Social-Cognitive Processing and Biases in Children with Nonverbal Learning Disabilities

by

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Abstract

The purpose of this study was to explore the relationship between hostile attribution bias and social-emotional functioning in children with nonverbal learning disabilities (NLD). A subset of the data collected by Tanya Galway, a University of Toronto doctoral student, was examined. Sixteen children with NLD and sixteen normally achieving controls between the ages of 9 and 16 were given the Social Problem Solving Measure (Galway, 2007) to examine hostile attribution bias, and parents and teachers of the children completed the Achenbach System of Empirically Based Assessment (Achenbach & Rescorla, 2001) to examine social-emotional functioning. Children with NLD were rated higher than normally achieving peers, by both parent and teacher informants, on the anxious/depressed, withdrawn/depressed, internalizing, aggressive and externalizing scales. Parents of children with NLD rated their children higher than teachers on these scales. Children with NLD differed from normally achieving peers on a measure of hostile attribution bias more frequently endorsing that a story character was being mean. Group differences in hostile attribution bias were accounted for by individual differences in depression and aggression, but not by individual differences in anxiety.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

Introduction

A Nonverbal Learning Disability (NLD) is a subtype of learning disabilities that is proposed to involve central processing deficits that lead to both learning difficulties and psychosocial problems (e.g., Palombo, 2001; Rourke, 1989, 1995). Children with NLD often have difficulty in the areas of tactile and visual perception and attention, concept formation, reading comprehension, mathematics, problem solving, and dealing with novel materials (Harnadek & Rourke, 1994; Rourke, 1989, 1995). In addition, they often exhibit strengths in the area of rote verbal memory, reading decoding, and spelling (Rourke, 1989, 1995). Children with NLD have been described as having social impairments in the areas of social perception, social judgment, and social interaction skills (e.g., Harnadek & Rourke, 1994; Palombo, 2001; Petti, Voelker, Shore, & Hayman-Abello, 2003; Rourke, 1989, 1995). Some research on children with NLD has suggested that these children are more likely to develop some forms of psychopathology, such as Attention Deficit Hyperactivity Disability and depression, than children with general learning disabilities (e.g., Harnadek & Rourke, 1994; Petti, Voelker, Shore, & Hayman-Abello, 2003; Rourke, 1995).

Although the concept of NLD has been around since the late 1960's, research on this learning disability is limited (Palombo, 2001). The research that has been conducted focuses on the neuropsychological aspects of NLD and frequently neglects the emotional and social features of the disorder (Scheeringa, 2001).

The current study examined several aspects of social-emotional functioning in children and youth with NLD. First, we examined whether this population shows a higher incidence of internalizing or externalizing symptoms than their normally achieving peers. Second, we examined one aspect of social problem solving, hostile attribution bias, in children and youth with NLD. Finally, the link between internalizing and externalizing symptoms and hostile attribution bias was explored.

This thesis examined several literature bases which are relevant to this study. First, the neuropsychological and cognitive assets and deficits typically seen in children with NLD are reviewed. Next, the research on the social-emotional difficulties in children with NLD is examined. Third, Crick and Dodge's (1994) model of social problem solving is reviewed with a focus on the impact that hostile attribution biases have on how a child processes social cues. Studies examining hostile attribution bias in children with internalizing and externalizing disorders are then reviewed.

Processing Strengths and Weaknesses

A Nonverbal Learning Disability (NLD) is a type of learning disabilities that is proposed to involve central processing deficits that affect children's academic progress as well as their social and emotional development (e.g., Palombo, 2001; Rourke, 1989, 1995). It has been proposed that this population demonstrates a specific pattern of neurological assets and deficits. The incidence of NLD in males and females is currently unclear. While Rourke et al. (1989) suggests that NLD occurs equally in males and females, there is currently no epidemiological research to address this question. In most research studies, the majority of participants are males, which suggest that prevalence rates may be higher in males than females. Children and youth with NLD have been

shown to have relatively strong verbal attention and memory, well developed rote memory, mastery of phonetic rules, and well developed receptive language skills (Rourke, 1989, 1995). In early school years, children with NLD appear to be very bright due to their strengths in verbal abilities. While some children with NLD may initially experience difficulties with phonological awareness, once these skills are learned they are easily mastered. Frequently these children demonstrate average to high average academic performance up until they are presented with more complex material around fourth grade (Rourke, 1989, 1995).

The lower level cognitive deficits commonly reported in this population are in the areas of tactile perception, visual perception, psychomotor coordination, and visual memory (Rourke 1989, 1995). Children and youth with NLD have been reported to have difficulties dealing with novel material at an age appropriate level (Rourke, 1989, 1995). Although verbal skills are often times strong, these may be repetitive, straightforward, and of a rote nature; higher level conceptual development may be weak (Rourke, 1989, 1995). Further, higher-level cognitive difficulties have been suggested in the areas of concept formation, problem solving, abstract reasoning, and generalizing information to novel situations (Rourke, 1989, 1995). Academic difficulties that are commonly associated with the NLD population are problems with mathematics, reading comprehension, handwriting, and organization. Higher level language and inferential skills may not be as well developed as typically developing children. In summary, these children have strengths in rote verbal skills and difficulties in visual spatial processing and areas of higher-level cognitive reasoning.

Social-emotional Functioning

It has been proposed that the cognitive deficits play a causal role in the difficulties children with NLD have in socio-emotional and adaptive functioning (Rourke, 1989, 1995). Rourke (1989, 1995) described children with NLD as having significant deficits in the areas of social perception, social judgment, and social interaction, with difficulties becoming more prominent as the child ages. Clinical reports suggest that these social impairments frequently lead to social withdrawal and social isolation in adolescent and adult years (Petti et al., 2003; Rourke, 1989, 1995). The NLD population is also said to be at risk for Attention Deficit-Hyperactivity Disorder, as well as for developing some forms of psychopathology, such as anxiety disorders, and depression (Fuest et al., 1990; Rourke et al., 1995; Tsatsanis et al., 1997). Rourke (1995) compared the depression rates among children with NLD, Verbal Learning Disabilities, and normally achieving controls using the Personality Inventory for Children (PIC; Wirt Lachar, Klinedinst, & Seat, 1977), a 420 item parent report measure of social-emotional adjustment. He found that the NLD group had increased rates of depression. A later study attempted to replicate Rourke's findings by using the PIC to measure rates of internalizing pathology; however, in this study it was found that children with Verbal Learning Disabilities scored higher on measures of internalizing symptoms than the NLD or control groups (Forrest, 2004). Fuerst, Fisk, and Rourke (1990) and Tsatsamis, Fuerst, and Rourke (1997) compared patterns of cognitive and academic performance in children with LD that met distinct psychosocial criteria based on PIC scores. The LD subgroup that displayed higher Verbal IQ versus Performance IQ (a difference recognized in NLD diagnostic criteria, Rourke, 2002) was found to be more commonly associated with severe externalizing or

internalizing psychopathologies. The research has been sparse and the incidence of internalizing and externalizing symptoms or disorders in this group compared to normally achieving children and youth is not clear.

It has been reported that children and youth with NLD often have poor peer relations, difficulty understanding social situations, and have a poor understanding of emotional signals from others (Dimitrovsky et al., 1998; Rourke, 1989, 1995; Petti et al., 2003). The majority of the literature that is available is clinical-based writing; few empirical studies have been conducted on these socially related skills with this population.

A study by Petti and colleagues (2003) examined perception of nonverbal emotion cues; deficits in these skills have been proposed to cause the social difficulties of children with NLD. The participants were administered the Diagnostic Analysis of Nonverbal Accuracy (DANVA-2; Baum and Nowicki, 1998). On two subtests, children and youth identified happy, sad, angry and fearful emotions from slides depicting different body postures of a female adult model, or gestures of male adult and child models. Another subtest required the child to identify happy, sad, angry, fearful and neutral emotions by examining slides depicting facial expressions of adults and children. This test thus examined perception of emotions from facial and body cues. Children with NLD were more likely to inaccurately interpret adult facial expressions and gestures than both the control group and a group with verbal learning difficulties. The PIC-R was also administered to examine the behavioral and emotional functioning of the participants. The NLD group was reported to have lower scores on a measure of social skill, but group differences failed to read statistical significance.

Dimitrovsky et al. (1998) examined the interpretation of facial expressions in children with verbal versus nonverbal learning disabilities. The children were administered Ekman and Friesen's Picture of Facial Affect test (1976), which consisted of 110 slides of men and women's faces, expressing happiness, sadness, anger, surprise, fear, disgust or neutral expressions. Normally achieving children and children with verbal deficits where found to be better at identify anger, surprise, sadness, fear and disgust than the group with nonverbal deficits. Due to this difficulty with interpreting facial expressions, Dimitrovsky and her colleagues suggested that children with nonverbal deficits are at a greater disadvantage in relationships, increasing the likelihood of developing social and emotional problems.

The results from these two studies suggest that children with NLD have difficulty interpreting facial expression and other nonverbal emotion cues. It was proposed by Dimitorvsky et al. (1998) that children with NLD have difficulties with social and emotional functioning, in part due to these deficits in reading facial expressions. This causal relationship has not been empirically demonstrated. It may be that difficulties in other aspects of social cognition impair children in their relationships.

Social Information Processing and Childhood Psychopathologies

One model that has been useful for understanding social difficulties in childhood is Crick and Dodge's social information-processing model (Crick & Dodge, 1994; Dodge, 1986). Dodge (1986) suggested that a child comes to each social situation with a biologically established set of reaction capabilities and personal past experiences that influence the child's choice of response. He proposed that when children are faced with social situational cues, they complete four cognitive steps before responding with social

behaviors. The four steps in this model are: 1) encoding of situational cues, 2) representation and interpretation of those cues, 3) mental search for possible responses to the situation, and 4) selection of a response.

The first step involves the child receiving and perceiving cues through a series of sensory processes (Crick & Dodge, 1994; Dodge, 1986). The child must be able to attend to the appropriate cues from a tremendous amount of information present in the social environment, chunk this information, and use memory aids (e.g., chunking information, using mnemonic strategies, etc.) in order to store the information. In the second step, the child must relate the new information he/she has perceived to past experiences to come to an understanding or interpretation of the cues (Crick & Dodge, 1994; Dodge, 1986). During steps three and four, the child accesses possible responses from long term memory, examines these choices, and then selects the one he/she feels is best for the situation (Crick & Dodge, 1994; Dodge, 1986).

Once the four steps are preformed, a fifth and final step is undertaken; enactment entails performing the response and monitoring the effect of his/her actions on others involved (Crick & Dodge, 1994; Dodge, 1986). Crick & Dodge (1994) caution that although the model presented above has empirical support, the correlation between social information processing variables and children's social adaptation does not offer clear conclusions regarding causal direction of the relations.

Hostile attribution bias describes a tendency to interpret the intent of others as hostile when social cues fail to indicate an obvious intent (e.g., Crick & Dodge, 1994; Dodge, 1986; & Dodge & Somberg, 1987). Interpreting the intent of others as hostile can alter how the information is perceived, and lead the child to attend only to aggressive or

deviant cues or to generate primarily aggressive or deviant responses (Dodge, 1986). Dodge and Tomlin (1983) found that children who recalled a high number of hostile cues when processing social information were more likely to make hostile interpretations of the person in the social situation. Hostile attribution bias has been related to a number of externalizing and internalizing symptoms and disorders.

Crick and Dodge (1996) examined intent attributions of 624 third through sixth-grade boys and girls using Fitzgerald and Asher's (1987) intent attribution instrument. This instrument consisted of six stories that describe a situation where the intent of the provocateur is ambiguous (e.g., a peer breaks the subject's new radio while the subject is out of the room). For each story, children were asked to circle one of four presented reasons for the provocation. Two of the choices reflected hostile intent (e.g., the kid was mad at me) and two reflected benign intent (e.g., the radio wasn't made well). Children were then asked to tell whether the provocateur's behavior was intentional (i.e., hostile intent) or accidental (i.e., benign intent; Crick and Dodge, 1996). For the fifth and sixth grade participants, children from the reactive aggressive group attributed hostile intent to peer provocateurs more frequently than did their nonaggressive peers. Children were categorized as reactive-aggressive based on teacher ratings of aggression using an aggressive scale developed by Dodge and Coie (1987).

Dodge, Price, Bachorowski and Newman (1990) assessed the attributional patterns of 128 male adolescent volunteers randomly selected from a maximum security prison for juvenile offenders. Video-recorded stimuli was developed to assess attribution patterns by having adolescent actors act out 64 vignettes for which the intent was either hostile, accidental, prosocial, or ambiguous. After viewing the vignettes, the subjects

were asked to attribute intent to the antagonist in a multiple choice format. Hostile attribution biases were positively correlated with undersocialized aggressive conduct disorder (as indicated by high scores on standardized scales and by psychiatric diagnoses), with reactive-aggressive behavior, and with the number of interpersonally violent crimes committed (Dodge et al., 1990). In summary, these two research studies showed that children and youth classified as aggressive show hostile attribution biases in social problem solving tasks.

A study by Milich and Dodge (1984) examined three types of social information-processing in child psychiatric populations. The processes studied were response decision biases, hostile attributional biases, and cue-utilization. Participants were diagnosed as hyperactive/aggressive, exclusively hyperactive, exclusively aggressive, psychiatric controls, and normal controls. They were administered attribution, recall, and detective decision tasks to solicit information-processing patterns. The detective decision tasks consisted of six ambiguous, hypothetical stories in which the participant was to determine whether they felt the peer may have committed a certain hostile act. The hyperactive/aggressive group was found to be deficient in all three areas asssessed, including HAB, relative to the exclusively hyperactive, exclusively aggressive, and normal control group.

Previous research on social information processing suggests that there is a connection between social competence, peer difficulties, and externalizing or internalizing problems (e.g., Rose-Krasnor, 1997, Schreeringa, 2001). Children with NLD are more likely to have psychopathologies than their normally achieving peers (Petti, Voelker, Shore & Hayman-Abello, 2003; Scheeringa, 2001; Whitman, 1998).

Whitman (1998) found that psychiatric inpatients meeting NLD criteria were at a greater risk for depression than psychiatric patients not meeting the NLD criteria. Strengthening Whitman's findings, Petti and colleagues (2003) found that NLD children were twice as likely as children with verbal learning disabilities to be diagnosed with depression, anxiety, or other internalized disorders (Fuerst et al., 1990; Tsatsamis et al., 1997; Rouke, 2002; but see Forrest, 2004) .

Individuals with externalizing disorders are more likely to contribute aggressive solutions in social dilemmas and attribute hostile biases in their attribution of peers intentions (e.g., Crick & Dodge, 1994, 1996; Coy, Speltz, DeKlyen, & Jones, 1999; Dodge, 1986). It would appear that hostile attribution bias is mainly displayed by children with aggressive or acting-out behavior problems (Crick & Dodge, 1994). However, in a recent study, findings suggested that individuals with internalizing disorders, namely depression, also exhibit a hostile attribution bias (Quiggle, Garber, Panak, & Dodge, 1992).

Quiggle et al. (1992) looked at children judged to be depressed, aggressive, or both and examined their social information processing patterns compared to non-depressed or non-aggressive children. Peer nomination and teacher ratings were collected to determine the severity of aggression, and the Children's Depression Inventory was given to determine the severity of depression among the 220 participants in the study. Not only did Quiggle and colleagues find that aggressive children displayed a hostile attribution bias, but so did children with depression. The depressed children showed a hostile attribution bias and were more likely to attribute negative situations to internal, stable, and global causes. Children from the comorbid aggressive and depressed group

showed patterns similar to both groups. To date, we are not aware of any studies that have examined hostile attribution bias in children or youth with NLD.

In summary, Crick and Dodge's (1994) model of children's social problem solving has been useful in examining social difficulties. Crick and Dodge (1994) propose that a child's response to social cues involves many functions. The child must be able to encode the social cues in the environment, create a mental representation and interpretation of the cues, integrate the cues with his or her past experience, and estimate the probability of favorable outcomes. Responding in a biased manner during any of the steps can have a significant impact on a child's social functioning, usually resulting in an increased probability that the child will behave in a deviant, perhaps aggressive way.

As reviewed earlier, there has not been much research examining social information processing in children with NLD. Research with learning disabilities more generally has been conducted but is not without its difficulties, as it does not differentiate between learning disability subtypes (Galway, 2007). Therefore, interpreting the results of these studies must be done with caution and does not provide insight on children with NLD, or any one subtype of learning disabilities.

Although these studies do not examine differences among learning disability subtypes, as a whole they have found that children with learning disabilities performed significantly lower than their normally achieving peers on social cognitive processing tasks (e.g., Cohen, Menna, Vallance, Barwick, Im, & Horodezky, 1998; Tur-Kaspa & Bryan, 1994). Tur-Kaspa and Bryan (1994) used Dodge's (1986) five step model of social problem solving. This study indicated that students with learning disabilities displayed a unique problem in understanding social information and tended to select

incompetent solutions to social situations (Tur-Kaspa & Bryan, 1994). Cohen and her colleagues (1998) examined children with diagnosed and unsuspected language impairments. Their results indicated that children diagnosed with language impairment displayed deficits in social cognitive processing, predominantly in the areas of emotion decoding and social problem solving. Many studies using a variety of methods have concluded that children with learning disabilities function more poorly than non-disabled peers on a variety of social measures (for reviews see Cohen et al., 1998; Tur-Kaspa & Bryan, 1994).

In summary, it is reported that children with learning disabilities are considered to have social cognitive processing deficits that impair social and emotional functioning. Examining children with learning disabilities as a whole, does not allow an examination of unique patterns in social cognitive processing as these relate to cognitive strengths and weaknesses among LD subtypes (Galway, 2007).

The current study examined social cognitive processing and hostile attribution bias in children and youth with NLD. Populations exhibiting high externalizing behaviors showed high hostile attribution bias. More surprisingly, children with internalizing disorders, such as depression, also showed a higher hostile attribution bias (Quiggle, Garber, Panak, & Dodge, 1992). Previous research has suggested that children and youth with NLD frequently display higher rates of depression, and possibly higher externalizing disorders (e.g., ADHD) than their normally achieving peers. Given these higher levels of psychopathologies, we might also expect to see higher hostile attribution biases in children and youth with NLD.

The current study examined several aspects of social-emotional functioning in children and youth with NLD using Crick and Dodge's model as a theoretical framework. First, we examined whether this population showed a higher incidence of internalizing and/or externalizing symptoms than their normally achieving peers (NA). Second, we examined one aspect of social problem solving, hostile attribution bias, in children and youth with NLD. Finally, the link between internalizing and externalizing symptoms and hostile attribution bias was explored.

The research questions for this study were:

1. *Do children and youth with NLD and normally achieving controls differ on measures of internalizing psychopathologies?*
2. *Do children and youth with NLD and normally achieving controls differ on the externalizing syndrome scale?*
3. *Do children and youth with NLD and NA controls differ in a measure of hostile attribution bias?*
4. *If children and youth with NLD and NA controls do differ on a measure of hostile attribution bias, are group differences accounted for by individual differences on measures of internalizing or externalizing symptoms? That is, could the groups differ on HAB due to differences on levels of internalizing and externalizing psychopathologies?*

CHAPTER 2

Method

Participants

This study examined a subset of the data collected by Tanya Galway, a University of Toronto doctoral student, between 2004 and 2007. There were16 children with NLD and 16 NA controls in this study[1]. The participants were between 9 and 16 years of age. The group size of 16 was chosen because research suggests that there should be a minimum of 14-16 subjects in each group in causal-comparative research (Gall, Borg, & Call, 1996, as cited in Galway, 2007). Galway (2007) proposed that examining children between the ages of 9 and 16 years is appropriate because most NLD children are not diagnosed until late elementary school and the models of social cognition that were used in this study have examined children in this age range (e.g., Cohen et al., 1998; Crick & Dodge, 1994; Quiggle, Garber, Panak, & Dodge, 1992; Tur-Kaspa & Bryan, 1994).

The children with NLD were recruited from the Integra Children's Mental Health Centre located in Toronto, Ontario. This Centre treats children and youth with learning disabilities, between the ages of 8-18. The treatment focuses on improving social, emotional, and behavioral outcomes through a range of specialized therapeutic, family-centered services, and community education. For example, a child with NLD might be receiving individual therapy, group therapy, and/or family therapy/support. Integra also runs a summer residential camp for children and youth with learning disabilities. It is

[1] The term children is sometimes used as a short form for children and youth. We recognize that some participants were adolescents and, therefore, the term children may not be strictly correct.

possible that some NLD participants only received camp services from Integra, others may have received any combination of the available services. Dr. Jamie Metsala, who supervised this thesis, is the former Director of Research and Psychology at Integra. The NA control group was recruited from the metropolitan Toronto area.

Comorbid diagnosis of children from the NLD group were distributed as follows: seven participants were diagnosed with Attention Deficit Hyperactivity Disorder, three had features of ADHD, one child was diagnosed with Anxiety, and one child had been previously described as having features of Asperger Syndrome. None of the children in the Control group had any reported significant learning, behavioral, or psychological concerns.

The NLD group was comprised of 13 males and 3 females; the control group was comprised of 12 males and 4 females. The Blishen SES Index was used to examine social economic status of the participants (Blishen, Carroll, & Moore, 1987). Families from both groups were considered to be within the middle class to upper-middle class range. The majority of the participants were Caucasion (27 of the 32). There were no significant differences between the two groups on age, gender, socioeconomic status, or ethnicity (Galway, 2007). These results are summarized in Table 1. The criteria for the NLD group is outlined below; followed by that for the NA group. The measures are elaborated in the procedure section.

Cognitive Processing:

1) A 10 point discrepancy between higher Verbal IQ and lower Performance IQ on the Wechsler Intelligence Scale for Children-Third or Fourth Edition (WISC-III or WISC-IV).

Table 1

Means and Standard Deviations of Demographic Characteristics and Selection Criteria

Variable	NLD (n=16)		NA (n=16)			
	Mean	Standard Deviation	Mean	Standard Deviation	t (30)	η^2
Age (years)	11.31	2.00	10.73	1.61		
Sex						
Male	13		12			
Female	3		4			
Ethnicity						
Caucasian	16		12			
Other	0		4			
VIQ	111.56	13.26	119.63	11.22	-1.86	.10
PIQ	89.03	13.94	119.63	12.86	-6.45***	.58
Block Design	7.78	3.86	13.31	2.87	-4.74***	.43
Object Assembly	7.03	3.67	11.38	1.82	-4.24***	.37
Coding	5.69	3.34	11.64	2.60	-5.61***	.51
WRAT3 Reading	107.50	9.63	119.25	10.69	-3.27**	.26
WRAT3 Arithmetic	90.69	10.45	107.81	8.57	-5.07***	.46
TOWL-3 Spontaneous Writing						
Below the 25th%ile	12		0			
Above the 25th%ile	4		16		19.20***	

Note. **p<.01; ***p<.001

2) Verbal IQ greater than or equal to 85 on the WISC-III or WISC-IV.

3) One of Block Design, Object Assembly or Coding was one standard deviation or more below the mean (e.g., standard score of 7 or below).

Achievement:

1) Wide Range Achievement Test -3 (WRAT-3) Arithmetic at or below the 25th percentile OR TOWL-3 – spontaneous writing composite less than or equal to the 25th percentile.

2) Reading achievement, as measured by the WRAT-3, at or above the 30th percentile

Neuropsychological:

1) Target Test at least one Standard Deviation below the mean OR Grooved Pegboard at least one Standard Deviation above the mean (higher scores indicative of poorer performance).

Criteria for the NA group is outlined below.

Cognitive Processing:

1) All four subtests of the Weschler Abbreviated Scale of Intelligence (WASI) within the average range

2) Verbal IQ greater than or equal to 85

3) Each of Block Design, Object Assembly and Coding is within one standard deviation of the mean or above (e.g., 8 or above).

Achievement:

1) Wide Range Achievement Test Arithmetic greater than or equal to the 30th percentile.

2) TOWL-3 – spontaneous writing composite greater than or equal to the 30th percentile

3) Reading achievement, as measured by the WRAT-3, at or above the 30th percentile.

Procedure

Children with NLD and children in the NA group were tested by Tanya Galway over 3 to 9 hours at Integra. The amount of time required depended upon the group the children belonged to (NLD vs. Control), and the amount of relevant testing completed within the past two years (e.g., WISC-III or WISC-IV). If a child met criteria for the NLD or NA group, then he/she completed the dependent tasks outlined below. Children were tested individually and parents or other primary caregivers, as well as teachers, were asked to complete two questionnaires about their child's social-emotional and behavioral functioning. Following is a description of the measures this study examined. These measures are a subset of those employed by Galway (2007).

Selection Criteria Measures

Wechsler Intelligence Scale for Children – Third Edition (WISC-III; Wechsler, 1991)

The WISC-III is a standardized test that measures intellectual functioning and is individually administered to children ages 6-16. The test is made up of 10 core subtests and three supplementary subtests. The subtests examine two main areas: verbal ability, and performance ability. These two areas determine a child's composite score for Verbal IQ, Performance IQ, and a Full Scale IQ.

A standardized sample of 2200 was used to determine the norms. Mean reliability coefficients for the individual subtests and IQ factor range from .69 to .96. Mean correlations between subtest and IQ scores on the WISC-III and the WISC-R range from .42 to .90.

Wide Range Achievement Test-Third Edition (WRAT- 3; Wilkinson, 1993)

This standardized test is individually administered and assesses a child's achievement in reading, spelling, and arithmetic. The WRAT examines individuals between the ages of 5 and 75. The present study will require that the reading and the arithmetic subtests be administered.

The WRAT-3 norms are based on a standardized sample of 4, 433 individuals between the ages of 5 and 75. The Reading, Spelling and Arithmetic standard scores correlate with the WISC-III Full Scale score .68, .64, and .71. The median test coefficient alphas range from .85 to .95, over all nine WRAT three tests from both the BLUE and TAN forms.

The Test of Written Language – Third Edition – Spontaneous Writing Composite (TOWL -3)

This standardized test allows examiners to evaluate student's writing abilities. It meets the nationally recognized need for a standardized way to document the presence of deficits in this area of literacy. The Spontaneous Writing Composite examines the areas of Contextual Conventions (measures capitalization, punctuation, and spelling), Contextual Language (measures vocabulary, syntax, and grammar), and Story Construction (measures plot, character development, and general composition). This subtest assesses the children's written language abilities.

The TOWL-3 was standardized on a 26-state sample of more than 2,000 public and private school students in Grades 2 through 12. Percentiles, standard scores, and age equivalents are provided. Internal consistency, test/retest with equivalent forms, and interscorer reliability coefficients approximate .80 at most ages, and many are in the .90s.

Dependent Measures

Social Problem Solving Measure (SPSM)

An experimental measure was designed for the purpose of Galway (2007). The Interpersonal Negotiation Strategies Interview (INS; Shultz, Yeates, & Selman, 1989) and the social information processing tasks used in previous research (e.g., Crick & Dodge, 1994, 1996; Crick & Werner, 1998; Quiggle et al., 1992) were examined and the new experimental measure was based on these previous measures. In this test, children were required to listen to hypothetical social situations and then asked to complete a series of questions that examined the child's ability to retain story facts, process social information and take another's perspective.

Only the first part of this task, Representing the Problem, is examined in this study. In this task children were presented with 8 hypothetical social dilemmas (see Appendix A). After listening to each dilemma, the child was asked a story fact recall question and six subsequent questions: (1) What is the problem here and why is it a problem? (2) How would you feel? (3) Why would you feel that way? (4) How would (the other person) feel? (5) Why would (the other person) feel that way? (6) Was (the other person) being mean or not being mean in the story? Responses to these questions received scores on two measures: (1) Hostile attribution bias (i.e., the tendency to attribute hostile intent in ambiguous situations), and (2) Problem Representation (i.e., recognition of problem elements and feelings). The Hostile attribution bias measure, the children's responses to question six (6) for each dilemma, was examined in this study.

Achenbach System of Empirically Based Assessment (ASEBA, Achenbach & Rescorla, 2001)

The CBCL/6-18 and the TRF are questionnaires that are filled out by parents and teachers and examine children's competencies, adaptive functioning, and behavioral and emotional problems. The questionnaires assess eight syndrome scales: 1) Anxious/Depressed, (2) Withdrawn/Depressed, (3) Somatic Complaints, (4) Social Problems, (5) Thought Problems, (6) Attention Problems, (7) Rule-Breaking Behavior, and (8) Aggressive Behavior. The ASEBA forms also examine two broad groupings of syndromes: (1) Internalizing and (2) Externalizing, as well as a Total Problems Score. A child's score is converted to T scores and percentiles based on national samples of nonreferred children of similar gender and age.

Norms are provided for children ages 6 to 18 years, and are based on a standardized sample of 1, 753 (CBCL/6-18) and 2, 319 (TRF). Test retest reliabilities were 1.00 for the competence items and .95 for the specific problem items. The ASEBA manual provides evidence for the content reliability, criterion-related validity, and construct validity. For the present study the variables that were examined were the levels of Internalizing and Externalizing symptoms, the Withdrawn/Depressed syndrome scale, the Anxious/Depressed syndrome scale, and the Aggressive Behavior syndrome scale.

CHAPTER 3

Results

Do children and youth with NLD and normally achieving controls differ on measures of internalizing psychopathologies?

To test whether the groups differed on measures of internalizing symptoms, an ANOVA for a mixed design was conducted. Participants' scaled scores were submitted to a three-way ANOVA with group membership (NLD, NA) as a between-subject factor and informant (parent and teacher) and syndrome scale (anxious/depressed, withdrawn/depressed, and internalizing) as within-subject factors. Results revealed a main effect of group, $F(1, 28) = 3951.7$, $p<.01$, informant $F(1, 28) = 14.2$, $p< .01$ and syndrome scale $F(2, 56) = 10.8$, $p<.01$. Interaction effects were obtained for Group x Informant $F(1, 28) = 14.8$, $p< .01$ and Group x Syndrome Scale $F(2, 56) = 8.2$, $p< .01$.

Overall, parents and teachers rated the NLD group higher than NA controls on each syndrome scale (see Table 2 for Means and Standard Deviations). For the Group x Informant interaction (see Figure 1), simple F tests revealed that for the NLD group, parents rated the internalizing syndrome scales higher than teachers did (M= 59.31 vs. 53.47 for parents and teachers respectively). Parents and teachers did not differ on their ratings for the NA group (M = 50.57 and 50.69, SDs = 1.94 and 1.50 for parents and teachers respectively).

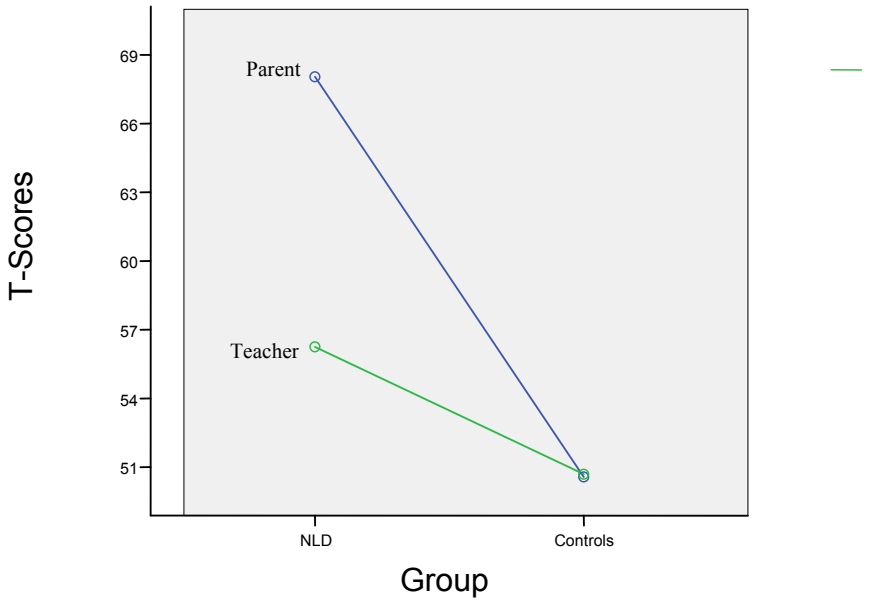

Figure 1. T-scores of internalizing scales for NLD and Control groups by parent and teacher informants, where scores above 64 fall within the borderline-clinical or clinical range.

Table 2

Mean T-Scores and Standard Deviations for the NLD and Control Group parent and teacher reports of Internalizing Syndrome Scales

Syndrome Scale	Group	Mean T-Score	Standard Deviation
Parent anxious/depressed	NLD	67.25	9.205
	Controls	51.71	4.214
Parent withdrawn/depressed	NLD	68.31	9.884
	Controls	53.43	6.394
Parent internalizing	NLD	68.56	8.124
	Controls	46.57	8.759
Teacher anxious/depressed	NLD	57.25	8.012
	Controls8	52.07	2.841
Teacher withdrawn/depressed	NLD	56.31	4.840
	Controls	53.07	5.061
Teacher internalizing	NLD	55.19	8.232
	Controls	46.93	7.374

For the Group x Syndrome interaction (see Figure 2), simple F tests revealed that the children with NLD were rated equally high for each of the syndrome scales; that is, there was no difference for this group on scaled scores across the Anxious/Depressed, Anxious/Withdrawn and Internalizing scales. For the control group, mean scaled scores for Anxious/Depressed and Anxious/Withdrawn were higher than for Internalizing (M = 51.89 vs. 53.25 vs. 46.75, SD's = 1.39, 1.44, and 1.58 for the Anxious/Depressed, Withdrawn/Depressed and Internalizing syndrome scales respectively); however, none of these scaled scores for the NA group were elevated and differences are therefore not meaningful. The number of NLD and NA participants whose scores fell within the borderline-clinical and clinical ranges on these internalizing scales is shown in Table 3.

Table 3

Number of NLD and NA participants that were reported within the borderline-clinical and clinical range on Anxious/Depressed, Withdrawn/Depressed, and Internalizing Measures

Syndrome Scale	Group	# within the B/C Range	# within the Clinical Range	Total # within B/C & Clinical ranges
Parent anxious/depressed	NLD (N=16)	6	5	11
	Controls (N=15)	1	0	1
Parent withdrawn/depressed	NLD (N=16)	4	7	11
	Controls (N=15)	1	1	2
Parent internalizing	NLD (N=16)	4	11	15
	Controls (N=15)	1	1	2
Teacher anxious/depressed	NLD (N=16)	1	2	3
	Controls (N=15)	0	0	0
Teacher withdrawn/depressed	NLD (N=16)	0	0	0
	Controls (N=15)	1	0	1
Teacher internalizing	NLD (N=16)	1	3	4
	Controls (N=15)	1	0	1

B/C=Borderline Clinical Range

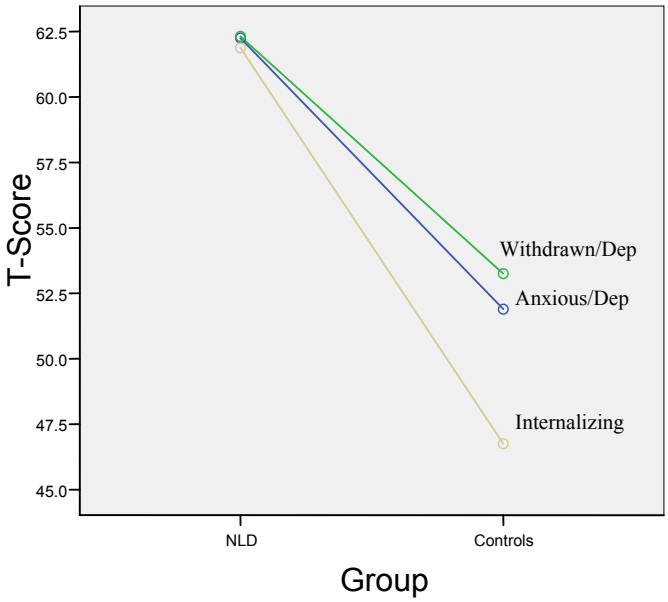

Figure 2 T-scores of internalizing scales for NLD and Control groups by syndrome scales, where scores above 64 fall within the borderline-clinical or clinical range.

Do children and youth with NLD and normally achieving controls differ on the externalizing scale?

To test whether groups differed on measures of externalizing symptoms, an ANOVA for a mixed design was conducted. Participants' scaled scores were submitted to a three-way ANOVA with group membership (NLD, NA) as a between-subject factor and informant (parent and teacher) and syndrome scales (aggression and externalizing) as within-subject factors. Results revealed a main effect of group, $F(1, 28) = 28.1$, $p<.01$, a main effect of informant, $F(1, 28) = 7.95$, $p< .01$, and a main effect of syndrome scale, $F(1, 28) = 48.20$, $p<.01$. Interaction effects were obtained for Group x Informant $F(1, 28) = 6.35$, $p< .01$, and Group x Syndrome Scale $F(1, 28) = 13.55$, $p< .01$.

Overall, the NLD group was rated higher than the NA group on both parent and teacher scales (See Table 4 for Means and SDs). For the Group x Informant interaction (see Figure 3), simple F tests revealed that parents of the NLD children rated externalizing scales higher than teachers did (M = 62.41 vs. 54.52, SDs = 1.83 and 1.32 for parent and teacher informants respectively). Parents and teachers did not differ on their ratings for the NA group (M = 49.21 vs. 48.75, SDs = 1.96 and 1.41 for parent and teacher informants respectively). For both groups, scores were higher on the Aggressive scale than the Externalizing scale (See Table B for Means and SDs). The number of NLD participants scores which fall within the borderline-clinical and clinical range on these internalizing and externalizing scales further show differences between the two groups (see Table 5).

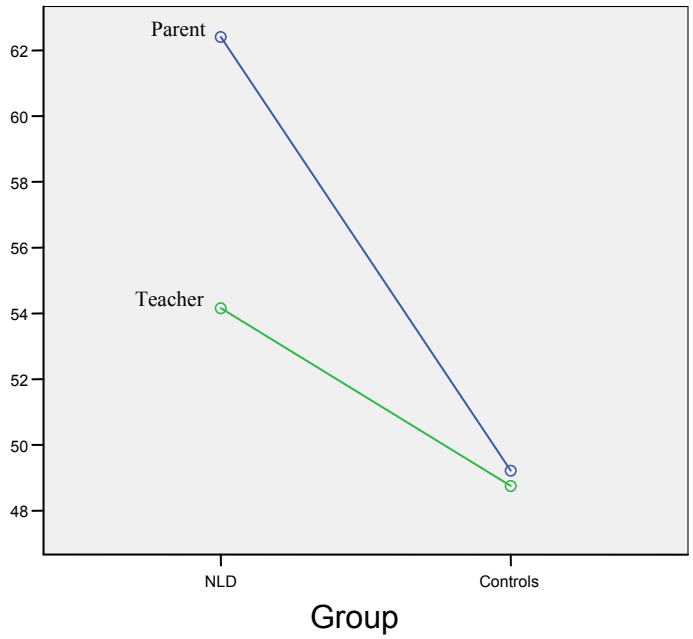

Figure 3. T-scores of externalizing scales for NLD and Control groups by parent and teacher informants, where scores above 64 fall within the borderline-clinical or clinical range.

Table 4

Mean T-Scores and Standard Deviations for the NLD and Control Group parent and teacher reports of Externalizing Syndrome Scales

Syndrome Scale	Group	Mean T-Score	Standard Deviation
Parent aggressive	NLD	63.13	8.492
	Controls	52.57	5.543
Parent externalizing	NLD	61.69	6.829
	Controls	45.86	9.272
Teacher aggressive	NLD	55.31	4.542
	Controls	51.50	3.481
Teacher externalizing	NLD	53.00	6.563
	Controls	46.00	6.850

Table 5

Number of NLD and NA participants that were reported within the borderline-clinical and clinical range on Aggressive and Externalizing Measures

Syndrome Scale	Group	# within the B/C Range	# within the Clinical Range	Total # within B/C & Clinical ranges
Parent aggressive	NLD (N=16)	4	2	6
	Controls (N=15)	1	0	1
Parent externalizing	NLD (N=16)	3	7	10
	Controls (N=15)	1	1	2
Teacher aggressive	NLD (N=16)	0	0	0
	Controls (N=15)	0	0	0
Teacher externalizing	NLD (N=16)	2	0	2
	Controls (N=15)	0	1	1

B/C=Borderline Clinical Range

Do children and youth with NLD and NA controls differ on a measure of hostile attribution bias?

Children's responses to the question, "Was (the other person) being mean or not being mean in the story?" were coded as 1 for being mean and 0 for not being mean for each of the 8 vignettes. Cronbach's alpha, a measure of the internal consistency for participants' responses across the 8 vignettes, was calculated. The results indicated that the internal consistency was low (.450). Vignettes were therefore dropped from the scale in order to obtain an alpha level at or above .6. This level of consistency is acceptable for research purposes (e.g. Gliem & Gliem, 2007). The final scale was taken across vignettes 2, 4, 5, 6, and 7. Cronbach's alpha for this 5 item scale was .614.

For each participant, the number of times he/she answered that the story character was being mean was summed across these 5 vignettes and then divided by 5, the total number of vignettes. This variable, the proportion of times a participant endorsed that a story character was mean (HAB), was submitted to an independent t-test to examine group differences. Results showed that there was a significant group difference $t(30) = 2.12$, $p<.05$. The NLD group was significantly higher than the control group ($M= .48$ vs. .25, $SDs = .36$ and .26 for the NLD and NA groups respectively). This indicates that the NLD group endorsed that a character in the story was being mean more frequently than the control group.

Are group differences on a measure of hostile attribution bias accounted for by individual differences on measures of internalizing or externalizing symptoms? That is, could the groups differ on HAB due to differences on levels of internalizing and externalizing psychopathologies?

Zero order correlations for the major variables in this study are presented in Table 6. Zero-order correlations between HAB and parent and teacher syndrome scaled scores showed similar patterns. Composite variables were created across parent and teacher ratings for each of the Anxious/Depressed, Withdrawn/Depressed, and Aggressive scales. The Anxious/Depressed composite was created by submitting the parent and teacher ratings on this scale to a factor analyses and retaining the principal factor scores. The resulting composite is a reflection of shared variance between the parent and teacher ratings on the Anxious/Depressed scale. This process was repeated for each of the Anxious/Withdrawn and Aggression scales.

Table 6

Correlation Coefficients Among Measures of Group, Hostile Attribution Bias, and Achenbach Scales in children with NLD and NA peers (N=30)

Measure	1	2	3	4	5	6	7
1. Group	1.00	-.361*	-.678**	-.598**	-.637**	-.762**	-.697**
2. HAB		1.00	.056	.265	.236	.177	.212
3. Anxious/Depressed[a]			1.00	.681**	.585**	.931**	.600**
4. Withdrawn/Depressed[a]				1.00	.447*	.801**	.478**
5. Aggressive[a]					1.00	.637**	.924**
6. Internalizing[a]						1.00	.685**
7. Externalizing[a]							1.00

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

[a] Composite scores across parent and teacher ratings

A) Predicting HAB from Internalizing Measures

First, two hierarchical regressions were conducted to test if group membership accounted for unique variance in HAB after variance accounted for by either the Anxious/Withdrawn or the Anxious/Depressed composite. Table 7 shows the results of a series of hierarchical regressions with HAB as the dependent variable. From Regression 1, it can be seen that group membership accounted for a significant amount of unique variance in HAB after variance accounted for by the Anxious/Depressed composite, F change = 5.087, $p<.05$. As can be seen in Regression 2, group membership did not account for additional variance in HAB after variance due to the Withdrawn/Depressed composite, F change = 2.398, $p>.05$.

B) Predicting HAB from Externalizing Measures

To examine whether group membership accounted for unique variance in HAB after aggression, a hierarchical regression forcing the Aggression composite into the equation first was conducted. As seen in Table 8, group membership did not account for unique variance in HAB after that accounted for by Aggression was removed (F change = 2.398, $p >.05$).

Table 7

Predicting Hostile Attribution Bias from Anxious/Depressed and Group Membership Ratings (N=30)

Step Variables	*B*	*SE B*	β	ΔR^2
Regression 1				
Anxious/Depressed	.019	.063	.056	-.003
Anxious/Depressed & Group Membership	-.355	.157	-.541	.099
Regression 2				
Withdrawn/Depressed	.088	.061	.265	.037
Withdrawn/Depressed & Group Membership	-.175	.148	-.267	.050

Table 8

Predicting Hostile Attribution Bias from Aggressive and Group Membership Ratings (N=30)

Step Variables	*B*	*SE B*	β	ΔR^2
Regression 3				
Aggressive	.079	.061	.236	.022
Aggressive & Group Membership	-.199	.155	-.302	.044

CHAPTER 4

Discussion

A Nonverbal Learning Disability (NLD) is a subtype of learning disabilities that is proposed to involve central processing deficits that lead to both learning difficulties and psychosocial problems (e.g., Palombo, 2001; Rourke, 1989, 1995). Children with NLD often have strengths in rote verbal skills and difficulties in visual-spatial processing and areas of higher-level cognitive reasoning (Rourke, 1989, 1995). Academically, this population frequently has difficulty with mathematics, reading comprehension, handwriting and organization. One most concerning aspect of NLD is the social – emotional difficulties associated with the disorder. Previous research with children with NLD has suggested that these children are more likely to develop some forms of psychopathology, such as depression, than children with verbal learning disabilities and normally achieving peers (e.g., Harnadek & Rourke, 1994; Petti, Voelker, Shore, & Hayman-Abello, 2003; Rourke, 1995). However, Forrest (2004) found that children with Verbal Learning Disabilities scored higher on a measure of social-emotional adjustment than the NLD group, and no significant differences were found between the NLD and control group. The research has been sparse and the incidence of internalizing symptoms or disorders in this group is not clear.

The current study examined internalizing symptoms using scales on the CBCL and TRF Achenbach System of Empirically Based Assessment. Children with NLD were rated higher than their normally achieving peers, by both parent and teacher informants, on the Anxious/Depressed, Withdrawn/Depressed, and Internalizing scales. These

findings are consistent with Rourke (1989, 1995) and colleagues (Fuerst et al., 1990, Tsatsanis et al., 1997) who found that children and youth with NLD had increased rates of internalizing psychopathologies, specifically depression, than children with Verbal Learning Disabilities and/or normally achieving peers. Although the sample size of 32 in this study was far less than the sample size used in studies by Fuerst et al. (1990) and Tsatsanis (1997; N = 130-160), the sample size was adequate to reveal group differences and findings were consistent across all three studies. Although several studies have shown that children with NLD have increased rates of internalizing psychopathologies (e.g., Rourke, 1989, 1995; Fuerst et al., 1990; and Tsatsanis, 1997), a study by Forrest (2004) found that children with NLD did not have higher rates of internalizing symptoms than their normally achieving peers. It is possible that Forrest found no differences between the NLD and NA groups on measures of internalizing symptoms because the Personality Inventory for Children (PIC; Wirt et al., 1977) was used as the sole measure of social-emotional functioning. Forrest (2004) noted the PIC has some serious limitations and that a number of the parents found the questions quite disturbing, which may have influenced their reports. The difference in assessment tools may therefore account for the variation in findings between Forrest (2004) and the current study. The current study used the Achenbach System of Empirically Based Assessment (2001) and examined teacher and parent reports, allowing for a more in depth examination of behavioral and emotional functioning.

The Achenbach Empirically Based Assessment (2001) CBCL/6-18 and TRF are questionnaires that are filled out by parents and teachers and examine children's competencies, adaptive functioning, and behavioral and emotional problems. A child's

score is converted to T-Scores and percentiles based on national samples of nonreferred children of similar gender and age. T-Scores are categorized into one of three ranges; Average, Borderline-Clinical, and Clinical. The average range indicates no concern, the Borderline-Clinical range indicates some concern, and the Clinical range indicates that the informant is reporting enough problems to be of clinical concern (Achenbach et. al, 2001).

Although both parents and teachers rated NLD children higher on the internalizing scales than NA peers, parents of children with NLD rated their children significantly higher than did teachers on the Anxious/Depressed, Withdrawn/Depressed, and Internalizing scales. It is possible that parents spend more one-on-one time with their children and have more intimate relationships with their children than teachers who have a classroom of children in their care, and parents are therefore more sensitive to these internalizing behaviors.

Indeed, the parent ratings of the children and youth with NLD in this study point to the serious nature of internalizing symptoms for this population. As shown in Table 2, NLD children's scores frequently fell within the borderline-clinical or clinical range; as many as 15 of the 16 participants scored as either borderline-clinical or clinical on the parent report internalizing scale, compared to two out of the 15 normally achieving participants. The NLD group had 11 participants out of 16 that fell within the borderline-clinical or clinical range on both the Anxious/Depressed and Withdrawn/Depressed subscales. Less than 3 children in the NA group were rated in the borderline-clinical or clinical range by their parents. This demonstrates the severity of internalizing problems that present in the NLD population.

Research examining patterns of cognitive and academic performance in children with learning disabilities reported that the subgroup displaying higher Verbal IQ versus Performance IQ (a difference recognized in NLD diagnostic criteria) was found to be more commonly associated with severe externalizing or internalizing psychopathologies (Fuerst, et al.,1990; Tsatsamis et al.,1997). Research examining psychopathologies in children with NLD is limited, especially research examining externalizing symptoms.

The current study examined externalizing symptoms using scales on the CBCL and TFR forms. Children with NLD were rated significantly higher than their normally achieving peers by both parent and teacher informants on the aggressive and externalizing scales of the Achenbach System of Empirically Based Assessment. As seen in Table 5, 10 of 16 children from the NLD group had been rated within the borderline-clinical or clinical range by parents on the Externalizing scale, versus 2 of 15 from the control group. On the Aggressive syndrome scale, parents rated 6 out of 16 NLD participants within the borderline-clinical and clinical ranges and one from the NA group. This is consistent with studies by Greenham (1999) and Scheeringa (2001) that have found evidence that children with NLD are at greater risk for externalizing symptoms than NA peers. Parents of children with NLD rated their children significantly higher than teachers of children with NLD on the Aggression and Externalizing syndrome scales. These results emphasize that parents are experiencing their NLD children and youth as more difficult behaviorally.

In the current study children and youth with NLD were rated higher than their NA peers on both internalizing and externalizing measures, however the most serious difficulties may be in the internalizing domains. Although 10 of 16 participants with

NLD were rated in the borderline-clinical or clinical range by parents on the Externalizing scale, 15 of 16 were rated in these ranges on the internalizing scale (see Table 3). Six of 16 participants from the NLD group were rated within the borderline-clinical and clinical ranges by parents on the Aggression syndrome, while 11 of 16 were rated within these ranges on both the Anxious/Depressed and Withdrawn/Depressed syndrome scales. Thus, this study may help clarify where NLD children are having the most difficulty. It is clear that for an individual with NLD, both internalizing and externalizing disorders should be assessed.

One criticism of the current study may be that the NLD participants were drawn from a clinic referred sample. However, comparisons from a study conducted concurrently, and within the same metropolitan area, may address this issue. Correia (2007) recruited participants through several avenues. A recruitment flyer was posted on an NLD website, distributed at a professional presentation and at a support group for parents of children with NLD, and distributed to professionals working with children with learning disabilities. Parents of children with NLD at a Catholic school were also sent an information letter. The current study replicated the findings of Correia (2007) in terms of the patterns and severity of difficulties across internalizing and externalizing symptoms.

As reviewed earlier, there has not been much research examining social and cognitive processing in children with NLD. Research with learning disabilities more generally has been conducted but is not without its difficulties, as it does not differentiate between learning disability subtypes (Galway, 2007). Previous research examining social cognitive processing in children with learning disabilities as a whole, have found that

children with learning disabilities performed significantly poorer than their normally achieving peers on social cognitive processing tasks (e.g., Cohen, Menna, Vallance, Barwick, Im, & Horodezky, 1998; Tur-Kaspa & Bryan, 1994). Tur-Kaspa and Bryan (1994) found that students with learning disabilities had difficulties understanding social information and more frequently selected incompetent solutions to social situations.

The current study examined one aspect of social cognition in children with NLD. Children with NLD differed from normally achieving peers on a measure of hostile attribution bias. Hostile attribution bias describes a tendency to interpret the intent of others as hostile when social cues fail to indicate an obvious intent (e.g., Crick & Dodge, 1994; Dodge, 1986; & Dodge and Somberg, 1987). A Social Problem Solving Measure (Galway, 2007) was used to examine hostile attribution bias. Children and youth were presented with 8 hypothetical social dilemmas and after listening to each, where presented with a series of questions. Children responded to the question, "Was (the other person) being mean or not being mean in the story?" Children with NLD were significantly higher than the control group on this measure, indicating that they were more likely to endorse a story character as being mean (HAB) than their NA peers.

Interpreting the intent of others as hostile can alter how information is perceived, and lead the child to attend only to aggressive or deviant cues in a situation or to generate primarily aggressive or deviant responses (Dodge, 1986). Dodge and Tomlin (1983) found that children who recalled a high number of hostile cues when processing social information were more likely to make hostile interpretations of the person in the social situation. Previous research found that children categorized as aggressive or diagnosed with conduct disorder attributed hostile intent to peer provocateurs more frequently than

did their nonaggressive peers (e.g., Crick & Dodge, 1996; Dodge, 1990; Milich & Dodge, 1984). Previous research had not examined hostile attribution bias in children and youth with NLD.

The results of this study are important in helping us better understand how children with NLD may interpret the intent of others and process social situations, which could then contribute to the social difficulties commonly associated with this group. The current study also indicates that the social difficulties of children with NLD may not be exclusively due to impairments with reading nonverbal cues. Previous research has shown that children with NLD have difficulty interpreting facial expressions and other nonverbal emotion cues (e.g., Dimitrovsky, 1998; Petti et al., 2003). Dimitrovsky (1998) proposed that children with nonverbal deficits are at an increased likelihood of developing social and emotional problems due to this difficulty with interpreting facial expressions. In the current study the social vignettes were read to the children and did not require them to interpret nonverbal cues. This leads us to believe that there are additional contributions to the social difficulties of children with NLD than reading nonverbal cues. A limitation of reading vignettes to children is that it only allowed an examination of what the children report they would do in that social situation, and not how they actually do behave in real life situations. A further limitation was that the current methodology did not allow us to examine whether children interpret social situations differently if they involve a close friend or relative, as opposed to a "hypothetical" child. Hostile attribution bias may vary with the familiarity of people in the situation and this could be examined in future research.

We examined hostile attribution bias in children and youth with NLD because other populations with social and adjustment difficulties have been found to display this bias on social information processing tasks. Specifically, children and youth with heightened aggression and those with depression have been found to display a hostile attribution bias (e.g., Crick & Dodge, 1994, 1996; Coy, et al., 1999; Dodge, 1986; & Quiggle et al., 1992). We were further interested in whether the shared psychosocial difficulties among children with NLD, externalizing disorders, and depression would account for or explain the hostile attribution bias in the NLD population. To examine this we first entered the Anxious/Depressed , Withdrawn/Depressed, and Aggressive composites, followed by group membership, into separate hierarchical regressions predicting hostile attribution bias. Interestingly, our group differences were accounted for by individual differences in depression and aggression, but not by individual differences in anxiety; indeed depression and aggression have been linked to hostile attribution bias, while anxiety has not. It may be that higher levels of depression in the NLD population lead to hostile attribution bias. Similarly, it may be that the higher levels of aggression lead to hostile attribution bias in the NLD population. On the other hand, it may be that these groups of children and youth have difficulties with social adjustment which leads to heightened levels of aggression, depression, and hostile attribution bias. The current study was not designed to examine these causal relationships, but is a first step toward demonstrating social information processing biases in children and youth with NLD.

Implications of Current Findings

Understanding the social-emotional functioning in children and youth with NLD has important implications for assessment and intervention strategies. The current study helps to identify in which areas children with NLD have adjustment difficulties. Children with NLD were rated higher than NA peers, and in the clinical range, on internalizing scales. The NLD group was also higher on externalizing scales, than the control group, although mean scores fell within the average range. This reinforces findings from previous studies that showed children with NLD were at risk for developing internalizing psychopathologies, particularly higher reports of depression and anxiety symptoms were observed. Ten of the NLD children were also in the borderline-clinical range or clinical range on the Externalizing scale as rated by parents. Therefore, children with NLD should also be assessed for difficulties associated with both externalizing and internalizing disorders.

The current study also points to the importance of multiple informants. It may be useful for those in the school system working with children and youth with NLD to realize that parents may be particularly sensitive to these children's internalizing symptoms and struggles, and to always solicit parents' input. Clinicians, teachers, and parents should be cognizant that NLD children are at a higher risk of developing psychopathologies and be aware of supports available for these children.

One finding of this study was that these children and youth have social information processing biases, which may contribute to their difficulties relating to peers in school and group contexts. Specifically, children with NLD may be more likely to interpret others' actions as hostile or mean. This could certainly influence how children

and youth with NLD would feel about the other person, the situation, and even themselves. Interpreting the intent of others as hostile is reported to skew the manner in which information is perceived (Dodge, 1989), which may direct the child to attend to only aggressive or deviant cues or to generate primarily aggressive or deviant responses. Further, it could contribute to responding inappropriately in a situation.

Some current interventions for children and youth with NLD focus on recognizing nonverbal cues, as well as developing strategies for common social situations (e.g., Tanguay, 2001; Thompson, 1997). The current study suggests that focusing on how children and youth with NLD are representing a social situation, and in particular, how they are attributing intent to others' behaviors might be a fruitful component of these interventions.

Finally, the current study suggests that children and youth with heightened depression and aggression may have a bias towards attributing hostile intent to others, regardless of the diagnosis (e.g., ADHD, ODD, Depression, NLD). Understanding how hostile attribution bias arises within diverse childhood psychopathologies may be one focus for future research.

The current thesis was completed as part of the requirements for the Master of Arts in School Psychology program and the findings from this study are relevant to the school psychology practice. School psychologists can play an important role in educating parents and school personnel about Nonverbal Learning Disabilities. Awareness could be raised about the pattern of cognitive, academic, and social difficulties these children and youth experience. Both early intervention and a focus on social interactions could be promoted by school psychologists. There is a lack of intervention programs for children

with NLD. In addition to a focus on interpreting nonverbal cues, further developing positive social interactions through interventions that may include components of social problem solving and reading intent of others could be helpful for this population.

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APPENDICES

Appendix A

SOCIAL PROBLEM SOLVING MEASURE (SPSM) – VERBAL PROTOCOL

Part 1: Representing the Problem

To begin the examiner says:

Everyone runs into problems with other people some of the time. I am going to read you several make-believe examples of these kinds of problems. For each example, I want you to imagine that the problem has happened to you. I will then ask you several questions about each example. O.K., Ready?

Story 1. You are walking to school and you're wearing your new running shoes. You really like your new shoes and this is the first day you have worn them. Suddenly, you are bumped from behind by another kid. You stumble into a mud pile and your new shoes get wet.

What are you wearing that is new? (If children do not answer correctly, the scenario will be re-read and the recall question repeated).

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess?" or "Give it a Try").

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?").

3. Why would you feel that way? (If a child responds with "don't know", probe once with "Take a guess ?" or "Give it a try")

4. How would the other kid feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5. Why would the other kid feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

6. Was the other kid being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Take a guess?" or "Give it a try")

Note: If the child's logic is unclear or the response does not make sense, probe with "Can you say a little more about that? Or "Explain what you mean"

Story 2. You and Tom are friends. You have been assigned to work together on a science project in school and only have two days to finish the project. You meet after school and you say you want to start working on the project right away, but Tom wants to play softball first.

What did Tom want to do before working on the science project?

(If children do not answer correctly, the scenario will be re-read and the recall question repeated).

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess?" or "Give it a try").

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?").

3. Why would you feel that way? (If a child responds with "don't know", probe once with "Could you take a guess?")

4. How would Tom feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5. Why would Tom feel that way? (If a child responds with "don't know", probe once with "Take a guess" or Give it a try")

6. Was Tom being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Take a guess" or Give it a try")

Story 3. One day your class has a substitute teacher. You remember that you are supposed to leave school early for an important doctor's appointment, but you forgot to bring a note from your mother. When you ask if you can leave the substitute teacher says that you can't leave without a note.

Why do you have to leave school early? (If children do not answer correctly, the scenario will be re-read and the recall question repeated).

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess or "Give it a try).

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?").

3. Why would you feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

4. How would the substitute teacher feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5. Why would the substitute teacher feel that way? If a child responds with "don't know", probe once with "Take a guess" or "Give it a try".

6. Was the substitute teacher being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

Story 4. You have just finished an art project for school. You've worked on it a long time and you're really proud of it. Another kid comes over to look at your project. The kid is holding a jar of paint. You turn away for a minute and when you look back the kid has spilled paint on your art project. You worked on the project for a long time and now it's ruined.

What kind of project were you working on? (If children do not answer correctly, the scenario will be re-read and the recall question repeated).

The following questions are asked:

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess" or "Give it a try")

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

3. Why would you feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

4. How would the other kid feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5. Why would the other kid feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

6. Was the other kid being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

Story 5. You are in the bathroom one day after recess. While you are in there, two other kids from your class come in and start talking to each other. You hear one of the kids invite the other one to a birthday party. The kid says that there are going to be a lot of people at the party. You have not been invited to this party.

Where are you when you hear the other kids talking? (If children do not answer correctly, the scenario will be re-read and the recall question repeated).

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess" or "Give it a try")

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?").

3. Why would you feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

4. How would the other kids feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5. Why would the other kids feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

6. Were the other kids being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

Story 6. Your teacher, Mrs. Able, wants every kid in the class to find a partner to work with on a school project. Mrs. Able says that all the kids should work with someone they don't know very well, but you want to work with your good friend, Peter.

What is the teacher's name? ? (If children do not answer correctly, the scenario will be re-read and the recall question repeated).

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess" or "Give it a try")

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?").

3.Why would you feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

4.How would Mrs. Able feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5.Why would Mrs. Able feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

6.Was Mrs. Able being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

Story 7. You and Steve are classmates. You don't know each other very well, but your teacher has assigned you to work together on a social studies project about Africa, and you are trying to decide on a topic. You want to do the report on wild animals, but Steve wants the report to be about different tribes, like pygmies.

What do you want to do the report on? (If children do not answer correctly, the scenario will be re-read and the recall question repeated).

The following questions are asked:

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess? or "Give it a try")

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?").

3. Why would you feel that way? (If a child responds with "don't know", probe once with "Take a guess?" or "Give it a try")

4. How would Steve feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5. Why would Steve feel that way? (If a child responds with "don't know", probe once with "Take a guess?" or "Give it a try").

6. Was Steve being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try").

Story 8. You are taking a walk in your neighborhood one day. After you walk a block or two, you see two kids that you know from school. You walk over to the kids and say "hi". The two kids act as if you are not there---they don't say anything to you. Then they say something to each other that you can't hear and they walk the other way.

Where are you walking? (If children do not answer correctly, the scenario will be re-read and the recall question repeated).

1a. What is the problem here? (If the child responds with "don't know" to question 1a. or 1b., probe once with "Take a guess" or "Give it a try").

1b. Why is that a problem? (It is important to ask all the why questions even if the child has given a response with the because clause in it. The child will usually elaborate on his or her reasoning and without the why the administration is not standardized (Schultz, Yeates, & Selman, 1989).

2. How would you feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?").

3.Why would you feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try")

4. How would the other kids feel? (If the child does not state a feeling, probe once with "What is the emotion they would be feeling?")

5. Why would the other kids feel that way? (If a child responds with "don't know", probe once with "Take a guess" or "Give it a try").

6. Were the other kids being mean or not being mean in this story? (If a child responds with "don't know", probe once with "Could you take a guess?").

Part 2 – Response Access or Construction and Response Decision

To begin the examiner says:

I will be reading several more stories about kids your age and things that happen to them. For each story, imagine that the situation has happened to you. I will then ask you several questions about each story. O.K., Ready?

Story 9. You brought your new radio to school today. You saved up your allowance to buy the radio and want to show it to other kids at school. You let another kid play with it for a few minutes while you go to get a drink of water. When you get back, you realize that the kid has broken your radio.

The following questions are asked:

7. What could you say or do if this happened to you? Probe: What else could you say or do? Participants were probed for up to 6 responses or until they gave no response or "don't know"

8. What would be the *best* way for you to solve your problem with the other kid out of the (insert number of responses given) responses you gave me. Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. Then I am going to ask you to rate how good or bad each child's response is using this scale (participants are given the number line with a Likert scale that ranges from 1 "very bad" to 4 "very good"). Look at this page, it has boxes with numbers and words. See, the number 1 goes with "very bad", 2 goes with "a little bad", 3 goes with "a little good" and 4 goes with "very good". After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (a shortened version of these instructions are used for vignettes 10 through 16)

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a) One kid hit the kid that broke his radio. How good or bad is this?

b) One kid took his radio from the other kid and walked away. How good or bad is this?

c) One kid asked the kid who broke his radio what happened. How good or bad is this?

After the participants rated each response strategy they were asked the following questions:

a) What do you think would happen if you hit the kid who broke the radio?

b) What do you think would happen if you took the radio from the other kid and walked away?

c) What do you think would happen if you asked the kid who broke the radio what happened?

Story 10. You and Carl are friends. One day at school, you are trying to decide what to do on the weekend. You want to invite the new kid in your class to see a movie with you, but Carl says he doesn't feel like having the new kid along. *The problem is that Carl is your friend and you don't want to fight over inviting the new kid to the movies, but you would like to invite the new kid to come along.*

The following questions are asked:

10. What could you say or do if this happened to you? Probe: What else could you say or do? (Participants were probed for up to 6 responses or until they gave no response or "don't know").

11. What would be the *best* way for you to solve your problem with Carl out of the (insert number of responses given) responses you gave me. Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (participants are given the Likert scale).

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a) One kid said mean things about Carl to the new kid. How good or bad is this?

b) One kid asked Carl why he did not feel like having the new kid come along. How good or bad is this?

c) One kid did not invite the new kid even though he wanted to. How good or bad is this?

After the participants rated each response strategy they were asked the following questions:

a) What do you think would happen if you said mean things about Carl to the new kid?

b) What do you think would happen if you asked Carl why he did not feel like having the new kid come along?

c) What do you think would happen if you did not invite the new kid even though you want to?

Story 11. One day in the lunchroom, you are the last one sitting at a messy table. A teacher that you don't know very well asks you to clean it up. You don't want to use up all your recess time cleaning up the table. *The problem is that you were not the only person who made the mess, so you don't want to use up all of your recess time cleaning the table.*

The following questions are asked:

7. What could you say or do if this happened to you? Probe: What else could you say or do? Participants were probed for up to 6 responses or until they gave no response or "don't know".

8. What would be the *best* way for you to solve your problem with (the other person) out of the (insert number of responses given) responses you gave me. Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (participants are given the Likert scale).

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a) One kid said "it's not my mess" and pushed the garbage off the table onto the floor. How good or bad is this?

b) One kid asked the teacher to get other students to help clean the table. How good or bad is this?
c) One kid put his head down and cleaned the table. How good or bad is this?

After the participants rated each response strategy they were asked the following questions:

a) what do you think would happen if you said "it's not my mess" and pushed the garbage off the table onto the floor?

b) What do you think would happen if you asked the teacher to get other students to help clean the table?

c) What do you think would happen if you put your head down and cleaned the table?

Story 12. You are sitting at the lunch table at school, eating lunch. You look up and see another kid coming over to your table with a carton of milk. You turn around to eat your lunch, and the next thing that happens is that the kid spills milk all over your back. The milk gets your shirt all wet.

The following questions are asked:

7. What could you say or do if this happened to you? Probe: What else could you say or do? Participants were probed for up to 6 responses or until they gave no response or "don't know".

8. What would be the *best* way for you to solve your problem with the other kid out of the (insert number of responses given) responses you gave me. Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (participants are given the Likert scale).

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a) One kid kept on eating his lunch. How good or bad is this?

b) One kid asked the kid what happened. How good or bad is this?

c) One kid poured his milk all over the other kid's back. How good or bad is this?

After the participants rated each response strategy they were asked the following questions:

a) What do you think would happen if you kept on eating your lunch?

b) What do you think would happen if you asked the kid what happened?

c) What do you think would happen if you poured your milk all over the other kid's back?

Story 13. You are standing in the hallway one morning at school. As you are standing there, two kids from your class walk by. As they walk by you, the two kids look at you, whisper something to each other and then they laugh.

The following questions are asked:

7. What could you say or do if this happened to you? Probe: What else could you say or do? Participants were probed for up to 6 responses or until they gave no response or "don't know".

8. What would be the *best* way for you to solve your problem with the other kids out of the (insert number of responses given) responses you gave me. Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (participants are given the Likert scale).

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a. One kid went back to class and said mean things about the two kids. How good or bad is this?
b. One kid turned around and ran in the other direction. How good or bad is this?
c. One kid asked the two kids what was so funny. How good or bad is this?

After the participants rated each response strategy they were asked the following questions:

A. What do you think would happen if you went back to class and said mean things about the two kids?
B. What do you think would happen if you turned around and ran in the other direction?
C. What do you think would happen if you asked the two kids what was so funny?

Story 14. You are looking forward to recess because you and your friends are going to practice for the school competition in soccer that's taking place the next day. During class your teacher says that you are behind in math and she wants you to stay in at recess to work on extra math problems. *The problem is that you won't be able to practice for the school competition in soccer with your friends, if you stay in at recess to work on extra math problems.*

The following questions are asked:

7. What could you say or do if this happened to you? Probe: What else could you say or do? Participants were probed for up to 6 responses or until they gave no response or "don't know".

8. What would be the *best* way for you to solve your problem with (the other person) out of the (insert number of responses given) responses you gave me. Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (participants are given the Likert scale).

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a) One kid kicked the desk and yelled "this stinks". How good or bad is this?
b) One kid stayed in at recess and did not get to practice for the soccer competition. How good or bad is this?
c) One kid asked the teacher if he could stay in tomorrow instead, so that he could practice for the soccer competition at recess. How good or bad is that?

After the participants rated each response strategy they were asked the following questions:

a) What do you think would happen if you kicked the desk and yelled "this stinks"?

b) What do you think would happen if you stayed in for recess and did not get to practice for the soccer competition?

c) What do you think would happen if you asked if you could stay in tomorrow instead, so that you could practice for the soccer competition?

Story 15. You and John are both in the same grade, but you don't know each other very well. On the playground one day, you are both picked to be on the same kickball team. You are both good pitchers, you both like to play that position best, and you both would like to pitch that day. *The problem is that you and John have to play together on the same team, but you both want to pitch.*

The following questions are asked:

7. What could you say or do if this happened to you? Probe: What else could you say or do? Participants were probed for up to 6 responses or until they gave no response or "don't know".

8. What would be the *best* way for you to solve your problem with John out of the (insert number of responses given) responses you gave me? Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (participants are given the Likert scale).

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a) One kid suggested that they take turns pitching. How good or bad is this?

b) One kid put his head down and walked toward the outfield. How good or bad is this?

c) One kid pushed John out of the way and ran over to the pitchers mound. How good or bad is this?

After the participants rated each response strategy they were asked the following questions:

a) What do you think would happen if you suggested that you take turns pitching?

b) What do you think would happen if you put your head down and walked toward the outfield?

c) What do you think would happen if you pushed John out of the way and ran over to the pitchers mound?

Story 16. You are at lunch one day and looking for a place to sit. You see some kids you know at a table across the room. The kids are laughing and talking to each other and they look like they are having a good time. You walk over to their table. As soon as you sit down, the kids stop talking and no one says anything to you.

The following questions are asked:

7. What could you say or do if this happened to you? Probe: What else could you say or do? Participants were probed for up to 6 responses or until they gave no response or "don't know".

8. What would be the *best* way for you to solve your problem with the other kids out of the (insert number of responses given) responses you gave me. Your (insert number of responses given) responses were…(the responses that the participant gave in question 7 are provided)?

9. Now I am going to read some things that other children said that they could say or do if this happened to them. After I read each child's response I want you to tell me if it is "very bad", "a little bad", "a little good" or "very good" you can use the words or numbers which ever you prefer (participants are given the Likert scale)..

Each of the three response strategies supposedly given by other children (presented in counterbalanced order, including a competent/assertive, an aggressive and a passive withdrawal response) are assessed.

a) One kid moved to another table. How good or bad is this?

b) One kid asked the kids at the table a question to get into the conversation. How good or bad is this?

c) One kid said mean things about the kids at the table. How good or bad is this?

After the participants rated each response strategy they were asked the following questions:

a) What do you think would happen if you moved to another table?

b) What do you think would happen if you asked the kids at the table a question to get into the conversation?

c) What do you think would happen if you said mean things about the kids at the table?