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# Assessing Effects of IQ on Sociable and Withdrawn Behaviors in Children with Language Impairment

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ASSESSING EFFECTS OF IQ ON SOCIABLE AND WITHDRAWN BEHAVIORS IN  
CHILDREN WITH LANGUAGE IMPAIRMENT

by

Amanda L. Bradshaw

A thesis submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Master of Science

Department of Communication Disorders

Brigham Young University

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BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

of a thesis submitted by

Amanda L. Bradshaw

This thesis has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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BRIGHAM YOUNG UNIVERSITY

As chair of the candidate's graduate committee, I have read the thesis of Amanda L. Bradshaw in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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## ABSTRACT

### ASSESSING EFFECTS OF IQ ON SOCIABLE AND WITHDRAWN BEHAVIORS IN CHILDREN WITH LANGUAGE IMPAIRMENT

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Master of Science

The purpose of this study was to determine the influence of IQ on subtypes of sociable and withdrawn behaviors in children with language impairment (LI). Research has suggested that children with LI are more likely to experience difficulty with social interaction than their typically developing peers (Brinton & Fujiki, 1999; Rice, 1991). The Teacher Behavior Rating Scale (Hart & Robinson, 1996) was used to compare sociable and withdrawn behaviors in 19 children with LI and 19 children with typically developing language. IQ scores for each participant were obtained by administering the *Universal Nonverbal Intelligence Test* (Bracken & McCallum, 2003). These scores were used as a covariate in group comparisons of sociable and withdrawn behaviors. Comparisons indicated that classroom teachers rated children with LI as displaying more withdrawal and less sociable behaviors than typically developing children even when IQ was controlled.

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## Introduction

Children with impaired linguistic functioning in the face of unremarkable cognitive, social, and physical development are considered to have language impairment (LI, Leonard, 1998). In essence, LI has been defined as a disorder that affects a child's linguistic ability while other areas of functioning are within typical limits. There are indications, however, that children with LI may have difficulty in other aspects of development that impact quality of life. For example, a large body of research has documented the fact that children with LI experience difficulty with social interaction (Brinton & Fujiki, 1999; Fujiki, Brinton, & Todd, 1996; Rice, 1991). Children with LI are less accepted by classmates than their typically developing peers (Fujiki, Brinton, Hart, & Fitzgerald, 1999; Gertner, Rice, & Hadley, 1994). They initiate conversations with classmates less frequently (Cunningham, Siegel, Van der Spuy, Clark, & Bow, 1985) and have difficulty accessing ongoing interactions (Craig & Washington, 1993). Additionally, children with LI are more likely to ignore or be ignored by their peers (Hadley & Rice, 1991) and tend to be less sociable and more withdrawn than their typical peers (Fujiki, Brinton, Isaacson, & Summers, 2001; Fujiki, Brinton, Morgan, & Hart, 1999).

It might be assumed that these social deficits stem directly from their linguistic deficiencies. However, there are reasons to believe that the relationship between language and behavior may not be so straightforward. There may be other factors that influence social interactions. For example, emotion regulation has been shown to play as important a role as language in predicting the reticent behavior of children with LI (Fujiki, Spackman, Brinton, & Hall, 2004). Among the various factors that may interact with

language to influence social ability, a basic one to consider is intelligence. The current project will examine how intelligence, as measured by IQ, influences the social abilities of children with LI.

### *Intelligence and IQ*

From the very beginning, the notion of intelligence has been a subject of debate among researchers. Many definitions have been developed to describe intelligence; some are general, others more specific. For example, Spearman (1904) described intelligence as a general ability rather than an assembly of single elements. Thurstone and Thurstone (1941), however, proposed that intelligence is comprised of six separate but related abilities including: verbal comprehension, word fluency, number, memory, inductive reasoning, and spatial visualization. Sternberg (Cianciolo & Sternberg, 2004), on the other hand, suggested that intelligence is composed of analytical, creative, and practical abilities. Even today, the description of intelligence is under debate. The definition of intelligence employed in the current study is “the ability to solve problems using memory and reasoning” (Bracken & McCallum, 2003, p. 12).

The idea of measuring intelligence flourished in the late 19<sup>th</sup> century. Psychologists and educators sought to capture some notion of innate ability or capacity that could be described based on performance and compared to “precise standards of achievement” (Danziger, 1997, p. 75). By 1905, Binet had developed a testing measure designed to identify intelligence quotient (IQ), a quantifiable indication of intelligence that could be compared to a normative sample. Traditional IQ tests were verbally based, using the ability to perform verbal tasks as a means for measuring intelligence (Bracken & McCallum, 2003).

Traditional IQ tests proved to be questionable measures for some populations. For example, individuals with limited proficiency in language, such as those with LI, were unable to comprehend and respond effectively to testing stimuli due to compromised linguistic capabilities. Because of these difficulties verbal intelligence measures did not allow researchers to determine whether performance reflected language, cognitive ability, or a combination of both. Consequently, it was determined that tasks tapping nonverbal abilities would be needed to provide a more accurate measure of IQ for these populations (DeThorne & Schaefer, 2004).

Nonverbal intelligence measures such as the *Universal Nonverbal Intelligence Test* (UNIT; Bracken & McCallum, 2003) were developed to provide more useful assessments of general intelligence in populations who were disadvantaged by traditional assessments. Nonverbal measures of IQ continue to be used to tease out IQ from language ability in children with LI. Additionally, nonverbal measures may be useful for examining IQ as a factor in determining social behavior in children with LI.

#### *IQ and Social Competence in Children with LI*

Intelligence is correlated with visual-spatial ability, mathematical ability, verbal ability (including abilities such as verbal fluency, reading comprehension, and writing), and memory (Cianciolo & Sternberg, 2004). It has also been suggested that intelligence influences specific abilities important to social functioning such as a child's play structure (Wright, 1990). Additional research has revealed a relationship between intelligence and social ability in children with exceptionally high IQs as compared to those with moderately high IQs (Garland & Zigler, 1999).

Intelligence, as reflected by IQ, is shown to influence adaptive behaviors such as communication, socialization, and daily living skills in various population groups. The relationship between social competence and IQ, however, is unclear. The following studies provide a brief sampling of work examining this relationship.

Numerous studies have suggested that IQ is predictive of adaptive behaviors in children with low functioning autism or mental retardation (Bacon, Fein, Morris, Waterhouse, & Allen, 1998; Flexer, Sigelman, DeSanctis, & Danker-Brown, 1979; Liss et al., 2001; Vig & Jedrysek, 1995). Additional research has revealed similar associations in other population groups. It was found that IQ was correlated with communication and socialization behaviors in children with various disabilities, including those with LI (Vig & Jedrysek, 1995). Liss et al. (2001) reported that nonverbal IQ predicted socialization in children with LI in their study. At the same time, the *Token Test* (DiSmoni, 1978), which measures attention and comprehension of complicated verbal directions, predicted communication and daily living skills. It was concluded that IQ rather than language was related to social skill. This leads one to believe that nonverbal IQ may be related to social skills in children with LI.

Some research, however, suggests that IQ is not predictive of social behavior. For example, Weiner, Harris, and Shirer (1990) considered IQ, achievement, and social behavior in children with learning disabilities (LD). They noted that these children had difficulty interacting with peers, were generally less popular, and were more often rejected than their typical peers. IQ, however, did not predict peer acceptance in children with LD.

The influence of IQ on social ability is complex and information regarding this connection is limited. It is certainly possible; however, that intelligence, as reflected by IQ, plays an influential role in the withdrawn and sociable behaviors of children with LI. Further research is needed to clarify this relationship. The purpose of the present study is to determine how IQ, as measured by a nonverbal assessment such as the UNIT, impacts the relationship between LI and social behavior, specifically reticent withdrawal and sociability.

## Review of Literature

This review of literature will begin by defining intelligence and briefly addressing different theories and the measurement of intelligence. It will then address various capacities, including social abilities that can be influenced by IQ. Withdrawn and sociable behaviors will be introduced and their subtypes will be discussed. Finally, this review will discuss the influence of IQ on LI.

### *Intelligence*

Intelligence has been described in a variety of ways. Early theorists used this term synonymously with others such as ‘intellect’ or ‘natural ability.’ It was a general term lacking a definition of its own (Danziger, 1997). Today, theorists continue to debate the definition of intelligence and its influence on human capacities. The definition of intelligence used in the present study is “the ability to solve problems using memory and reasoning” (Bracken & McCallum, 2003, p. 12). Generally, intelligence refers to a person’s ability to learn, comprehend, and reason. As implied by this definition, intelligence influences a wide range of human capacities. Many factors influence a person’s abilities or disabilities, however, and it is difficult to draw causal links between intelligence and specific characteristics or behaviors (Ormrod, 2003).

*General theories of intelligence.* One of the early theories of intelligence was presented by Spearman (1904). Spearman theorized that intelligence is best described as a general ability, rather than an assembly of single elements. Although Spearman’s theory of intelligence is supported by many theorists, some feel that intelligence can be better explained by examining specific abilities in a variety of domains. As an example, Thurstone and Thurstone (1941) suggested that a child’s general cognitive ability could

be described by measuring performance in a number of areas and compiling a composite. Others such as Gardner (1999) argued that there are multiple forms of intelligence that are relatively independent of one another. More recently, Sternberg (Cianciolo & Sternberg, 2004) presented the triarchic theory suggesting that successful intelligent behavior involves the balance of analytical, creative, and practical abilities. He proposed that in order for individuals to be successful in life, they must learn to capitalize on their strengths and compensate for their weaknesses in each of these areas.

*Assessment of intelligence.* Methods for measuring human intelligence flourished in the late 19<sup>th</sup> century. Galton (1907) was among the theorists who inspired the idea of measuring intelligence. Psychologists and educators hoped to devise measures that would predict a person's probability for future success. Such measures would enable them to evaluate innate ability or capacity based on performance that could be compared to "precise standards of achievement" (Danziger, 1997, p. 75). These initial measures of intelligence, or IQ tests, provided quantifiable data that permitted comparison of an individual's intelligence to an established norm (Danziger, 1997). IQ tests were comprised of a series of tasks requiring reasoning, logic, and problem solving. Binet (1905), one of the early developers of intelligence tests, formulated an assessment that became the model after which many other assessments were patterned.

Although traditional IQ tests were described as effective measures of general intelligence, they proved to be biased against some populations. One major weakness of traditional IQ tests was their dependence upon verbal abilities. The verbal nature of these assessments put many groups, including children with LI, at a disadvantage (Bracken & McCallum, 2003). For instance, when assessing a student's reasoning ability, traditional

IQ tests required examiners to give verbal test instructions and also required verbal responses from test participants. Examples of language-based tasks included defining words, making verbal analogies, pointing to described items, or naming items according to their functions. In children with LI, apparent intellectual limitations reflect linguistic limitations that influence the child's ability to comprehend or respond to testing material. As a result, many children with limited verbal proficiency were classified as having low IQs when their nonverbal abilities may have been within typical limits (Nelson, 1993).

Since traditional IQ tests did not effectively tease out IQ from language ability, it was determined that other assessments were needed to more accurately evaluate the intelligence of populations with limited linguistic proficiency. Recent measures of intelligence, such as the UNIT, have been developed to assess populations with disabilities without the use of verbal instruction or response. The UNIT has reduced the testing bias toward many population groups with limited linguistic proficiency.

*IQ and various abilities.* The notion of intelligence involves a range of human abilities. For example, Carroll (1993) identified and described numerous abilities that are associated with intelligence. Some of the general cognitive abilities he described include language, reasoning, memory and learning, visual perception, auditory reception, idea production, cognitive speed, knowledge and achievement, and psychomotor abilities. In addition, he addressed miscellaneous abilities such as sensory perception, attention, motivation, interest, personality, and other behavioral domains that are associated with intelligence. Within each general cognitive domain he described hundreds of token factors, which are "latent traits reflecting differences over individuals in ability characteristics or potentials" (Carroll, 1993, p. 22). Token factors may include abilities

such as spelling, visual memory, or tonal memory. Besides the numerous token factors influenced by intelligence, additional factors such as environment, motivation, personality, socioeconomic status, and gender may also influence a person's ability in a particular area. As a result, it is often difficult to separate intelligence from other variables when assessing a specific ability. This section will highlight a few studies that demonstrate the influence of intelligence, as reflected by IQ, on human capability.

Abilities influenced by IQ include those that are required for proficiency in academic environments. IQ tests are reported to be fairly good predictors of academic performance (DeThorne & Schaefer, 2004; Kauffman, 1989). Their subtests span a variety of capacities, which influence a child's ability to function within an academic environment. IQ subtests may require a child to answer questions about factual information in order for the clinician to find clues about the child's general knowledge of the world, alertness to the environment, social or cultural background, and attitudes toward education (Sattler, 1992). Subtests may include sections assessing abilities in the following areas: arithmetic, digit span, picture completion, picture arrangement, object assembly, block design, coding, similarities, vocabulary, comprehension, or thinking through issues (Kamphaus, 2001; Sattler, 1992). Although each of these domains may not directly reflect specific academic abilities (e.g., language or mathematics), they tap the underlying abilities that are required to function within a classroom. More direct assessments include measurement of the ability to follow directions, organize information, abstract ideas, or find relationships that are not inherently obvious. IQ tests may also assess students' abilities to draw from previously acquired knowledge to form logical conclusions.

Kaufman and McLean (1998) found a strong relationship between IQ and people's interests. Their study involved 936 participants between ages 16 and 65 years. Each participant was administered an IQ test and an interest inventory. The interest inventory was used to determine each participant's likes and dislikes on items having to do with occupations, school subjects, types of people, hobbies, and leisure activities. Results showed large differences on the interest inventory according to intelligence level. Individuals with high IQs were found to be more artistic and investigative than those with average or low IQs. They were also more interested in investigative occupations such as science and abstract problem solving than people with lower IQs, providing a possible explanation for their investigative nature. In addition, the authors reported that intellectual ability was highly predictive of success for investigative occupations.

Wright (1990) determined that IQ affected types of play among children in her study. Twenty-six preschoolers, ages 3 to 5 years, participated in this study. All children came from middle- and upper-class backgrounds. Prior to entrance into a preschool, each child went through a comprehensive screening process. Assessments included IQ testing, observation while interacting with a small group of peers on a teacher-directed activity, and a parent questionnaire. After children were assessed, researchers divided the sample in half according to IQ and compared the results. Wright found that children with varying IQs displayed similar social participation abilities. However, she also found that IQ strongly influenced levels of play in the participants. Children with lower IQs participated in more constructive and less dramatic play than children with high IQs. Conversely, the higher IQ group chose complex dramatic play tasks almost three times more than constructive play. Wright concluded that, as a child's intellectual capacity

increased, the complexity of a task also increased. Therefore, complex dramatic activities were generally more appealing to children with higher IQs.

*IQ and social ability.* IQ tests are fairly effective general predictors of how students will adapt to everyday social demands (Kauffman, 1989). It has been suggested that students with behavior problems tend to have lower IQs than those who exhibit typical behaviors. Researchers have also proposed that children with the most severe behavior problems usually have much lower IQs than those with more mild behavior problems. Although IQ appears to be related to social behaviors, Kauffman noted that this “correlation between intelligence and level of behavior disorder does not imply a causal relationship” (p. 184). Nevertheless, Kauffman suggested that IQ appears to be the best single predictor of educational achievement and social adjustment in disturbed patients and is shown to be an effective predictor of social and academic skill in children with autism.

Kauffman (1993) further investigated the relationship between low IQ, low achievement, and antisocial behavior (i.e., hostile aggression, incorrigibility, truancy, running away from home, vandalism, sexual misconduct). He developed several hypotheses in attempt to explain the complex interaction between these variables. It was suggested that the majority of children who have low achievement scores also have low IQs, but are not considered antisocial. However, the relationship between these variables may differ across children. It was suggested that some children with low IQ and achievement scores may exhibit antisocial behaviors. Few children with high IQ and achievement scores, however, will demonstrate antisocial behaviors. In addition to the above stated variables, Kauffman suggested other variables that may influence the

relationship between IQ, achievement, and antisocial behavior. These may include the severity of the antisocial behavior, socioeconomic status, and parents' behavior.

Benasich, Curtiss, and Tallal (1993) performed a longitudinal study investigating the relationship between emotional behavioral problems and language ability in 99 8-year old children with LI. It was determined that children with LI displayed a much higher proportion of problem behaviors than did their typical peers. Upon analyzing causal factors, Benasich et al. suggested that it was IQ, rather than linguistic deficiency, that predicted problem behaviors or emotional status in children with LI.

Vig and Jedrysek (1995) examined the relationship between adaptive behaviors such as communication, socialization, daily living or motor skills, and intelligence in specific populations of children. They found a strong positive correlation between adaptive behavior and intelligence, as measured by a standardized IQ test, in children with developmental disabilities. Their study consisted of 497 urban preschool children diagnosed with LI, autism, mental retardation, pervasive developmental disorder, attention-deficit hyperactivity disorder, and cognitive deficit. Using the *Vineland Adaptive Behavior Scale* (Sparrow, Balla, & Cicchetti, 1984) to assess the overall adaptive behaviors of these children, Vig and Jedrysek found that adaptive behavior, when measured globally, was predictive of intelligence. More specifically, they discovered a high correlation between adaptive behavior, in the communication and socialization domains, and intelligence in most of these groups of children (excluding those with autism). Researchers also determined that the greater the cognitive deficit exhibited, the stronger the correlation between adaptive behaviors and intelligence.

In a similar study, Liss et al. (2001) found that IQ was related to adaptive behaviors in various groups of children, including those with LI. This longitudinal study was performed to determine the factors that predicted adaptive functioning in children with high- and low-functioning autism as compared to children with LI and low IQ, respectively. Participants included 123 children of approximately nine years of age. The Vineland Adaptive Behavior Scale was used to measure behaviors such as communication, socialization, and daily living, and the *Stanford-Binet Intelligence Test* (Thorndike, Hagen, & Sattler, 1986) was used to quantify intelligence. Researchers found correlations between IQ and adaptive behavior in all groups; however the relationship was strongest in the lower functioning populations. Additionally, it was determined that, in the group with LI, nonverbal IQ, as reflected by the Abstract/Visual Reasoning Standard Age Score of the Stanford Binet Intelligence Test, was the best predictor of socialization. However, the Token Test, a measure of language and attention to complex directions, was predictive of communication and daily living skills. As a result, authors suggested that nonverbal IQ, rather than language limitations, may have influenced the social skills of children with LI.

Other research has suggested that IQ and social ability are not correlated or that the correlation is weak. For example, Wiener, Harris, and Shirer (1990) compared the IQ, achievement, social behavior, and peer status of 90 children with learning disabilities (LD) and 94 typically developing children between the ages of 9 and 12 years. In this study, a significant correlation was found between IQ, academic achievement, and peer preference in the total sample (i.e., typically developing children and children with LD). However, there was no correlation between these variables when the groups were

considered separately. Weiner et al. (1990) concluded that:

The lack of significant correlations in the LD and typical groups separately suggests that for children with IQ scores above 80, the total sample correlations may be a reflection of the LD children's peer relationship difficulties, and not any relationship between IQ, academic achievement, and peer relations per se" (p.126).

Bacon, Fein, Morris, Waterhouse, and Allen (1998) investigated the behaviors of children with varying levels of functioning (LI, high-functioning autism, low-functioning autism, mental retardation, and normal development) in different settings. First, participants were presented with a nonsocial orienting stimulus (i.e., an unfamiliar noise). Then, they were introduced into two social situations in which the adult with whom the child was playing simulated distress. The children's responsiveness to the distress was then observed. Results showed that cognitive variables were correlated with behavioral responsiveness to stimuli in the groups with mental retardation and low-functioning autism. However, cognitive ability, as measured by the Stanford Binet Intelligence Test, did not appear to predict behavior in higher functioning groups, such as those with LI.

#### *Social Difficulty Associated with LI*

In considering the relationship between social behavior and IQ it is important to consider the nature of the social difficulties experienced by children with LI. These children have a range of social problems including difficulty initiating conversations (Cunningham et al., 1985) and accessing ongoing interactions (Craig & Washington, 1993). They are less desired as playmates (Brinton et al., 1999; Gertner et al., 1994) and are more likely to ignore or be ignored by their peers (Hadley & Rice, 1991). In that the

current study focuses on the influence of IQ on reticent withdrawal and sociable behavior, the following review will also focus on these variables.

*Withdrawal.* The social interactions of children with LI are often characterized by withdrawn behaviors such as exclusion, isolation, or solitary activity. Withdrawn behaviors among children with LI have been recorded early in child development. In one study, toddlers who were considered “late-talkers” were rated by their mothers as experiencing more withdrawal than their typically developing peers (Irwin, Carter, & Briggs-Gowan, 2002). Another study of pre-school children found those with LI to be more anxious, depressed, and withdrawn than their typical peers (Carson, Klee, Perry, Muskina, & Donaghy, 1998).

Withdrawal has also been identified in older children. A study performed in the Ukraine found that sixteen-year-old students with language and communication delays displayed difficulty with social interactions. These students reacted to their environment by exhibiting withdrawal, low self-esteem, lack of confidence, disaffection, boredom, work-avoidance, and disruptive behavior (Miller & Roux, 1997).

One difficulty in studying withdrawal is that different researchers have grouped a variety of diverse behaviors under this umbrella term. To provide more specificity to the study of withdrawal, Rubin and Asendorpf (1993) begin with the notion of solitude or “the act of being alone” (p. 11). Simply being alone, however, is not necessarily problematic. Thus, in order to capture different aspects of solitude, this domain has been separated into three constructs: solitary-passive, solitary-active, and reticent withdrawal. Solitary-passive withdrawal is observed when a child participates in a constructive activity by him/herself (Brinton & Fujiki, 2004). This type of withdrawal is evident when

a child appears to be content with a solitary activity, such as reading a book. Solitary-active withdrawal is typified by “repeated sensorimotor action with or without objects and/or...solitary dramatizing” (Coplan, Rubin, Fox, Calkins, & Stewart, 1994, p. 130). For example, while a child’s classmates are playing cops and robbers, the child might do the same, but without actually interacting with peers. A child who displays this form of behavior is often actively excluded by classmates. The third type of withdrawal, reticence, is observed when a child wants to play with his peers, but is afraid to do so (Coplan & Rubin, 1998). This child may anxiously watch peers while they are playing a game. Children with LI have repeatedly been rated by teachers as being more withdrawn than their peers. Most frequently this withdrawal takes the form of reticence (Fujiki et al., 2001; Fujiki et al., 1999; Hart, Fujiki, Brinton, & Hart, 2004).

Fujiki et al. (1999) examined the subtypes of withdrawal exhibited by 41 children with LI as compared to their typically developing age-matched peers. Classroom teachers were asked to complete the *Teacher Behavior Rating Scale* (TBRS; Hart & Robinson, 1996) for each participant. Students with LI were rated by their classroom teachers as being more reticent than their peers. Of the children with LI, boys were said to display much higher levels of solitary-active withdrawal than girls. Boys and girls with LI were found to exhibit relatively similar degrees of reticence; however boys demonstrated greater solitary-passive withdrawal than girls.

Other research supports the results reported by Fujiki et al. (1999). Hart et al. (2004) examined the association between severity of language impairment and social behavior. Classroom teachers rated the withdrawn behaviors of 41 children with LI. Overall, children with LI displayed greater solitary-passive withdrawal and reticence than

did their typical peers. The researchers further divided children with LI into groups based on their levels of LI. They reported that girls with greater receptive language limitations exhibited more solitary-passive withdrawal than girls with less significant LI.

Fujiki et al. (2001) performed a study examining the social abilities of eight children with LI as compared to their typical age-matched peers while playing at recess. Each participant was videotape recorded for 45 minutes while playing. Video samples were divided into five-second segments, which were rated according to the behavior observed. From these samples, it was noted that the children with LI spent significantly less time interacting with peers than typically developing children. Individuals with LI spent more time moving between playgroups or playing by themselves. Reticent behaviors were particularly common in this group, indicating that the children wanted to play with their peers, but were fearful of doing so. Instances of solitary-active withdrawal were also noted among children with LI, in that they were more likely to be actively excluded by their peers.

Recent research has examined other factors that may influence the social abilities of children with LI. Fujiki et al. (2004) assessed the relationship between language ability, emotion regulation, and reticent behavior in 43 children with LI and their typically developing age-matched peers. Teachers were asked to rate each student's reticent behavior and level of emotion regulation using the TBRS and the *Emotion Regulation Checklist* (Shields & Cicchetti, 1997, 1998), respectively. Researchers found that, when paired with linguistic ability, emotion regulation was a strong predictor of reticent behavior in children with LI. Thus, reticent behavior was not merely the result of difficulty communicating, but of factors related to regulating emotion. This finding

suggests that the social deficits of children with LI extend beyond language and involve other aspects of social and emotional competence (Fujiki et al., 2004).

In summary, children with LI demonstrate higher levels of withdrawn behavior than their typical peers. This withdrawal most typically takes the form of reticence. As a result of these high levels of withdrawn behavior, children with LI have fewer social contacts, thus limiting their opportunities for important social interactions. Withdrawal is not, however, the only resulting social impairment of children with LI.

It is important when assessing children with LI to examine both the positive and negative behaviors displayed. Negative behaviors represent only a small fraction of the child's overall behavior. Therefore, assessing only negative behaviors limits one's understanding of the child's abilities. Including both negative and positive behaviors in assessments also allows for more accurate predictions of future behavior. Additionally, assessing both positive and negative behaviors may be more tolerable to parents, teachers, and others who complete questionnaires. As previously stated, some types of withdrawal are viewed more positively than others. For example, some children choose to withdraw from social interaction because they prefer solitude to interaction. In addition, while they are alone, these children may participate in constructive activities. It is possible that children with LI who are viewed as being more withdrawn could interact more positively in other aspects of communication or in different communicative contexts (e.g., with close family members). The relationship between impaired linguistic ability and socioemotional function is complex. Therefore, in order to obtain a more comprehensive picture of the relationship between LI and social ability, withdrawn and sociable behaviors must be considered together (Fujiki et al., 1999).

*Sociability.* In addition to displaying greater withdrawn behaviors, children with LI are notably less sociable than their typically developing peers (Fujiki et al., 1999; Hart et al., 2004). Sociability includes the positive behaviors that occur during interaction such as cooperating, sharing, comforting, and helping others (Hart et al., 2004). Children who are highly regarded by their peers frequently exhibit sociable behaviors. Those who are less sociable, on the other hand, are less accepted by peers (Coie, Dodge, & Kupersmidt, 1990). Sociability can be conceptualized in various ways. One common way of looking at this domain is to divide it into two subtypes: prosocial behavior and likeability. Likeability is characterized by good leadership skills, friendly behavior, impulse control, and cooperative play (Hart, McGee, & Hernandez, 1993). Prosocial behavior involves comforting, sharing with, and helping others (Radke-Yarrow, Zahn-Waxler, & Chapman, 1983). (Details of the following studies are included in the section under the heading of “withdrawal.”)

Hart et al. (2004) provided evidence supporting the notion that children with LI are less sociable than their peers. Using the TBRS, teachers rated children with LI as demonstrating fewer likeable and prosocial behaviors than their typically developing peers. In addition, when divided into subgroups according to severity of LI, children with more significant expressive language problems demonstrated fewer prosocial behaviors than children with lesser impairments. This group, however, did not display fewer likeable behaviors than their peers with LI who had less severe impairments.

Fujiki et al. (1999) also examined the sociable behaviors of children with LI as compared to their typically developing peers. Teachers were asked to complete the TBRS for each participant. Researchers analyzed these data to determine the children’s sociable

behaviors, focusing specifically on the subtypes of likeability and prosocial behavior. The likeability domain included children's ability to control anger, receive criticism, and cooperate in rough-and-tumble play. The prosocial domain included whether the child helped, comforted, or shared with others. Teacher ratings for children with LI were significantly lower than for typical children in each of these domains. The researchers questioned whether linguistic ability alone caused the observed social difficulties among children with LI. Fujiki et al. (1999) explained that, if impaired linguistic ability were the only factor affecting social ability, then it might be expected that there would be less variance in the social abilities of these children. Furthermore, the authors would have expected the variance between social skills to be directly related to the children's linguistic ability; however, it was not.

The social interactions of children with LI are limited by their generally poor sociability. Children with LI exhibit less sociable behaviors than their typical peers, which is demonstrated in the form of poorer likeability and prosocial behaviors than children within their peer group. Although linguistic impairments are found to significantly influence the social interactions of children with LI, other variables may also impact this relationship.

### *IQ and LI*

Children with LI have typically been identified as having impaired linguistic abilities in the face of typical nonverbal intelligence. However, there is ongoing debate regarding where standardized IQ thresholds should be set for these children (Botting, 2005). Willinger and Eisenwort (1999) examined the verbal and nonverbal intelligence of 93 children with LI, between ages 4:0 and 6:6. The intelligence of each child was

assessed using the *Hannover Wechsler Intelligenztest für das Vorschulalter* (Eggert, 1978). A cluster analysis revealed that two thirds of the children with LI exhibited deficiencies in verbal and nonverbal intelligence. These data suggest that there may be a nonverbal cognitive deficit associated with LI, which directly contradicts traditional definitions of this impairment.

Fey, Long, and Cleave (1994) also questioned the generally accepted IQ range defining children with LI. The standard definition of LI, they argued, failed to identify children who may fall at or below the level of normal intelligence (i.e., an IQ of 85 or less). For example, there is a large population of children with LI who have nonverbal IQs below 85 but above 70. The linguistic profiles of these children are similar to those of children with LI who have nonverbal IQs above 85. The authors suggested that inclusion of children with IQ scores as low as 70 within the definition of LI may more accurately represent this population.

The traditional definition of LI also assumes a gap between verbal and nonverbal IQ. It has even been suggested that children with LI who have similar levels of linguistic and cognitive abilities are unlikely to benefit from language intervention (Cole, Dale, & Mills, 1990). Cole et al. addressed this notion by studying 50 participants, with 32 exhibiting equal levels of linguistic and cognitive development and 18 exhibiting greater cognitive than linguistic development. Results showed a lack of significant differences between the two groups on the ability to benefit from language intervention. Both groups showed marked improvements in linguistic ability following intervention. Fey et al. (1994) came to a similar conclusion in the previously described study.

*Decreases in IQ over time.* In addition to the debate regarding IQ thresholds for children with LI, current research presents new data about cognitive limitations and processing deficits in this population (Botting, 2005). For example, Botting performed a longitudinal study assessing IQ measurements over time in eighty-two children with LI controlled for IQ and language. Data were gathered at ages 7, 8, 11, and 14 years for each participant. Results revealed that nonverbal IQ scores dropped 23 points on average between 7 and 14 years of age. Although IQ was controlled at baseline, further research showed that participants displayed different patterns of IQ development with the passage of time. Some children's IQs remained relatively stable, while other's IQs increased. However, the majority of the children exhibited decreasing IQ scores with age. By 14 years of age, the participants also exhibited varying levels of linguistic development. For example, children with IQ scores that remained stable over time typically displayed greater linguistic ability than children with declining IQ scores. Botting indicated that these data suggest a dynamic relationship between IQ and language. She also concluded that intellectual abilities, such as working memory and linguistic ability, may interact to create LI.

*Processing limitations and IQ.* Bishop (1997) presented the limited processing model, which suggests that the social and communicative difficulties that children with LI experience are the result of cognitive limitations in processing capacity and working memory (Bishop, 1997). These types of abilities are often examined by formal IQ tests. The process of effective communication requires a significant amount of cognitive capacity, including the ability to organize thoughts, relay a message, and attend to the verbal and nonverbal messages of the communicative partner, while at the same time

filtering out unnecessary information. As Bishop notes, children with LI may experience difficulty processing several sentences at a time and drawing conclusions from statements (Bishop, 1997). In that these abilities are basic to conversation, it is probable that the social interactions of children with LI may be impacted. Thus, children with LI may experience social difficulty because they cannot process all of the linguistic and social information necessary to interaction.

*Summary.* Language impairment is often associated with problematic social behaviors such as reticent withdrawal and decreased sociability. An obvious cause of these social disturbances is limited linguistic ability; however, research suggests that other variables may contribute to this relationship. The effect of nonverbal IQ on social functioning in children with LI is not well understood. The purpose of this study was to determine how IQ, as measured by a nonverbal assessment instrument, impacted the relationship between LI and two types of social behavior, specifically reticent withdrawal and sociability.

## Method

The current study was completed as part of a larger project, which evaluated the emotion understanding of children with LI. The data for this study were gathered over a two-year period of time. Forty children of ages 7 to 10 years were assessed in the spring of 2004. Ten additional children of ages 10 to 12 participated in this study during the winter of 2004-2005, resulting in a total of 50 participants. Thirty eight of these children met the requirements for inclusion in the current investigation.

### *Participants*

Participants consisted of 19 children with LI (9 males and 10 females;  $M = 8:9$  years,  $SD = 11.7$  months) and 19 children with typically developing language (9 males and 10 females;  $M = 8:9$  years,  $SD = 12.9$  months). Each child with LI was enrolled in the same mainstream public school classroom as their age-matched peer. Participants were selected from seven elementary schools within the Jordan and Alpine School Districts located in the state of Utah. Information regarding the socioeconomic status of participants was obtained from block group data from the 2000 census (U.S. Census Bureau, 2003). The mean percentage of families with incomes below the poverty level within these areas was 3.2% ( $SD = 3.7$ ).

Participants were required to speak English as their primary language. The children's school audiologist or speech-language pathologist tested hearing through pure-tone audiometry. Results showed hearing to be 20 dBHL or better for each child. Prior to beginning this study, an application for protection of human subjects was approved by the internal review board of Brigham Young University. Parent permission was also obtained from all parents/guardians before children participated in this study.

*Participants with LI.* Participants with LI were required to have a formal diagnosis of LI and be enrolled in speech-language pathology services prior to participating in this study. They were also required to score at or above 80 on the UNIT (Bracken & McCallum, 2003). UNIT means and standard deviations are displayed in Table 1. In addition, participants were required to score at least one standard deviation below the mean on a formal language assessment. For 18 of these children, the *Comprehensive Assessment of Spoken Language* (CASL; Carrow-Woolfolk, 1999) was used to assess linguistic ability. The *Test of Language Development-Primary 3* (Newcomer & Hammill, 1997) was used to qualify one participant for inclusion. For purposes of this study, participants with LI could not be receiving special services for concomitant behavioral, intellectual, or psychological impairments.

*Participants with typically developing language.* Participants with typically developing language were required to be within 6 months of age to their peer with LI, without exhibiting or receiving services for academic, communication, behavioral, intellectual, or psychological impairments. Each child was randomly selected from a small group of peers that fit the above stated requirements and attended the same mainstream class as the child with LI. Random selection proceeded as follows: The typically developing children in the same classroom and within six months of age to a child with LI were identified. A permission slip was sent home with each of these children. Children were randomly selected from those who returned the permission slip. To further verify group membership these children were also required to score within one standard deviation of the mean on the CASL and UNIT (see Table 1 for UNIT means and standard deviations).

Table 1

*Means and Standard Deviations for UNIT*

Participant Group	<i>UNIT</i>
Language Impaired, Male	
<i>M</i>	97.22
<i>SD</i>	9.72
Language Impaired, Female	
<i>M</i>	97.10
<i>SD</i>	7.78
Typical, Male	
<i>M</i>	103.33
<i>SD</i>	8.40
Typical, Female	
<i>M</i>	103.60
<i>SD</i>	7.71

*Note.* *UNIT* = Universal Nonverbal Intelligence Test (Bracken & McCallum, 2003).

*Teachers.* Fifteen teachers from different classrooms participated in this assessment. They were asked to complete the TBRS (Hart & Robinson, 1996), a measure of children's social skills. Teachers were provided with a sufficient amount of time to become familiar with their students before completing the questionnaire. To avoid evaluation bias, teachers were not informed of the purpose of this study.

#### *Assessment Instruments*

*IQ assessment.* The UNIT (Bracken & McCallum, 2003) is a comprehensive, standardized, norm-referenced test of general intelligence for children and adolescents (ages 5 to 17 years). It is comprised of subtests such as symbolic memory, cube design, spatial memory, and analogic reasoning. The UNIT was administered to each participant in order to assess general cognitive ability. This assessment was chosen for various reasons, but primarily for its nonverbal administration and response formats. The UNIT did not require listening, reading, writing, or speaking on the part of the administrator or the participants. The UNIT was well suited to assess the cognitive abilities of children and adolescents who were disadvantaged by traditional verbal IQ tests. Since children with LI, by definition, experience difficulty with various linguistic tasks, it was important to use an intelligence test that would tap into their cognitive ability without being impacted by language limitations.

*Social behavioral assessment.* The TBRS was used to evaluate the social behaviors of each participant. This 161-item survey was designed to identify various social behaviors, including sociable and withdrawn behaviors and their respective subtypes (see appendix A for a copy of the TBRS). Examples of TBRS questions include whether other children like the child being assessed or whether the child laughs and

smiles easily. The TBRS uses a three-point rating scale in which the individual completing the scale responds to each item by indicating whether the child never, sometimes, or often exhibits each behavior characteristic. Each child's behaviors were rated in comparison to others within the same age group. The current study focused on sociable and withdrawn behaviors and their subtypes. Subtypes of withdrawn behavior that were studied included solitary-active withdrawal, solitary-passive withdrawal, and reticence. Subtypes of sociability that were studied included likeability and prosocial. Questions examining each behavior subtype were scattered throughout the survey to avoid bias.

The TBRS has been used in prior studies to identify various social behaviors of children with LI (Fujiki et al., 1999; Fujiki et al., 2004; Hart et al., 2004). Initially, the TBRS was formulated to assess preschool populations. It has more recently been revised to examine the behaviors of elementary school children. In a previous study (Fujiki et al., 1999) researchers hoped to gain more accurate measurements regarding behaviors of the elementary school population. Therefore, they collected TBRS data for a large sample of typically developing children between the ages of 6:4 and 12:6. Elementary school teachers were asked to complete the TBRS for each study participant. Once these data were collected, researchers eliminated items that they felt were inappropriate for this assessment measure. The present study utilized the updated version of the TBRS formatted for elementary school children (see Fujiki et al. [1999] for a detailed presentation of psychometric data regarding the validation of the TBRS for older children).

Teachers, rather than parents, were chosen to complete this analysis for various reasons. Teachers were able to observe the participants in the school setting, throughout the day, over extended periods of time. They were also able to measure each student's peer interactions and social behaviors against a larger body of peers. Therefore, teacher ratings were appropriate for determining the social abilities of the participants, providing an estimate of their social behavior in an important social context.

### *Procedures*

Completion of the TBRS took approximately 10 to 15 minutes per student. Teachers were provided with a pre-stamped, self-addressed envelope for easy return. If the TBRS forms were not returned within a few weeks, teachers were contacted. If necessary, teachers were provided with a second TBRS form to complete and return. Teacher responses were then recorded in an Excel file to later be analyzed.

Standardized test administration took place within the school setting during two or three, 30 to 60 minute sessions per child. Tests were administered in a classroom where ambient noise was minimal. The UNIT was administered according to testing guidelines by two graduate student clinicians of speech-language pathology.

## Results

Data were analyzed using two 2-way multivariate analyses of covariance (MANCOVAs) to examine the individual and interactive contributions of language ability (LI or typical) and gender (male or female) to withdrawn (solitary-active, solitary-passive, and reticence) and sociable (likeability and prosocial) behaviors using IQ as a control variable. In the first analysis, solitary-active, solitary-passive, and reticence scores were dependent variables, language group and gender were independent variables, and IQ was the covariate. The same model was utilized for the second analysis; however likeability and prosocial scores were substituted for withdrawn scores. Following these analyses, data were further analyzed using five analyses of covariance (ANCOVAs) contrasting the influence of IQ on the social variables of interest. Results were compared at the .05 alpha level.

### *Withdrawn Behavior*

Table 2 displays the means and standard deviations for the three subtypes of withdrawn behavior. These data were analyzed using a MANCOVA which revealed a multivariate main effect for language group,  $F(3, 31) = 6.046, p = .002$ ; however the main effect for gender was not significant,  $F(3, 31) = 1.932, p = .145$ . Interactive effects between these variables were also not significant,  $F(3, 31) = .826, p = .490$ .

*Solitary-active withdrawal.* Univariate analyses of covariance also revealed a significant difference between language groups for solitary-active withdrawal,  $F(1, 33) = 5.097, p = .031, \eta^2 = .134$ . As can be seen in Table 2, children with LI displayed more solitary-active withdrawal than did their typical peers.

Table 2

*Means and Standard Deviations for Withdrawn Behaviors*

Participant Groups	Solitary-Active	Solitary-Passive	Reticence
LI, Male			
<i>M</i>	1.78	2.78	4.33
<i>SD</i>	2.05	2.17	2.92
LI, Female			
<i>M</i>	0.30	2.40	3.70
<i>SD</i>	0.67	1.26	2.16
Typical, Male			
<i>M</i>	0.44	2.00	0.67
<i>SD</i>	0.88	1.94	0.50
Typical, Female			
<i>M</i>	0.10	1.80	1.20
<i>SD</i>	0.32	1.75	1.69

*Note.* LI = Language Impaired. Higher solitary-active, solitary-passive, and reticent scores indicate greater withdrawn behaviors.

*Solitary-passive withdrawal.* Univariate analyses of covariance indicated a significant difference between language groups for solitary-passive withdrawal when IQ was co-varied,  $F(1, 33) = 5.782, p = .022, \eta^2 = .149$ . As Table 2 illustrates, children with LI displayed greater solitary-passive withdrawal than did their typical peers.

*Reticent withdrawal.* Univariate analyses of covariance revealed a significant difference between language groups for reticence when IQ was co-varied,  $F(1, 33) = 16.301, p = .000, \eta^2 = .331$ . As can be seen in Table 2, children with LI were rated as being more reticent than their typical peers.

#### *Sociable Behavior*

The mean ratings on sociable behavior for children with LI and their typical peers are presented in Table 3. The MANCOVA revealed a multivariate main effect for language group,  $F(2, 32) = 5.567, p = .008$ , and for gender,  $F(2, 32) = 4.854, p = .014$ . Although there was a significant difference in both language group and gender, the interaction between these variables was not significant,  $F(2, 32) = 2.890, p = .070$ . Children with LI were rated by their teachers as being less sociable, overall, than their typical peers, when IQ was controlled.

*Likeability.* Univariate analyses of covariance revealed a significant difference between language groups for likeability,  $F(1, 33) = 11.103, p = .002, \eta^2 = .252$ . A significant difference was also found between genders,  $F(1, 33) = 5.595, p = .024, \eta^2 = .145$ . As indicated by the mean scores in Table 3, typical children were rated as displaying greater likeability than children with LI. When comparing genders, females exhibited greater likeable behaviors than males.

Table 3

*Means and Standard Deviations for Sociable Behaviors*

Participant Group	Likeability	Prosocial
LI, Male		
<i>M</i>	8.22	4.44
<i>SD</i>	3.60	3.43
LI, Female		
<i>M</i>	11.80	6.20
<i>SD</i>	2.39	2.20
Typical, Male		
<i>M</i>	13.44	6.11
<i>SD</i>	2.30	1.90
Typical, Female		
<i>M</i>	14.10	9.00
<i>SD</i>	2.81	1.76

*Note.* LI = Language Impaired. Higher likeability and prosocial scores indicate greater sociable behaviors.

*Prosocial.* Univariate analyses of covariance indicated a significant difference between language groups for prosocial skill,  $F(1, 33) = 4.979, p = .033, \eta^2 = .131$ . Significant differences were also found between genders,  $F(1, 33) = 9.089, p = .005, \eta^2 = .216$ . As Table 3 illustrates, children with typically developing language displayed greater prosocial skills than did their peers with LI. Additionally, females were rated as being more prosocial than their male peers.

## Discussion

The purpose of this study was to examine the social behavior of children with LI removing the influence of IQ. The findings of this study are pertinent to determining whether differences in social behaviors among children with LI can be attributed to general intelligence. Two methods of measurement were employed to assess this interaction. First, the social functioning of each participant was assessed using the TBRS (Hart & Robinson, 1996). Social abilities included solitary-active, solitary-passive, reticent, likeable, and prosocial behaviors. Second, the UNIT was used to measure nonverbal IQ. IQ was used as a covariate in analyses involving language group and gender to remove its influence on each subtype of withdrawn and sociable behavior.

### *Withdrawn Behavior*

Teacher ratings indicated that children with LI displayed higher levels of withdrawal than did their typical peers. Of the subtypes of withdrawal, reticence was most commonly reported by teachers for the group with LI. Although this study was set apart from others by its control of IQ, its findings replicated those of previous studies (Fujiki et al., 2001; Fujiki et al., 1999; Hart et al., 2004), which identified high levels of reticent behaviors in children with LI. Teachers reported that these children often displayed approach-avoidance behavior. They were anxious to play or interact with their peers, but were afraid to do so. They also stared at other children without interacting with them, did nothing when there was plenty to do, or shied away when approached by other children.

Solitary-active withdrawal, although comparatively rare, was significantly more prevalent in children with LI than their typical peers. It was characterized by behaviors

such as pretending to be someone or something (e.g., doctor or airplane) in the vicinity of peers engaged in a similar activity without actually interacting with them. For example, a child who plays soccer surrounded by peers also playing soccer, but who does not play with the other children is exhibiting solitary-active withdrawal. Of the three subtypes of withdrawal considered in this study, solitary-active withdrawal is the least accepted form. This behavior is of particular concern because of the negative attention it draws from peers and its association with peer rejection (Coplan et al., 1994).

The findings for solitary-active withdrawal when the influence of IQ was removed were consistent with previous work. Fujiki et al. (1999) found that children with LI demonstrated more solitary-active withdrawal when compared with peers. Hart et al. (2004), however, reported that teachers rarely observed solitary-active withdrawal among typical children or children with LI and found no significant differences between groups. The discrepancies in results between the Fujiki et al. (1999), the Hart et al. (2004), and the present study may be explained by the fact that solitary-active withdrawal is relatively rare and may not occur in a given sample of children. When differences were observed for solitary-active withdrawal, these differences were based on a relatively small number of observations. The fact that solitary-active withdrawal occurred significantly more frequently in the Fujiki et al. study and the current study is concerning, however, because this behavior has such negative social potential.

Teacher reports also indicated that children with LI displayed greater solitary-passive withdrawal than did their typical peers, replicating the findings of earlier work (Hart et al., 2004). Solitary-passive withdrawal is considered the most acceptable of the three subtypes of withdrawal. It was characterized by behaviors such as participating in

constructive activities alone, reading a book away from other children, or playing with toys alone. Teachers reported that children who displayed solitary-passive withdrawal were content playing alone. Although the most acceptable subtype of withdrawal, solitary-passive withdrawal is associated with peer rejection as children grow older (Fujiki et al., 1999).

### *Sociable Behavior*

In order to gain a more complete understanding of the social skills of children with LI, one must observe both positive and negative behaviors. The influence of positive social skills such as likeability and prosocial behaviors may offset the negative consequences of behaviors such as reticence, solitary-active, and solitary-passive withdrawal. For these reasons, both withdrawn and sociable behaviors were compared for children with LI and their typically developing peers. With IQ as a control variable, the current study revealed that children with LI displayed poorer sociable behaviors than did their typical peers, which replicated the findings of previous work that did not co-vary IQ (Hart et al., 2004).

Teacher reports indicated that children with LI displayed fewer likeable behaviors than did their typical peers. However, females demonstrated greater likeable behaviors than their male peers. Likeability was typified by being slow to anger, cooperative during rough and tumble play, accepted by peers into ongoing activities, and able to accept criticism.

Children with LI were rated as demonstrating fewer prosocial behaviors than their typical peers. Consistent with the work of Hart et al. (2004), the present study found that females displayed more prosocial behaviors than males. This may be explained by the

fact that girls tend to be more person-oriented than boys (Hart et al., 2004). Prosocial behavior was identified when a child displayed behaviors such as offering to help other children complete a difficult task, showing sympathy to someone who made a mistake, comforting another child who was crying or upset, or offering to share materials that were being used to complete a task.

As previously stated, withdrawn behaviors may be compensated for when accompanied by prosocial behaviors. A child who demonstrated solitary-passive withdrawal accompanied by likeable or prosocial behaviors would probably be more accepted by peers than a child who displayed similar withdrawn behaviors without accompanying sociable behaviors. Children with LI often fit into the second profile. It was observed that, as a group, children with LI who were rated as demonstrating withdrawn behaviors were also rated as displaying poor sociable behaviors. This trend may be explained in two ways. First, a particular withdrawn behavior may be incompatible with sociable behaviors. For example, a reticent child would be less likely to comfort an upset peer because of the fear of initiating an interaction. Second, many interactions with peers are dependent upon language proficiency, which puts children with LI at a disadvantage in social interactions. However, in the present study, only one question on the TBRS addressed language output (e.g., other children enjoy conversing with this child). Therefore, the influence of language ability was minimal when teachers were determining social competence in the children within this study.

#### *Potential Causes of Social Deficits*

There is considerable evidence that children with LI experience struggle with peer interaction (Brinton & Fujiki, 1999; Fujiki, Brinton, & Todd, 1996; Rice, 1991). In the

past, language has been identified as the primary cause of these social deficits (Redmond & Rice, 1998). Additional research, however, has suggested that factors other than language may be involved in determining social outcomes in children with LI (Fujiki et al., 1999; Fujiki et al., 2004). For example, Fujiki et al. (1999) questioned whether LI, alone, could explain observed social difficulties. The children with LI in their study displayed a high degree of variability on social behaviors that did not appear to be related to severity of language impairment. The authors suggested that other variables were involved in this relationship. In a subsequent study, Fujiki et al. (2004) found that emotion regulation played as important a role as language in predicting reticent behaviors in children with LI. In the present study, it was proposed that IQ may account for the social behaviors of children with LI. However, differences between the social behaviors of children with LI and their typical peers remained even when the influence of IQ was removed.

#### *Influence of IQ on Social Ability*

The social difficulties of children with LI identified in previous research were verified in the current study. It was hypothesized that general intelligence, as measured by IQ, might explain some of these social problems. This study set out to determine if the social difficulty observed in children with LI would remain if the influence of IQ were removed. Mean IQ scores were employed as covariates of language ability and gender in order to determine their influence on solitary-active, solitary-passive, reticent, likeable, and prosocial behaviors. It was found that group differences remained, with the possible exception of solitary-passive withdrawal. These data suggest a trend linking lower IQs with higher levels of solitary-passive withdrawal.

The overall results of this study suggest that IQ was not responsible for the group differences between children with LI and their typical peers on the social variables of interest. It is likely, however, that other aspects of development are influential. It might be noted, for example, that since emotion regulation was found to influence social abilities in children with LI, future research may provide a closer look into specific subtypes of emotion regulation. Additionally, it may be of interest to determine the influence of other factors such as parenting styles on the social behaviors of children with LI.

#### *Study Limitations*

The TBRS has been used in various studies to determine the social abilities of children within different age ranges (Fujiki et al., 1999; Fujiki et al., 2004; Hart et al., 2004). It has proven to be a fairly reliable method for assessing social behaviors. When comparing studies, it can be observed that the TBRS yielded comparable results for general withdrawn and sociability ratings in different groups of participants. Although the TBRS has been shown to be a fairly effective measure of social behaviors, it may not be the most representative of a child's true ability due to its dependence on teacher report.

Using other types of measurement, such as direct observation, would be important in validating these findings. For example, observations of children with LI during peer interactions would provide a second source of data. If these results were similar, they would provide a strong indication of validity. It is important to note, however, that even a study based solely on direct observation would have weaknesses of its own. For example, one advantage of a teacher rating system is that teachers observe children while interacting with different people, in multiple settings, at different times of the day,

throughout an entire school year. With this in mind, researchers using direct observations would be at a disadvantage in that they would most likely be observing participants for a limited period of time.

An additional weakness of the present study may be the fact that it did not consider severity of LI in its outcome. As observed by Hart et al. (2004), however, severity of LI does not appear to be related to degree of social behavioral difficulty for withdrawn behaviors. In that it is more influential for sociable behaviors, its inclusion for future studies of sociable behaviors may provide added insights.

#### *Directions for Future Research*

Based on the reported findings, it is suggested that the social difficulties in withdrawn and sociable behaviors often observed in children with LI cannot be attributed to subtle differences in intelligence, at least as measured by the UNIT. Therefore, further research is needed to identify additional factors that combine with language to influence the social abilities of children with LI. Future assessment and intervention methods should then be designed to address these factors as well as language deficits. For example, if a specific subtype of emotion regulation were shown to significantly influence the social abilities of children with LI, clinicians may want to incorporate emotion regulation techniques into language intervention. Doing so may facilitate better social skills and improve linguistic ability.

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## APPENDIX A

## Teacher Behavior Rating Scale

**Social Skills Teacher Behavior Rating Scale, Part A**Directions

This questionnaire is designed to measure how often a child exhibits different types of social behaviors. Understanding the development of social skills is important for promoting the educational and psychological well-being of students. Therefore, your careful response to each item is requested.

Reflecting on your experience with children in this age group, read each item in this questionnaire and think about the child's present behavior relative to other you know or have known. Decide how often the child does the things described. If you are not sure about a particular, use your best judgment based on your knowledge of the child's personality,

If the child never does this behavior, fill in the line with a 0 in it.

If the child sometimes does this behavior, fill in the line with a 1 in it.

If the child very often does this behavior, fill in the line with a 2 in it.

HOW OFTEN?

0=Never, 1=Sometimes, 2=Very Often

- \_\_\_ 1. Other children like to be with this child.
- \_\_\_ 2. Offers to help other children who are having difficulty with a task in the classroom.
- \_\_\_ 3. Is slow to anger.
- \_\_\_ 4. Invites other to join in activities.
- \_\_\_ 5. Peers enjoy talking with him/her.
- \_\_\_ 6. Leads out in peer group activities.
- \_\_\_ 7. Offers to share materials (e.g. pencils, erasers) when used in a task.
- \_\_\_ 8. Controls temper in conflict situations with adults.
- \_\_\_ 9. Helps other children who are feeling sick.
- \_\_\_ 10. Has many friends.
- \_\_\_ 11. Is cooperative during rough and tumble play with peers.
- \_\_\_ 12. Children laugh together when engaged in rough and tumble play with him/her.
- \_\_\_ 13. Shows sympathy to someone who has made a mistake.
- \_\_\_ 14. Peers accept this child easily into ongoing peer group activities.
- \_\_\_ 15. Receive criticism well.
- \_\_\_ 16. Introduces himself or herself to new people without being told.
- \_\_\_ 17. Acknowledges compliments or praises from peers.
- \_\_\_ 18. Laughs and smiles easily.
- \_\_\_ 19. Peers enjoy rough housing with him/her.
- \_\_\_ 20. Controls temper in conflict situations with peers.

- \_\_\_21. Comforts a child who is crying or upset.
- \_\_\_22. Gets along even when rough housing with peers.
  
- \_\_\_23. Fights back when provoked by peers who are trying to be mean.
- \_\_\_24. Cries when picked on by peers.
- \_\_\_25. Reacts angrily when confronted aggressively by peer who is trying to be mean.
- \_\_\_26. Avoids children who tend to bully him/her.
- \_\_\_27. Is pushed around by other children.
- \_\_\_28. Ignores a child who is trying to be mean to him/her.
- \_\_\_29. Cowers or slinks away when confronted by a bully.
- \_\_\_30. Misinterprets the friendly intent of others' behavior and becomes defensive.
- \_\_\_31. Says assertively, but without hostility, something like "that's mine" or "give it back" in a firm voice when another child takes something of his/her.
- \_\_\_32. Pushes or hits others when perceived he/she is wrong.
- \_\_\_33. Tells child who tries to be mean to "stop it right now" or something to that effect.
- \_\_\_34. Is made fun of by mean kids.
- \_\_\_35. Behaves aggressively even when other children are making friendly overtures toward him/her.
- \_\_\_36. Cries when intimidated by a mean child.
- \_\_\_37. Pushes or hits when he/she wants to get something back another child has taken from him/her.
- \_\_\_38. Withdraws when provoked by peers.
- \_\_\_39. Is picked on by mean kids.
- \_\_\_40. Stands up assertively but not aggressively to bullies.
- \_\_\_41. Lashes out at peer even when peer has not intended to hurt him/her in any way.
- \_\_\_42. Tells child who tries to intimidate him/her that he/she "doesn't like it" or something to that effect.
  
- \_\_\_43. Inconsiderate of others.
- \_\_\_44. Does things to get the teacher's attention.
- \_\_\_45. Cries or screams when mad.
- \_\_\_46. Tells lies.
- \_\_\_47. Butts into games or activities.
- \_\_\_48. Has sudden mood changes.
- \_\_\_49. Disturbs ongoing activities.
- \_\_\_50. Dawdles when required to do something.
- \_\_\_51. Becomes aggressive when rough housing with peers.
- \_\_\_52. Tattles on other children to the teacher.
- \_\_\_53. Gets angry easily.
- \_\_\_54. Is obnoxious when rough housing with peers.
- \_\_\_55. Won't do chores/assignments (cleanup) unless threatened in some way.

- \_\_\_ 56. Has temper tantrums.
- \_\_\_ 57. Resists going along with ideas of other children.
- \_\_\_ 58. Excessive praise or reward is required to get child to do chores/assignment (cleanup).
- \_\_\_ 59. Is not sorry after misbehaves.
- \_\_\_ 60. Demands teacher's attention.
- \_\_\_ 61. Stamps feet when angry.
- \_\_\_ 62. Does not wait for opportune moments to enter ongoing peer group activities.
- \_\_\_ 63. Is overly boisterous in rough and tumble play.
- \_\_\_ 64. Interrupts conversations of others.
- \_\_\_ 65. Is louder than peers when engaged in rough and tumble play.
- \_\_\_ 66. Is secretive.
- \_\_\_ 67. Draws attention to self in disruptive ways when trying to enter ongoing play activities with peers.
  
- \_\_\_ 68. Blames others.
- \_\_\_ 69. Follows your instructions.
- \_\_\_ 70. Starts conversations rather than waiting on other to talk first.
- \_\_\_ 71. Is self-confident in social situations.
- \_\_\_ 72. Joins group activities without being told to.
- \_\_\_ 73. Makes friends easily.
  
- \_\_\_ 74. Finishes class assignments within time limits.
- \_\_\_ 75. Produces correct schoolwork.
- \_\_\_ 76. Puts work material or school property away.
- \_\_\_ 77. Attends to your instructions.
- \_\_\_ 78. Initiates conversations with peers.
- \_\_\_ 79. Accepts peers' ideas for group activities.
- \_\_\_ 80. Cooperates with peers without prompting.
- \_\_\_ 81. Compromises in conflict situations by changing own ideas to reach agreement.

## Social Skills Teacher Behavior Rating Scale, Part B

### Directions

This questionnaire is designed to measure how often a child exhibits different types of social behaviors. Understanding the development of social skills is important for promoting the educational and psychological well-being of students. Therefore, your careful response to each item is requested.

Reflecting on your experience with children in this age group, read each item in this questionnaire and think about the child's present behavior relative to other you know or have known. Decide how often the child does the things described. If you are not sure about a particular, use your best judgment based on your knowledge of the child's personality,

If the child never does this behavior, fill in the line with a 0 in it.

If the child sometimes does this behavior, fill in the line with a 1 in it.

If the child very often does this behavior, fill in the line with a 2 in it.

### HOW OFTEN?

0=Never, 1=Sometimes, 2=Very Often

- \_\_\_\_ 1. Bullies others just to be mean.
- \_\_\_\_ 2. Tries to embarrass peers by making fun of them in front of other children.
- \_\_\_\_ 3. Gives mean looks or frowns when upset at peers.
- \_\_\_\_ 4. Ruins other children's things (artwork, block structures) when upset.
- \_\_\_\_ 5. Laughs at other children in derogatory ways.
- \_\_\_\_ 6. Threatens to push a peer off a toy (e.g. tricycle, play house) or ruin what peer is working on unless he/she shares.
- \_\_\_\_ 7. Hits or kicks others for the sake of doing it.
- \_\_\_\_ 8. Tells a peer that he/she won't play with them if he/she doesn't do what is asked.
- \_\_\_\_ 9. Walks away or turns his/her back when he/she is made at another peer.
- \_\_\_\_ 10. Threatens or intimidates other children just to be mean.
- \_\_\_\_ 11. Tries to exclude other children who want to play.
- \_\_\_\_ 12. Says, "I won't be your friend" to peers "If you don't do things my way."
- \_\_\_\_ 13. Throws things at other children when he/she doesn't get his/her own way.
- \_\_\_\_ 14. Tells other children that they can't play with the group unless they do what the group wants them to do.
- \_\_\_\_ 15. Does not listen to other children when he/she is made (may cover ears).
- \_\_\_\_ 16. Makes fun of peer's possessions (e.g. clothes, art project).
- \_\_\_\_ 17. Picks on other children just to be mean.
- \_\_\_\_ 18. Tells other children not to play with or be a peer's friend.
- \_\_\_\_ 19. Hits, kicks, or pushes to get something he/she wants.
- \_\_\_\_ 20. Pouts or sulks when made at another child.
- \_\_\_\_ 21. Tells other children not to play with someone.
  
- \_\_\_\_ 22. Squirmy, fidgety child.
- \_\_\_\_ 23. Acts sad or depressed.

- \_\_\_ 24. Has poor concentration or short attention span.
- \_\_\_ 25. Acts tearful.
- \_\_\_ 26. Rather than asking for something he/she wants, does not ask and appears to wait for it to happen.
- \_\_\_ 27. Talks very quietly.
- \_\_\_ 28. Tends to be fearful or afraid of new things or new situations.
- \_\_\_ 29. Is over-sensitive emotionally.
- \_\_\_ 30. Inattentive.
- \_\_\_ 31. Appears miserable, unhappy, tearful, or distressed.
- \_\_\_ 32. Cries easily.
- \_\_\_ 33. Can't sit still.
- \_\_\_ 34. Rather than asking for something that he/she wants, chooses to do something else.
- \_\_\_ 35. Shows anxiety about being with a group of children.
- \_\_\_ 36. Has stutter or stammer.
- \_\_\_ 37. Has other speech difficulty.
- \_\_\_ 38. Gets mixed up when talking.
- \_\_\_ 39. Restless. Runs about or jumps up & down. Doesn't keep still.
  
- \_\_\_ 40. Animates toys (e.g. pretends as inanimate object – doll or stick – is alive) by self, away from peers.
- \_\_\_ 41. Reads books alone, away from others.
- \_\_\_ 42. Feelings get hurt easily.
- \_\_\_ 43. Can't get other to play with him/her.
- \_\_\_ 44. Manipulates body parts (e.g. twists/wrings hands, hair mouth, ears).
- \_\_\_ 45. Shies away when approached by other children.
- \_\_\_ 46. Does constructive activities (e.g. build with blocks, legos) or does puzzles alone, away from others.
- \_\_\_ 47. Is off task and preoccupied.
- \_\_\_ 48. Other children tell him/her that he/she cannot play with them.
- \_\_\_ 49. Talks aloud or sings dramatically around peers when they are doing similar things but does not interact with them while doing so.
- \_\_\_ 50. Other children exclude him/her.
- \_\_\_ 51. Is very shy.
- \_\_\_ 52. Has twitches, mannerisms, or tics of the face and body.
- \_\_\_ 53. Pretends to be something (e.g. fireman, doctor, airplane) in vicinity of peers doing similar things but does not interact with them while doing so.
- \_\_\_ 54. Animates toys (e.g. pretends as inanimate object such as a doll or stick is alive) in vicinity of peers doing similar things but does not interact with them while doing so.
- \_\_\_ 55. Builds things by self rather than with other children.
- \_\_\_ 56. Pouts or sulks.
- \_\_\_ 57. Likes to play alone.
- \_\_\_ 58. Cries over seemingly little things.
- \_\_\_ 59. Says nobody likes him or her.
- \_\_\_ 60. Appears to be doing nothing.

- \_\_\_ 61. Does pretend/dramatic play with peers, but does not interact with them while doing so.
- \_\_\_ 62. Is reserved around other children.
- \_\_\_ 63. Is told to go away by other children.
- \_\_\_ 64. Is unoccupied even when there is plenty to do.
- \_\_\_ 65. Bites nails or fingers.
- \_\_\_ 66. Plays with toys by self rather than with other children.
- \_\_\_ 67. Is fearful in approaching other children.
- \_\_\_ 68. Twists/manipulates clothing.
- \_\_\_ 69. Stares at other children without interacting with them.
  
- \_\_\_ 70. Appears lonely.
- \_\_\_ 71. Is easily distracted.
- \_\_\_ 72. Is easily embarrassed.
- \_\_\_ 73. Doesn't listen to what others say.
- \_\_\_ 74. Argues with others.
- \_\_\_ 75. Talks back to adults when corrected.
- \_\_\_ 76. Acts impulsively.
- \_\_\_ 77. Is aggressive toward people or objects.
- \_\_\_ 78. Disobeys rules or requests.
- \_\_\_ 79. Fights with others.
- \_\_\_ 80. Has low self-esteem.