
How would you show me that you are happy?  
What kinds of things make you sad?  
What do you do when you feel sad?  
How would you show me that you are sad?  
What kinds of things make you angry?  
What do you do when you feel angry?  
How would you show me that you are angry?  
What kinds of things make you afraid?  
What do you do when you feel afraid?  
How would you show me that you are afraid?  
What do you do when you feel nervous?  
How would you show me that you are nervous?  
What do you do when you feel embarrassed?  
How would you show me that you are embarrassed?

What do you do when you meet someone for the first time?

What do you do when you want someone to know that you are sorry?  
What do you do when someone tells you that they are sorry?

What does “it’s raining cats and dogs” mean?  
What does “feeling under the weather” mean?  
What does “hot under the collar” mean?

#### **Point of view, scenario interpretation:**

When someone is crying how do you think they feel?  
What would you do if a friend was crying?  
When someone is yelling (shouting) how do you think they feel?  
How do you feel when someone yells at you?

What do you do?

When someone is laughing how do you think they feel?

How do you feel when someone gives you a compliment?

What do you do?

If you broke your friends favorite toy how would you feel?

What would you do? (How would you show this)?

When 3 friends are playing together and you want to join, what do you do?

If 3 friends are playing together and one asks you to join, what do you do?

If you are telling a story and someone interrupts you, how do you feel?

What do you do?

How do you know when someone else is angry?

How do you know when someone else is happy?

How do you know when someone else is sad?

How do you know when someone else is nervous?

How do you know when someone else is embarrassed?

### **Peer Relationships:**

How many friends do you have?

How old are these friends?

How did you meet them?

What do you like to do with these friends?

What do you like to do with just one of these friends?

With many of them?

Is it easy, medium, or hard for you to make friends?

Do other kids ever do or say things that are not very nice to you?

How do you feel?

What do you do?

### **Activities/Family Relationships:**

Do you participate in any after school activities, groups, or organizations?

What do you participate in?

What do you do in these groups?

What do you like to do in your free time alone?

What do you like to do with family members?

Who is in your family?

What is spending time like with each of them?

What are the good times like?  
The bad times?

**School:**

What is school like for you?  
What do you do at school with your friends?  
What do you like about school?  
What do you dislike?

**End:**

Is there anything else that you would like to share with me?  
Do you have any questions for me?

## **Primary Caretaker Interview:**

### **Introduction questions:**

Please describe a social interaction with \_\_\_\_\_.

How does \_\_\_\_ interpret social or emotional cues?

Describe what this looks like.

### **Prosody:**

Describe how \_\_\_\_\_ interprets the voice tones of others.

How does your child attend to voice tones displaying:

- Happiness
- Sadness
- Anger

What voice tones does \_\_\_\_ easily interpret?

Describe what this looks like.

What voice tones does \_\_\_\_ have difficulty interpreting?

Describe what this looks like.

How would \_\_\_\_\_ respond to the phrase:

“it’s raining cats and dogs”

“feeling under the weather”

“hot under the collar”

### **Facial Expression:**

Describe how \_\_\_\_\_ interprets the facial expressions of others.

How does your child attend to facial expressions displaying:

- Happiness
- Sadness
- Anger

What facial expressions does \_\_\_\_ easily interpret?

Describe what this looks like.

What facial expressions does \_\_\_\_ have difficulty interpreting?

Describe what this looks like.

Describe how \_\_\_\_\_ attends to eye contact.

How does \_\_\_\_ make eye contact?

Tell me about the situations in which \_\_\_\_\_ does make eye contact.

How does \_\_\_\_ make eye contact in situations where eye contact is appropriate? (i.e. when speaking to someone, when greeting someone)

Tell me about \_\_\_\_'s use of particular facial expressions.

How does \_\_\_\_ use these facial expressions appropriately?

Tell me about \_\_\_\_'s use of particular facial expressions inappropriately.

### **Body Language:**

Describe how \_\_\_\_\_ interprets the body postures of others.

How does your child attend to body language displaying:

- Happiness
- Sadness
- Anger

What body language does \_\_\_\_ easily interpret?

Describe what this looks like.

What body language does \_\_\_\_ have difficulty interpreting?

Describe what this looks like.

Describe \_\_\_\_'s use of body posture.

Describe how \_\_\_\_ uses appropriate body posture for appropriate situations.

Describe how \_\_\_\_ does not use appropriate body posture for appropriate situations.

How does \_\_\_\_ attend to gestures during conversations?

How does your child react when someone greets them?

How does your child greet someone?

How does your child express "I am sorry"?

What kinds of things make \_\_\_\_ happy?

What does \_\_\_\_ do when \_\_\_\_ feels happy?

What kinds of things make \_\_\_\_ sad?

What does \_\_\_\_ do when \_\_\_\_ feels sad?

What kinds of things make \_\_\_\_ angry?

What does \_\_\_\_ do when \_\_\_\_ feels angry?

What kinds of things make \_\_\_\_ afraid?

What does \_\_\_\_ do when \_\_\_\_ feels afraid?

How does \_\_\_\_ react when \_\_\_\_ is nervous?

How does \_\_\_\_ react when \_\_\_\_ is embarrassed?

How well does \_\_\_ learn things?

How well does \_\_\_ seem to understand things that are said to \_\_\_?

How does \_\_\_ react when \_\_\_ is faced with a difficult task?

How does \_\_\_ attend to sensory cues (such as auditory, visual, etc.) that don't match?

### **Social Situations:**

Describe what it is like when \_\_\_ properly interprets the social actions of others.

Describe what it is like when \_\_\_ does not properly interpret the social actions of others.

Describe \_\_\_'s social strengths.

Describe \_\_\_'s social weaknesses.

In comparison to others the same age as \_\_\_\_, how would you compare \_\_\_'s social interactions?

Emotional expressions?

How does \_\_\_ react when confronted with a new or unusual social situation?

Describe \_\_\_'s ability to take the viewpoint of others.

Describe \_\_\_'s ability to attend to the feelings of others.

Describe a situation in which \_\_\_ demonstrated empathy (understanding, compassion).

Describe what a typical conversation with \_\_\_ is like.

How does \_\_\_ exhibit appropriate social behaviors?

How does \_\_\_ react to praise or compliments?

How does \_\_\_ react to criticism?

### **Peer Relationships:**

Does \_\_\_ express interest in seeking friendships?

What does \_\_\_ do when he wishes to initiate friendship?

How many friends does \_\_\_ have?

What ages are these friends?

Describe what \_\_\_'s interactions are typically like with these friends.

Describe \_\_\_'s interactions with peers of the opposite sex.

How does \_\_\_ interact with peers one on one?

How does \_\_\_ interact with peers in large groups?

How does \_\_\_ react to teasing?

**Activities/Family Relationships:**

What does \_\_\_ like to do in his spare time?

What does \_\_\_ like to do alone?

With friends?

With family members?

What types of things or activities does \_\_\_ like to do the least?

Describe \_\_\_'s participation in activities, groups, or organizations.

How does \_\_\_ get along with you, and other family members?

What are the good times like with each of you?

The bad times?

**End:**

Is there any other information I should know about your child?

Is there anything else that you would like to share with me?

Do you have any questions for me?

## **Teacher Interview:**

### **Introduction Questions:**

How long have you known \_\_\_\_\_?

What subjects do you see \_\_\_\_\_ for?

How many hours a day do you see \_\_\_\_\_ for?

Please describe a social interaction with \_\_\_\_\_.

How does \_\_\_\_\_ interpret social or emotional cues?

Describe what this looks like.

### **Prosody:**

Describe how \_\_\_\_\_ interprets the voice tone of others.

How does \_\_\_\_\_ attend to voice tones displaying:

- Happiness
- Sadness
- Anger

What voice tones does \_\_\_\_\_ easily interpret?

Describe what this looks like.

What voice tones does \_\_\_\_\_ have difficulty interpreting?

Describe what this looks like.

Describe how \_\_\_\_\_ would respond to phrases such as:

“it’s raining cats and dogs”

“feeling under the weather”

“hot under the collar”

Please describe a few phrases \_\_\_\_\_ has difficulty with.

Describe what this looks like.

### **Facial Expression:**

Describe how \_\_\_\_\_ interprets the facial expressions of others.

How does \_\_\_\_\_ attend to facial expressions displaying:

- Happiness
- Sadness
- Anger

What facial expressions does \_\_\_\_\_ easily interpret?

Describe what this looks like.

What facial expressions does \_\_\_\_\_ have difficulty interpreting?

Describe what this looks like.

Describe how \_\_\_\_\_ attends to eye contact.

How does \_\_\_\_ make eye contact?

Tell me about the situations in which \_\_\_\_\_ does make eye contact.

How does \_\_\_\_ make eye contact in situations where eye contact is appropriate? (i.e. when speaking to someone, when greeting someone)

Tell me about \_\_\_\_'s use of particular facial expressions.

How does \_\_\_\_ use these facial expressions appropriately?

Tell me about \_\_\_\_'s use of particular facial expressions inappropriately.

### **Body Language:**

Describe how \_\_\_\_\_ interprets the body postures of others.

How does \_\_\_\_ attend to body language displaying:

- Happiness
- Sadness
- Anger

What body language does \_\_\_\_ easily interpret?

Describe what this looks like.

What body language does \_\_\_\_ have difficulty interpreting?

Describe what this looks like.

Describe \_\_\_\_'s use of body posture.

Describe how \_\_\_\_ uses appropriate body posture for appropriate situations.

Describe how \_\_\_\_ does not use appropriate body posture for appropriate situations.

How does \_\_\_\_ attend to gestures during conversations?

How does \_\_\_\_ react when someone greets them?

How does \_\_\_\_ greet someone?

How does \_\_\_\_ express "I am sorry"?

What kinds of things make \_\_\_\_ happy?

What does \_\_\_\_ do when \_\_\_\_ feels happy?

What kinds of things make \_\_\_\_ sad?

What does \_\_\_\_ do when \_\_\_\_ feels sad?

What kinds of things make \_\_\_\_ angry?

What does \_\_\_\_ do when \_\_\_\_ feels angry?

What kinds of things make \_\_\_ afraid?  
What does \_\_\_ do when \_\_\_ feels afraid?

How does \_\_\_ react when \_\_\_ is nervous?  
How does \_\_\_ react when \_\_\_ is embarrassed?

How well does \_\_\_ learn things?  
How well does \_\_\_ seem to understand things that are said to \_\_\_?  
How does \_\_\_ react when \_\_\_ is faced with a difficult task?

How does \_\_\_ attend to sensory cues (such as auditory, visual, etc.) that don't match?

### **Social Situations:**

Describe what it is like when \_\_\_ properly interprets the social actions of others.  
Describe what it is like when \_\_\_ does not properly interpret the social actions of others.

Describe \_\_\_'s social strengths.  
Describe \_\_\_'s social weaknesses.  
In comparison to others the same age as \_\_\_\_, how would you compare \_\_\_'s social interactions?  
Emotional expressions?  
How does \_\_\_ react when confronted with a new or unusual social situation?

Describe \_\_\_'s ability to take the viewpoint of others.  
Describe \_\_\_'s ability to attend to the feelings of others.  
Describe a situation in which \_\_\_ demonstrated empathy (understanding, compassion).  
Describe what a typical conversation with \_\_\_ is like.

How does \_\_\_ exhibit appropriate social behaviors?  
How does \_\_\_ react to praise or compliments?  
How does \_\_\_ react to criticism?

### **Classroom Setting:**

How many children are in your class?  
Describe a typical day in your classroom.  
Does \_\_\_ receive any special concessions or arrangements?  
How does \_\_\_ react to your different types of instruction?

Explicit instruction-lectures?  
Teacher mediated instruction?  
Peer mediated instruction?  
Whole group activities?  
Small group work/activities?  
Individual work/activities?

**Activities:**

What does \_\_\_ like to do in \_\_\_'s spare time at school?  
What is \_\_\_'s interaction like with other students?  
During unstructured play?  
During structured play?  
What does \_\_\_ like to do alone?  
With friends?  
What types of things or activities does \_\_\_ like to do the least?  
Describe \_\_\_'s participation in activities, groups, or organizations.  
How does \_\_\_ get along with you?  
What are the good times like with each of you?  
The bad times?

**Peer Relationships:**

Does \_\_\_ express interest in seeking friendships?  
What does \_\_\_ do when he wishes to initiate friendship?  
How many friends does \_\_\_ have?  
What ages are these friends?  
Describe what \_\_\_'s interactions are typically like with these friends.  
Describe \_\_\_'s interactions with peers of the opposite sex.  
How does \_\_\_ interact with peers one on one?  
How does \_\_\_ interact with peers in large groups?  
How does \_\_\_ react to teasing?

**End:**

Is there any other information I should know about \_\_\_?  
Is there anything else that you would like to share with me?  
Do you have any questions for me?

## Appendix E. Examples of Interviews

### **Child Interview** (Excerpt of Interview with Alex)

I: What types of things do you like to do for fun?

S: Basketball. Swim. Roller coasters. I'm going to go to Mexico.

I: Have you been to Mexico before?

S: Two times.

I: What do you like to do when you're in Mexico?

S: Go swimming, we're supposed to go on a cruise. I really like swimming. I have two, large, immense inflatable rafts that I use to haul things.

I: That sounds like a lot of fun.

S: We went snorkeling there. The first time we went to Mexico, we snorkeled for a long time. We went out on a boat with snorkeling gear and sometimes I would take my rafts, but mostly I wouldn't because there wasn't always enough room. But we put our snorkeling gear on and swum around looking at the fish and the coral reefs. There are thousands of fish and if you're lucky you get to see other fish or amphibians, like eels or sting rays. I would feed the fish. Once we were feeding the fish and then the fish tried to bite me.

I: What other things do you like to do in the summer? What do you like to do with friends?

S: I don't usually have friends. I don't usually have things I do with them. I went to a party right after school was out, but that was pretty much it.

I: What do you like to do by yourself?

S: Play basketball, ride my bicycle around the cul-de-sac in my driveway.

I: When you are in school, what are your favorite things about school?

S: I like lunch and I like recess sometimes.

I: What do you do at recess?

S: I play tetherball or I play basketball.

I: What are your least favorite things about school?

S: Reading, writing, math. We spend a lot of time in school coming up with ideas to write about. I really don't like it. It's stressful and I'm really not good at math.

I: Do you do any afterschool activities?

S: I always usually have something afterschool. During the school year I was on different swim teams, so I had to go home and get ready for that.

I: How many friends do you have?

S: I'm not sure. I don't really have a lot of friends. At school I'm usually friends with whoever I'm sitting by.

I: How do you meet your friends?

S: Most of them I've met through school.

I: How old are your friends?

S: They're all around my age, but they're all shorter than me. I kind of like it because I like being taller than everybody, because then I'm good at some things that height is needed for, but I kind of don't like it because it makes me feel too tall sometimes.

I: Is it usually easy, medium, or hard for you to make friends?

S: It's really easy.

I: What do you do when you want to make friends?

S: Talk to them.

I: If three of your friends were playing and you wanted to join, what would you do?

S: I would ask them if I could play and if they said, "Yes," I would play with them.

I: If three friends were playing together and one asked you to join what would you do?

S: I don't know. That doesn't usually happen to me and I'm not sure what I would do in that situation.

I: Do other kids ever do or say things that are not very nice to you?

S: My dad does. My dad might tease me. He'll joke with me. My dad will do it for fun, but other people might do it to be mean to me and that makes me feel bad. Some kids are too competitive and some are just mean people. They think that they're better than everyone and smarter than everyone else and they are really mean to others.

I: How do you feel when someone gives you a compliment?

S: It makes me feel really good.

I: What do you do when someone gives you a compliment?

S: I say thank you.

I: If you're telling a story and someone interrupts you, how do you feel?

S: I just don't let it bother me.

I: If you broke your friend's favorite toy, how would you feel?

S: I would feel really bad.

I: What would you do?

S: I would offer to buy them a new one.

I: What do you do if you're with a friend and they want to play a game that's different than the game that you want to play?

S: I probably would just do what they want to do.

I: When someone is crying how do you think that they feel?

S: I think that they feel bad.

I: When someone is yelling or shouting, how do you think they feel?

S: Kind of mad.

I: When someone is laughing, how do you think they feel?

S: I think that they feel happy. I have this one kid in my class who just likes to laugh cause he think things are funny.

I: How do you know when someone is angry?

S: Usually when people are angry at my school they just walk away to be away from everybody.

I: How do you know when someone is happy?

S: Well, they might be jumping around or smiling.

I: How do you know when someone is sad?

S: They are usually crying.

I: How can you tell when someone is nervous?

S: They don't want to do anything. They're just walking around and they don't want to talk to anyone.

I: What kinds of things make you happy?

S: Well, my dog.

I: What do you like to do with your dog?

S: I like to mess around with my dog and I like to just pet my cat. She's not like most cats where she's happy all the time.

I: What do you do when you feel happy?

S: When I feel happy, I'll just run around and start laughing.

I: How would you show me that you're happy?

S: I would probably smile.

I: Show me what you would do when you are happy.

S: (Smiles).

I: What kinds of things make you sad?

S: I can't really think of anything right now.

I: What do you do when you are sad?

S: I usually go in my room and close my doors and lay around and I like going there for about 30 minutes at a time.

I: How would you show me that you're sad?

S: I don't really know how to show it. I'm not really very good at showing emotions.

I: What types of things make you angry?

S: When my brother makes me mad.

I: What do you do when you're mad?

S: I usually do the same thing that I do when I am sad, I go in my room.

I: How would someone else know the difference between when you are sad or mad?

S: Well, my parents do. They are probably the only ones. Probably the only ones who care. Because they'll knock on the door and they'll asked me what's wrong. So they'll find out if I'm sad or mad, because it's hard for me to show it sometimes

I: How would you show me that you are angry?

S: I don't know. I think I'm kind of happy a lot. I don't really get mad or sad.

I: What kinds of things make you afraid?

S: Scary movies.

I: What do you do when you are afraid?

S: When I'm afraid I usually just cover my eyes. Or go to my room.

I: What do you do when you feel nervous?

S: I talk a lot.

I: What do you do when you meet someone for the first time?

S: I try to make friends with them and see what they like and stuff and if it's something that I like.

**Parent Interview** (Excerpt of Interview with Kevin's Mother)

S: He has only one single friend and he's struggling tremendously with wanting to have additional friends, but most typical peers his age bother him from the language aspect and they're maturing more rapidly than Kevin, so Kevin is finding it difficult to make accommodations for others.

I: When you say language aspect, what do you mean?

S: Well, cussing, using sexual, suggestive language. He finds all of it very distasteful and if someone exhibits that type of behavior then he wants absolutely nothing to do with them and he marks them off his list. He has a very high expectation of what a friend should be and no one really fits into his criteria. He does very well with adults and he does very well with younger children.

I: Do you have any thoughts on why he does better with older or younger people?

S: I think that with those who are younger he feels nurturing and he feels that he has something to offer, and I think that with adults, they see a broader picture of Kevin's abilities and they make more accommodations for him, so he feels more comfortable and does better in those interactions

I: Does Kevin express interest in seeking friendships?

S: You know, he does. We're experiencing that right now, because Thomas and I have been discussing with him heavily the fact that he needs to broaden his horizon to include a larger friendship base, so that when that one friend is not available, one, Kevin doesn't feel disappointed, and two, it doesn't put the burden of that full friendship on one person, because that's a lot for someone, especially when that person doesn't share many of the commonalities that he does. We've been asking him to pick two to three people that he feels that he could meet with, that have some interests that he does. He's struggling with it, yet he understands the need for it. For example, when a friend was over, Kevin accidentally did something on this friend's gaming system, and instead of asking questions, Kevin continued doing whatever it was, because he didn't want his friend to know that he didn't know what to do. He was afraid it would cost him the friendship. He said, "All I have now is my puppy and my books," and we explained to him, "No, your

friendship base can be as large as you want it to be, but you have to be willing to step outside that comfort zone.” We're working really hard on exploring what areas he might be able to do that with.

I: How has that been working so far?

S: We haven't made a tremendous amount of progress, but Kevin has an afterschool social group and I have sent out an email to the lady that runs the group asking her to forward it to the parents that participate in the group and I'm going to try to get the kids together that are in that group. There's only six kids I think, and it's people that he's familiar with. As long as I plan something structured, because for Kevin it must be structured.

I: What happens if something's unstructured versus when it's structured?

S: He used to only be able to have structured activities. It used to be that we'd have outbursts. But through coaching he knows to remove himself from the situation and use his coping strategies. He'll go to his room sometimes or he'll turn to reading to calm down. He takes his book pretty much everywhere.

I: You mentioned that he has one friend, can you please describe what his interactions are like with this friend?

S: Well, his actual interactions are pretty sparse. His friend doesn't usually come over and when he does they usually play video games or do something that's more side by side rather than interactive.

I: What does Kevin do if his friend wants to do something different than what he wants to do?

S: Well, it will depend on how long the friend's been here. Typically he's gotten much better. He will attempt to please that friend and try to go along with whatever the person wants to do. If he's too tired, it's almost as if the world closes off and he doesn't hear any auditory commentary. Before a friend comes over, we'll typically go over what we might expect from the encounter. We'll talk about the things we can do with that friend while

they're here. We'll also talk about what to do if the friend has something else that they want to do.

I: How does he react to teasing?

S: Bullying? We've had several incidences of that this year. We've really been working on that and other skills. It can be really stressful for him and he'll come home in tears so we're working together to try to stop that. We now have worked it out that Kevin is asked during his day, "On a scale, zero percent to one hundred percent, with one hundred percent being the worst possible day ever, how is your day going?" So now the school is much better able to track where he's derailing and we can encourage him to do something to stop that from happening.

I: How does he react to praise or compliments?

S: He does very well. That's been a very wonderful thing that he takes that. He received student spotlights for being respectful within his community and it's been tremendous. And we've worked very hard to make sure that we recognize all the positive things. I always try to make sure that we end the day on a positive note, with something that he's accomplished and that he should be as proud of as we are proud of.

I: How does he react to criticism?

S: It depends on the situation. There is the general world of thought and then there's Kevin's world of thought. Sometimes he hears only what he wants to hear.

I: How does he react to new or unusual situations?

S: It depends if it's something that's going to interest him. If it's something that he will find unique or interesting, he's okay. A lot of times now, if we go somewhere, I have to stay within a general range. If it's a situation where he's uncomfortable, you better not leave him, you better not step outside of the parameters he feels are appropriate. It's like he's got his own book of rules.

I: How would you describe his ability to take the viewpoint of others?

S: It's become better. After the heat of a particular moment or some time has passed, we can go back and analyze certain situations to see how the other person may have been feeling or what may have led to the outcome of something. That accomplishes much more than going over things right away.

I: Please describe a situation when he demonstrated empathy.

S: If he feels that he has done something that has hurt the puppy accidentally or he's done something unkind to another, if he's said something horrible to me or whatnot, he will come up and make amends. It's, "I'm really sorry I said that. I didn't mean for this to happen. How about I kiss your nose and give you..."

I: What type of things does Kevin like to do for fun in his spare time?

S: Reading. He reads anywhere from 2,000 to 3,200 pages a month and he likes to build Legos and he games, but it's usually--the books have become, I think they've taken the place of external friendships and they've opened up a whole new world to him.

I: What types of things does he like to do with family members?

S: We do cards or we play apples to apples or we cook. We do movies. We go to the movies probably at least once if not twice a month and we do family movie night, because that's something that allows them to be able to be in the same room with each other and with others without having to actively participate.

I: How would you describe Kevin's eye contact with others?

S: He's gotten better. There are still times where you have to say, "I need you to look at me." We've taught both the kids so that people feel like you're respecting them, "If you can't look in their eyes, look at their nose, their chin or their ear," and so he's gotten much better at that.

I: How does he interpret the facial expressions of others?

S: He typically thinks that people are displeased more than he thinks people are pleased.

I: Are there any particular facial expressions that he has more trouble interpreting than others?

S: If someone has more of a neutral expression on their face he doesn't have the skills I think at this time to be able to read what the underlying circumstances are, even if you've been talking with him.

I: How does he interpret the voice tones of others?

S: Voice? He has a difficult time with that. His context clues are coming along, but they're not what they should be. He's unable to clearly read a situation if the person isn't demonstrating what he would consider the appropriate facial expressions for that moment. If it's a neutral face and you're humming, instead of thinking that you're having a good day, unless you said, "I'm having a great day," and there's a smile with that, he's going to say, "Oh, are you having a bad day?"

I: Are there any cues that are more easy for him to interpret?

S: If there's laughter, he can understand that. It's the more subtle cues he has trouble with. Neutral is very difficult to read. He'll take neutral as a negative and he's more likely to interpret neutral cues as sadness or anger or something negative.

I: How does he interpret the body language of others?

S: It's still very difficult.

I: Is there some body language that's easier for him to interpret than others?

S: Neutral again is very difficult to read. He will take neutral as a negative. He's more quick to interpret other people's body language than he is his own, I'd be curious to see what his teacher has to say.

I: What is a typical conversation with him like?

S: It's very in depth. It's interesting, especially with his book reading. It used to be that I could keep up with him, but now there's no way I can read his material and do everything

else, but he expects that when we're discussing a book that I should remember those characters and be able to recall everything that he's told me. He's very thorough in topics that he finds interesting. He can be a very engaging person to speak with.

### **Teacher Interview** (Excerpt of Interview with Annabel's Teacher)

I: How many hours a day do you see Annabel for?

S: Annabel was in my home room. I partnered with my team teacher, Brad, and he taught math and science and I taught language arts and social studies. So Annabel was with me for the first part of the day. She was with me any home room activities that we had, parties, assemblies, and anything like that she was always with me. On a day to day basis she would be with me from 8 o'clock in the morning until about 11, and then she would come back to me after lunch for 1 hour, and then she'd go with him for the afternoon, for math and science.

I: What are Annabel's interactions like with others?

S: Well, it changed. In the very beginning of the year, I was informed by her mom that she had had some social issues in the past. This was good, because I really wanted to get to know my students beforehand, just so I would know if there were certain situations that I needed to work on with them or keep a look out for. After speaking with her mom, I knew firsthand that that's where we were going into the school year and that was good, because the whole year I was better prepared and able to be there for her. At the beginning of the year she wouldn't really talk to other kids, at the end of the year she was doing much better.

I: How does Annabel interact with others one-on-one?

S: Annabel was extremely reserved. When you got her talking about something that she really enjoyed, she would give you an earful. She is very intelligent about certain things, when it comes to history and music and when you get her talking about something that she's very interested in. Annabel's vocabulary is so far advanced from her peers, it's fantastic. She blew me away several times.

I: Did she express interest in seeking friendships?

S: At the beginning of the year she did not express any interest whatsoever. She didn't express any interest in me either. She would basically tell me she didn't like her teachers, she doesn't like so and so. She was very blunt, but later she confided in me that she did

really want friends, but that she didn't know how to make them. She put it as one of her goals at school and wrote that she wanted to make more friends, but that she doesn't always know what to do. She wanted to learn how to be better at making friends.

I: How many friends does Annabel have?

S: Honestly, Annabel doesn't really have many friends. There are students that she talks to, but no one she is close with. I see something very special within Annabel, but when it came to her interacting with others, she wouldn't and she would tell me, "I don't want to work with anyone, I want to be alone, so leave me alone." She would tell me that. I would try my hardest to get her to interact with others. We did a lot of group work in my classroom, but she wouldn't work with anyone, no matter who. I tried so many different things. I tried to let her pick who she wanted to work with and tried to work on social skills with her. My students were very turned off by it, I could tell. I mean, they're kids and they would see that she would say, "I don't want to work with them," so they didn't want to work with her. So I started dealing with that and I really tried to keep an eye on it. I always see her playing alone. She eats lunch alone and I don't like that. I don't care who it is, I don't like it. I made a point to go into the cafeteria during their lunch and when she was sitting alone I would gather some of the girls and say, "Let's go sit with Annabel." We'd sit with her and I'd make sure that she used the skills that we'd worked on. I talked to my kids a lot about interacting with each other and taking care of each other and keeping an eye out for one another. Things changed a little more towards the end of the year. I really tried to pull out the best in her, I would have her work on projects and stuff that she was really, really interested in. She started standing up and sharing about the things that she knew and she really blew the class away. Once the other students started to see that side of her, they were into her, and they started wanting to working with Annabel. They started saying things like, "Hey, why don't you come over here and work with us," and she really grew tremendously as a result. At the beginning of the year, I was really worried.

I: Describe how Annabel interacts appropriately with others.

S: Well, she does not always. This year she would say a lot of inappropriate things. I don't think she would think sometimes before she would say things. She would really just blurt things some times that were kind of hurtful. Mom had many talks with her about it, but I don't think Annabel is mean. I just think that she would just blurt things out. She

would think that they were funny, the things she would say. She would try to get a kick out of the kids. She would expect them to laugh.

I: Can you describe this a little for me please?

S: Well, for example, she said towards the end of this school year, her desk is right next to mine and I could hear her and some other kid talking and she said, "Gracie is very large she looks like a giant balloon, isn't that funny?" I don't think that she meant to be mean, but it came across as inappropriate and her peers were not pleased. She started laughing and she was expecting them to laugh, and they said, "Annabel that's not funny," and she said, "Why not? It's true, you know," and they were all like "Annabel," and she goes, "What?" like she didn't see anything wrong with it.

I: Can you please describe Annabel's ability to take the perspective of others?

S: She could not do that very well. She could not do that by herself. If we worked on it together and talked things over between us or with another student, she might be able to, but she really couldn't do that on her own. There were many situations where she could have, but I never saw her do it on her own.

I: Please describe a situation where Annabel demonstrated empathy.

S: When people were hurt she would do that. She would ask them if they were ok or try to help them. If someone was crying or hurt she would react.

I: What are her social interactions like during unstructured play times, like during lunch or on field trips?

S: She didn't really interact with others. She would choose to sit by herself or play alone.

I: How does Annabel interpret the voice tones of others?

S: I think she can have some difficulty. I think it just depends on the time, the situation, because there were times when I was trying to get my point across and any other scholar in my class would have gotten it by tone of voice, but she wouldn't.

I: Are there some voice tones that are easier for her to recognize than others?

S: To be honest with you, I don't think so.

I: Are there any voice tones that you think she has more difficulty with?

S: I think that she knew that I was disappointed in her when I pulled her out in the hallway. I think that's when she knew, but it was more the physical action of me standing up, it wasn't the voice tone. When I was disappointed or a little frustrated, I think the majority of my kids knew, but I don't think she did.

I: How does she interpret the facial expressions of others?

S: I don't think she does. She has a hard time with facial expressions. I think she understands more the physical like I said, standing up, "Let's go outside." If I were to stand in front of her and just stand there and look at her if she wasn't on task and she wasn't doing what she was supposed to, I think she would kind of understand that.

I: How does she interpret the body language of others?

S: I think she understood that sometimes.

I: How did she respond to positive feedback or compliments?

S: She appreciated it. I know that she enjoyed it and I know that she needed that. I think she was very hard on herself, especially when it came to certain subjects, like math. She had a hard time with math this year. I would tell her, "Annabel, look how much you've grown with this subject, look at what you've done." I remember the day that I compared her math benchmark scores. I showed her what she did and I showed her what she got on the very last one. She said, "I still didn't get an A," and I said, "Annabel, but look," and I showed her her progress over the course of the year, and I said, "All you've done is grow, all you've done is go up," and she got the biggest smile on her face. Her eyes got really big and she looked excited. I think if you showed her her progression or showed her whatever she achieved, she really appreciated that.

I: How did she react to criticism?

S: She did not like it. As a teacher I don't want to criticize my kids, but sometimes you need to kind of guide them in a different direction. It would always be about something specific she said that wasn't appropriate but no matter what type of criticism it is, she wouldn't like it. Sometimes she would misinterpret things and think you were criticizing her. When I'm teaching a lesson, I might ask, "What do you think the answer to this is?" and if she got it wrong, I'd say, "That's a nice try Annabel, you're on the right track though, but no, that's not it," and she would cry. She'd get tears in her eyes and she'd get really mad. I'd have to explain to her, "Annabel, I said you were on the right track sweetheart. There were specific answers I was looking for, but you were on the right road." Later, I would go through what I'd said to her with her and what I meant when I said it, so she would see that it wasn't a criticism of her. When I did that she could see that.

I: How would you describe her social strengths and weaknesses?

S: Her social strengths-If you talk with her about something she's really interested in, she can be quite engaging, because she knows a lot and you can really learn from her. I think Annabel's very knowledgeable about many things and if you get her talking about the right thing you can definitely have intelligent interactions with her. Her weaknesses are her physical and social interactions with others. She can be very critical and socially inappropriate a lot of the time and she just doesn't recognize the viewpoints of others. I think she's come a long way this year and I do hope that she doesn't lose that next year. I don't see them getting that one-on-one attention as much, so I'm kind of worried. I hope that she will keep whatever she's learned this year and the friends that she's made.

Appendix F. Observation Form

	Behavior Present	Behavior Not Present	Examples
Greeting			
Eye Contact			
Self Introduction			
Facial Expressions			
Positive			
Negative			
Neutral			
Body Language			
Positive			
Negative			
Neutral			
Prosody			
Positive			
Negative			
Neutral			
Eye Contact			
Appropriate			
Inappropriate			
Length of Time			

Conversation			
Superior Vocabulary			
Tangential			
Rambling/Long-winded			
Redirection Needed			
Preservation on Specific Interests			
Emotion Expression			
Happy			
Sad			
Angry			
Afraid			
Nervous			
Embarrassed			
Other			

## Appendix G. IRB Approval



OFFICE OF RESEARCH SUPPORT  
THE UNIVERSITY OF TEXAS AT AUSTIN

P. O. Box 7426, Austin, Texas 78713 (512) 471-8871 -FAX (512 471-8873)  
North Office Building A, Suite 5.200 (Mail code A3200)

FWA # 00002030

Date: 05/27/09

PI(s): Ayiesha L Cottrell

Department & Mail Code: CURR & INSTRUCT DEPT

Title: Social Competence in Children with NVLD

IRB APPROVAL – IRB Protocol # 2008-05-0093

Dear: Ayiesha L Cottrell

In accordance with Federal Regulations for review of research protocols, the research study listed above has been re-approved for the following period of time:

**Your research study has been re-approved from 05/27/2009 - 05/26/2010** . (expires 12am [midnight] of this date.)

### RESPONSIBILITIES OF PRINCIPAL INVESTIGATOR FOR ONGOING PROTOCOLS:

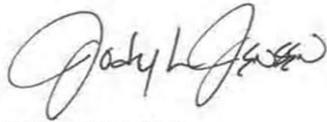
- (1) Report **immediately** to the IRB any unanticipated problems.
- (2) Proposed changes in approved research during the period for which IRB approval cannot be initiated without IRB review and approval, except when necessary to eliminate apparent immediate hazards to the participant. Changes in approved research initiated without IRB review and approval initiated to eliminate apparent immediate hazards to the participant must be promptly reported to the IRB, and reviewed under the unanticipated problems policy to determine whether the change was consistent with ensuring the participants continued welfare.
- (3) Report any significant findings that become known in the course of the research that might affect the willingness of subjects to continue to take part.
- (4) Insure that only persons formally approved by the IRB enroll subjects.
- (5) Use **only** a currently approved consent form (remember approval periods are for 12 months or less).
- (6) **Protect the confidentiality of all persons and personally identifiable data, and train your staff and collaborators on policies and procedures for ensuring the privacy and confidentiality of participants and information.**
- (7) Submit for review and approval by the IRB all modifications to the protocol or consent form(s) prior to the implementation of the change.
- (8) Submit a **Continuing Review Report** for continuing review by the IRB. Federal regulations require **IRB review of on-going projects no less than once a year** (a Continuing Review Report form and a reminder letter will be sent to you 2 months before your expiration date). Please note however, that if you do not receive a reminder from this office about your upcoming continuing review, it is the primary responsibility of the PI not to exceed the expiration date in collection of any information. Finally, it is the responsibility of the PI to submit the Continuing Review Report before the expiration period.

(9) Notify the IRB when the study has been completed and complete the Final Report Form.

(10) Please help us help you by including the above protocol number on all future correspondence relating to this protocol.

Thank you for your help in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Jody L. Jensen". The signature is fluid and cursive, with the first name "Jody" being the most prominent.

Jody L. Jensen, Ph.D.  
Professor  
Chair, Institutional Review Board

## Appendix H. Consent and Assent Forms

### **PARENT AND CHILD CONSENT FORM**

You and your child are invited to participate in a research study. This form provides you with information about the study. The person in charge of this research will also describe this study to you and answer all of your questions. Please read the information below and ask any questions you might have before deciding whether or not to take part. Your participation is entirely voluntary. Your decision to participate and allow your child to participate in this study will not affect your or your child's current or future relationships with The University of Texas at Austin or Austin Neuropsychology, PLLC. If you agree to participate and allow your child to participate, you may discontinue your and his or her participation at any time. To do so simply tell the researcher you wish to stop participation. The researcher will provide you with a copy of this consent for your records.

**The purpose of this study** is to examine how children and adolescents understand communication and social interactions. The interview questions of this study will inquire about how your child interprets voice tones, facial expressions, body language, and social interactions.

**If you agree to be in this study:** You and a teacher of your child will be asked to complete a phone interview. Your child will be asked to complete an in-person interview at Austin Neuropsychology, PLLC.

**Total estimated time to participate is:** Parent/guardian and teacher interviews will last approximately 40 minutes. Child interviews will last approximately 50 minutes. All interviews will be audio-taped. Child interviews will also be video-taped. Additionally, a follow-up telephone call to parent/guardians will occur approximately four months after the full-length interviews have been concluded. Parent/guardian follow up phone calls will last approximately 15 minutes.

#### **Risks** of being in the study

- There are minimal risks involved in this study. There is the possibility of loss of confidentiality. The steps listed below will prevent this. There is no discomfort expected with any interview question and participants may skip a question, stop the interview, or drop out at any time. This study does not provide treatment for participants. Participants with any questions or concerns about potential risks may ask questions now or call the Principal Investigator, Ayiesha Cottrell, at (512) 663-5451.

**Benefits** There are no individual benefits for participating. This research study does not involve treatment. However, you and your child will be contributing to researchers'

better understanding of how youth perceive communication and social interactions.

The **records** of this study will be stored securely and kept confidential. To protect the confidentiality of all participants and their families, all materials will be stored in a locked file cabinet. Names will be removed and participants will be referred to by an identification number assigned by the principal investigator. All computer files containing data will be password protected. The interviews will be audio-taped and/or videotaped. Identifying information will be removed in the data collection process. Audiotapes will be transcribed so that no personally identifying information is on them. Observational data derived from the videotapes will be recorded so that no personally identifying information is on them. Audiotapes and videotapes will be kept in a locked file cabinet and will be listened to or viewed only for research purposes. All audiotapes and videotapes will be destroyed after the data analysis and write up of this study unless you give signed permission allowing their use for educational purposes. The data gathered from this study will be published in the principal investigator's doctoral dissertation and may be used in future publications or scientific meetings. If the results of this research are published or presented at scientific meetings, all identifying information will be removed. Authorized persons from The University of Texas at Austin and members of the Institutional Review Board have the legal right to review your child's research records and will protect the **confidentiality** of those records to the extent permitted by law. All publications will exclude any information that will make it possible to identify you or your child as a subject. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.

**How can you withdraw from this research study and who should you call if you have questions?**

If you wish to withdraw your or your child's participation in this research study for any reason, you should call the Primary Investigator, Ayiesha Cottrell, at (512) 663-5451. Your child can also tell Ayiesha Cottrell in person. You are invited to call Ayiesha Cottrell with any questions, concerns, or complaints about the research. You are free to withdraw your consent and stop participation in this research study at any time without any consequences.

If you have any questions about the study please ask now. If you have questions later or want additional information please call the researcher conducting the study.

Additionally, if you have questions about your child's rights as a research participant, complaints, concerns, or questions about the research please contact please contact Jodi Jensen, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects at (512) 232-2685 or the Office of Research Support and Compliance at (512) 471-8871.

You may keep the copy of this consent form.

You are making a decision about allowing yourself and your child to participate in this study. Your signature below indicates that you have read the material above and have agreed to participate and allow your child to participate in this study. If you later decide that you wish to withdraw your permission for you and your child to participate in the study, simply tell me. You may discontinue participation at any time.

---

Printed Name of Child

---

Signature of Parent(s) or Legal Guardian

---

Date

---

Signature of Investigator

---

Date

## CHILD ASSENT FORM

### **Title: Social Competence in Children and Adolescents**

I agree to be in a study about how children think about and respond to feelings and communication. This study was explained to my parents or guardian and they said that I could be in it. Information about what I say and do in this study will not be given to anyone else.

The purpose of this study is to understand how children share their feelings and thoughts with others. In this study I understand that I will be asked questions about my feelings, friendships, and communication skills.

Writing my name on this page means that the page was read to me and that I agree to be in the study. I understand what will be needed from me. I also understand that I can stop participating in the study at anytime, all I need to do is tell the person in charge and I will no longer be included in the study.

---

Child's Signature

---

Date

---

Signature of Investigator

---

Date

## TEACHER CONSENT FORM

A child in your class and one of their parent/guardians have been invited and agreed to participate in a study investigating social perception. This form provides you with information about the study. The person in charge of this research will also describe this study to you and answer all of your questions. Please read the information below and ask any questions you might have before deciding whether or not to take part. Your participation is entirely voluntary. Your decision to participate in this study will not affect your future relationships with The University of Texas at Austin or Austin Neuropsychology, PLLC. If you agree to participate, you may discontinue your participation at any time. To do so simply tell the researcher you wish to stop participation. The researcher will provide you with a copy of this consent for your records.

**The purpose of this study** is to examine how children and adolescents understand communication and social interactions. The interview questions of this study will inquire about how a child in your class interprets voice tones, facial expressions, body language, and social interactions.

**If you agree to be in this study:** A child in your class will be asked to complete an in-person interview. You and one of the parent/guardians of this child will be asked to complete a phone interview.

**Total estimated time to participate is:** approximately 40 minutes.

**Risks** of being in the study

- There are minimal risks involved in this study. There is the possibility of loss of confidentiality. The steps listed below will prevent this. There is no discomfort expected with any interview question and participants may skip a question, stop the interview, or drop out at any time. This study does not provide treatment for participants. Participants with any questions or concerns about potential risks may ask questions now or call the Principal Investigator, Ayiesha Cottrell, at (512) 663-5451.

**Benefits** There are no individual benefits for participating. However, you will be contributing to researchers' better understanding of how youth perceive communication and social interactions.

The **records** of this study will be stored securely and kept confidential. To protect the confidentiality of all participants and their families, all materials will be stored in a locked file cabinet. Names will be removed and participants will be referred to by an identification number assigned by the principal investigator. All computer files containing data will be password protected. The interviews will be audio-taped and/or

videotaped. Identifying information will be removed in the data collection process. Audiotapes will be transcribed so that no personally identifying information is on them. Observational data derived from the videotapes will be recorded so that no personally identifying information is on them. Audiotapes and videotapes will be kept in a locked file cabinet and will be listened to or viewed only for research purposes. All audiotapes will be destroyed after the data analysis and write up of this study unless you give signed permission below to allow their use for educational purposes. The data gathered from this study will be published in the principal investigator's doctoral dissertation and may be used in future publications or scientific meetings. If the results of this research are published or presented at scientific meetings, all identifying information will be removed. Authorized persons from The University of Texas at Austin and members of the Institutional Review Board have the legal right to review your research records and will protect the **confidentiality** of those records to the extent permitted by law. All publications will exclude any information that will make it possible to identify you as a subject. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.

**How can you withdraw from this research study and who should you call if you have questions?**

If you wish to withdraw your participation in this research study for any reason, you should call the Primary Investigator, Ayiesha Cottrell, at (512) 663-5451. You are invited to call Ayiesha Cottrell with any questions, concerns, or complaints about the research. You are free to withdraw your consent and stop participation in this research study at any time without any consequences.

If you have any questions about the study please ask now. If you have questions later or want additional information please call the researcher conducting the study. Additionally, if you have questions about your child's rights as a research participant, complaints, concerns, or questions about the research please contact please contact Jodi Jensen, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects at (512) 232-2685 or the Office of Research Support and Compliance at (512) 471-8871.

You may keep the copy of this consent form.

You are making a decision about allowing yourself to participate in this study. Your signature below indicates that you have read the material above and have agreed to participate in this study. If you later decide that you wish to withdraw your permission for your participation in the study, simply tell me. You may discontinue participation at any time.

---

Signature of Teacher

---

Date

---

Signature of Investigator

---

Date

**Videotape Consent Form (Parent and Child Form)**

I/We (print name)\_\_\_\_\_ give our permission to be videotaped in order to assist with research regarding social competence.

I voluntarily authorize the use of the videotape for:

a) Review by researcher and staff ... Yes No

b) Education of other mental health professionals and professional workshops and conferences ..... Yes No

I reserve the right to have any or all recordings erased upon written request. I grant that this consent is a voluntary contribution in the interest of education and that there is no financial compensation to me for the use of such tape. I grant that all my questions pertaining to this consent have been answered to my satisfaction.

If you have any questions, or would like to request that your video tape be destroyed following the write up of this study, please contact (512) 663-5451.

**I CERTIFY THAT I HAVE READ AND FULLY UNDERSTAND THE ABOVE CONSENT FOR VIDEOTAPE RECORDING AND DO SO CONSENT.**

\_\_\_\_\_  
Signature of Parent or Legal Guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Child

\_\_\_\_\_  
Date

### Audiotape Consent Form (Parent and Child Form)

I/We (print name)\_\_\_\_\_ give our permission to be audio taped in order to assist with research regarding social competence.

I voluntarily authorize the use of the audiotape for:

a) Review by researcher and staff .....Yes No

b) Education of other mental health professionals and professional workshops and conferences .....Yes No

I reserve the right to have any or all recordings erased upon written request. I grant that this consent is a voluntary contribution in the interest of education and that there is no financial compensation to me for the use of such tape. I grant that all my questions pertaining to this consent have been answered to my satisfaction.

If you have any questions, or would like to request that your audio tape be destroyed following the write up of this study, please contact (512) 663-5451.

I CERTIFY THAT I HAVE READ AND FULLY UNDERSTAND THE ABOVE CONSENT FOR AUDIOTAPE RECORDING AND DO SO CONSENT.

\_\_\_\_\_  
Signature of Parent or Legal Guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Child

\_\_\_\_\_  
Date

**Audiotape Consent Form (Teacher Form)**

I (print name)\_\_\_\_\_ give my permission to be audio taped in order to assist with research regarding social competence.

I voluntarily authorize the use of the audiotape for:

a) Review by researcher and staff ... .....Yes No

b) Education of other mental health professionals and professional workshops and conferences .....Yes No

I reserve the right to have any or all recordings erased upon written request. I grant that this consent is a voluntary contribution in the interest of education and that there is no financial compensation to me for the use of such tape. I grant that all my questions pertaining to this consent have been answered to my satisfaction.

If you have any questions, or would like to request that your audio tape be destroyed following the write up of this study, please contact (512) 663-5451.

I CERTIFY THAT I HAVE READ AND FULLY UNDERSTAND THE ABOVE CONSENT FOR AUDIOTAPE RECORDING AND DO SO CONSENT.

\_\_\_\_\_  
Signature of Teacher

\_\_\_\_\_  
Date

Appendix I. Open Coding List

<b>General Codes</b>	<b>Specific Codes</b>
<b>Facial Expression</b>	FC
<b>Eye Contact</b>	EC
<b>Prosody</b>	P
<b>Body Language</b>	BL
<b>Discordant Sensory Cues</b>	DSC
<b>Conversation</b>	C
<b>Emotion Expression</b>	EE
<b>Cognitive Flexibility</b>	CF
<b>Empathy</b>	E
<b>Perspective Taking</b>	PT
<b>Specific Social Situations</b>	SSS
<b>Peer Relationships/Interactions</b>	PR
<b>Child Worries</b>	CW
<b>Child-Parent Communication</b>	CPC
<b>Child-Teacher Communication</b>	CTC
<b>Parent-Teacher Communication</b>	PTC
<b>Anxiety</b>	A
<b>Social Development</b>	SD

Appendix J. Axial Coding List

<b>General Codes</b>	<b>Specific Codes</b>
<b>Facial Expression</b>	FC
Positive Emotions	FC:P
Negative Emotions	FC:N
Neutral Emotions	FC:NE
<b>Eye Contact</b>	EC
Appropriate use	EC:AU
Inappropriate use	EC:IU
<b>Prosody</b>	P
Positive Emotions	P:P
Negative Emotions	P:N
Neutral Emotions	P:NE
<b>Body Language</b>	BL
Positive Emotions	BL:P
Negative Emotions	BL:N
Neutral Emotions	BL:NE
<b>Discordant Sensory Cues</b>	DSC
Appropriate use	DSC:A
Inappropriate use	DSC:U
<b>Conversation</b>	C
Characteristics of	C:C
Physical Behaviors	C:P
<b>Emotion Expression</b>	EE
Positive Emotions	EE:P
Negative Emotions	EE:N

Neutral Emotions	EE:NE
Emotion Regulation	EE:ER
<b>Cognitive Flexibility</b>	CF
Appropriate use	CF:A
Inappropriate use	CF:I
<b>Empathy</b>	E
Appropriate use	E:A
Inappropriate use	E:I
<b>Perspective Taking</b>	PT
Appropriate use	PT:A
Inappropriate use	PT:I
<b>Specific Social Situations</b>	SSS
Greetings	SSS:G
Sorry	SSS:S
Conflict Resolution	SSS:CR
New Situations	SSS:NS
<b>Peer Relationships/Interactions</b>	PR
Interest in Friendships	PR:IIF
Initiating Friendships	PR:IF
Age of Friends	PR:AF
Characteristics of	PR:C
One on One Interaction	PR:OOI
Group Interaction	PR:GI
Social Norms	PR:SN
Teasing	PR:T
<b>Child Worries</b>	CW
Social	CW:S
Academic	CW:A

<b>Child-Parent Communication</b>	CPC
Affectionate	CPC: AF
Appropriate	CPC: A
Inappropriate	CPC: CA
Play	CPC: P
Teaching	CPC: T
Coaching	CPC: C
Social Modeling	CPC: SM
Role-playing	CPC: RP
Advanced Prep	CPC: AP
Walking Through	CPC: WT
<b>Child-Teacher Communication</b>	CTC
Appropriate	CTC: A
Inappropriate	CTC: CA
Play	CTC: P
Teaching	CTC: T
Coaching	CTC: C
Social Modeling	CTC: SM
Role-playing	CTC: RP
Advanced Prep	CTC: AP
Walking Through	CTC: WT
<b>Parent-Teacher Communication</b>	PTC
Antecedents	PTC:A
Outcomes	PTC:O
<b>Anxiety</b>	A
Child	A:C
Parent	A:P
Teacher	A:T

<b>Social Development</b>	SD
Understanding of Self	SD: US
Problem-solving abilities	SD: PS
Coping processes	SD: CP
Social skills	SD: SS
Awareness of Others	SD: AO
Perspective-taking abilities	SD: PT

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