Sociability in Children with Developmental Language Disorder

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Sociability in Children with Developmental Language Disorders

Miranda Elizabeth Miller

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Science

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ABSTRACT

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This study employed the Teacher Behavior Rating Scale (TBRS) to investigate two aspects of sociability, likeability and prosocial behavior, in 143 children with developmental language disorder (DLD) and 131 of their typically developing peers. Initially, measurement invariance analysis was performed to determine if teachers evaluated likeability and sociability in a similar manner for both children with DLD and their typically developing peers. Likeability items on the TBRS were invariant, and 4 of the 5 prosociability items were invariant. Subsequent analysis revealed that teachers rated children with DLD lower in both likeability and prosociability in comparison to their typically developing peers. The results of this study suggest that children with DLD are not fully accepted by their peers, nor do they engage in the helpful, comforting behaviors that encourage peer acceptance and build friendships.

Keywords: developmental language disorder, language impairment, sociability, likeability, prosociability, prosocial behavior, school-age children
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DESCRIPTION OF THESIS STRUCTURE

This thesis, *Sociability in Children with Developmental Language Disorders*, draws on data collected in several previous research projects. These projects are listed in Appendix B.

This thesis is presented in a journal article format and abides by university format requirements for submission. This work may be included in future presentations where the author is listed as a coauthor.

Appendix A contains copies of consent forms. Appendix B contains a table where participant information and testing results are described. Appendix C contains an annotated bibliography.
Introduction

Developmental language disorder (DLD)\(^1\) is identified when a child has difficulty learning language in the absence of global intellectual delays, hearing loss, or other psychiatric conditions. Developmental language disorder is estimated to affect 7% of schoolchildren (Bishop, 2006; Tomblin et al., 1997). It has long been established that children with DLD have difficulties with the structural aspects of language. However, the differences between typically developing children and children with DLD may extend beyond these structural deficits into other aspects of development. As Fujiki, Spackman, Brinton, and Hall (2004) noted, “The nature of [DLD] cannot be understood independent of emotional and social behavior” (p. 645). It can be helpful to employ a broader social communication framework to understand DLD. This framework describes social communication as an integration of language processing, pragmatics, and social and emotional learning (Adams, Lockton, Gaile, Gillian, & Freed, 2012; Fujiki & Brinton, 2017). Traditionally, there has been a great deal of research and study describing language processing and pragmatic deficits in children with DLD. In recent years, there has been increased attention to social and emotional learning in these children as well.

Research focusing on social and emotional learning has documented that many children with DLD experience a variety of difficulties. For example, a number of studies have reported that children with DLD performed more poorly than their typically developing peers on tasks including recognizing facial expressions of emotion (Ford & Milosky, 2003; Spackman, Fujiki, & Brinton, 2006; Vendeville, Blanc, & Brechet, 2015), inferring the emotional reactions of others (Brinton, Fujiki, Hurst, Jones, & Spackman, 2015; Ford & Milosky, 2003; Spackman et al., 2006), and hiding emotions for social reasons (Brinton et al., 2015).

\(^1\) DLD has also previously been called “specific language impairment” or “language impairment.”
Withdrawal in Children with Developmental Language Disorder

In addition, social withdrawal has been a particular concern for children with DLD. A number of studies have demonstrated that children with DLD tend to show various types of withdrawal, particularly reticent withdrawal or shyness, in school settings (Fujiki, Brinton, Hart, Olsen, & Coombs, 2019; Fujiki, Brinton, Morgan, & Hart, 1999; Hart, Fujiki, Brinton, & Hart, 2004; Redmond & Rice, 1998; Rubin, Hymel, & Mills, 1989). Social withdrawal is a term that describes a collection of distinct behaviors associated with children with DLD, including reticence, behavioral inhibition, social isolation, neglect, and rejection (Rubin et al., 1989). In a study of teacher ratings of child behavior, children with DLD were reported to be significantly more reticent than their peers and to engage more in solitary-active and solitary-passive withdrawal (Fujiki et al., 1999). However, it is an oversimplification to conclude that DLD is the root cause of withdrawn behaviors, because “if [developmental language disorder] alone explained the social difficulty, we might expect less variability in the group with [DLD]” (Fujiki et al., 1999, p. 191). In fact, formal test scores may not predict the levels of withdrawn behaviors in children with DLD, because these tests “are not sufficiently discriminating to describe aspects of [developmental language disorder] that sabotage social functioning” (Fujiki et al., 1999, p. 192). Patterns of social withdrawal in children with DLD are concerning in that they co-occur with poor social outcomes including difficulty establishing friendships, social isolation, and victimization (Coplan, Rubin, Fox, Calkins, & Stewart, 1994; Fujiki et al., 1999; Hart et al., 2004; Henderson, Marshall, Fox, & Rubin, 2004; Nelson, Rubin, & Fox, 2005; Rubin, Coplan, & Bowker, 2009). Reticence is associated with peer rejection and neglect, active victimization, anxiety, emotion dysregulation, and cautiousness in novel situations (Coplan et al., 1994; Rubin et al., 2009). Solitary-passive withdrawal has not been as closely associated with poor social
outcomes. However, indicating a general disinterest in social behavior may lead to low positive emotion and low regulation over time (Coplan et al., 1994; Nelson et al., 2005). In addition, some researchers speculate that rejection from exhibiting reticence may result in the child’s choosing to play alone instead of interacting with peers (Henderson et al., 2004).

Reticent withdrawal or shyness should be considered in light of sociability. Although these withdrawn behaviors and social consequences are troubling, the outcomes and characteristics of withdrawn behaviors would be less concerning if withdrawn children demonstrated strong sociable behaviors when they did interact. In other words, even if these children tend to withdraw from other children, are they similar to their peers when they do interact? Fujiki et al. (1999) argued that the consequences of withdrawal should be considered in the light of more positive behaviors in order to provide a more complete picture of the social functioning of children with DLD.

Sociability

Although withdrawal has been documented in children with DLD, sociability has not been studied as extensively. Sociability is not merely the opposite of withdrawal; it is a distinct concept that “is the tendency to prefer the presence of others to being alone” (Buss, 1984, p. 330). Thus, a study of sociability looks at the nature of the social interactions that do occur, and how these qualities influence later interactions and perceptions of peer groups.

There are differences across disciplines and researchers in the conceptualization of sociability and variation in the constructs related to the term (Cook & Oliver, 2011). In general, sociability is defined to include positive and outgoing behaviors, such as cooperation, comfort, sharing, and offering help to others (Hart, Robinson, McNeilly-Choque, Nelson, & Olsen, 1995; Ladd & Price, 1993). Hart, Olsen, Robinson, and Mandleco (1997) summarized behavioral
manifestations of sociability to include friendly/amicable behavior, impulse control, leadership/assertiveness, rough-and-tumble cooperative play, prosocial behavior, and person-centered communication.

Children’s sociable behaviors are predictive of peer acceptance. Coie, Dodge, and Kupersmidt (1990) reviewed the literature and summarized that “cooperativeness and prosocial behavior emerge as major correlates of positive status at each age” (p. 17) and peers, teachers, and trained observers alike rated ‘high status children’ as being helpful, considerate, rule-following, and as more likely to engage in positive peer interactions.

Although social competencies develop over time, early sociability appears to predict later sociability (Giles & Street, 1994; Snow, Pan, Imbens-Bailey, & Herman, 1996; Stafford & Bayer, 1993), and therefore, young children who have difficulties with sociable behavior will often continue to do so. In studies of children with intellectual disability, researchers have theorized that poorer opportunities for social interaction for these children is secondary to a delay in development of interaction skills, difficulty in initiating or maintaining interactions with peers, less awareness of social cues, difficulty in identifying relevant information, and difficulty in taking perspective or deducing intentions of others (Cook & Oliver, 2011). Although children with DLD present with a different profile than do children with ID, this research provides evidence that impoverished social interactions can be due to many developmental factors, and these factors could continue to have an impact over time.

Previous research has identified two factors of sociability that emerge in typically developing children: likeability/impulse control and prosocial behavior (Fujiki et al., 1999; Hart et al., 1997). Likeability/impulse control, hereafter simply referred to as likeability, consists of conforming and friendly behaviors, emotional impulse control, rough-and-tumble cooperative
play, and assertive leadership behaviors (Hart, McGee, & Hernandez, 1993). Prosocial behaviors include helping, sharing, and comforting behaviors during children’s social interactions (Radke-Yarrow, Zahn-Waxler, & Chapman, 1983).

**Likeability.** Children whom others enjoy being around would be considered likeable. This is not necessarily the same as being popular, as social dominance is not inherently considered when asking if a child is liked or accepted by their classmates (Lease, Kennedy, & Axelrod, 2002; Parkhurst & Hopmeyer, 1998; Witvliet et al., 2010). Children who are considered likeable by their peers exhibit behaviors such as emotional impulse control, conforming and friendly behaviors, cooperative rough-and-tumble play, and assertive leadership skills (Hart et al., 1993). A child’s likeability may change over time. For example, children who demonstrate higher levels of cooperative play at the beginning of the school year may experience gains in peer acceptance by the end of the year (Ladd, Price, & Hart, 1988).

Coie et al. (1990) identified children in sociometric categories based on peer acceptance (i.e., socially rejected, popular, etc.), and concluded that “social acceptance is related at all ages to helpfulness, rule conformity, friendliness, and prosocial interaction” (p. 20). In all, children observed engaging in more cooperative play and social conversation were seen viewed as more likeable than those who did not. Children who were rejected by their peers presented with the opposite of this profile. Controversial children (liked by some and disliked by others) were most distinguished from their peers by poor impulse control. In addition, they showed high levels of the positive behaviors observed in the accepted children, but also had high levels of the negative behaviors associated with the poorly accepted children.

Impulse control contributes to likeability in important ways. Impulse control refers to the ability to control impulses to act in a socially appropriate way. Impulsiveness might be
described as speaking or acting without thinking. The ability to control impulses is a crucial element in being perceived as likeable. Impulse control develops similarly in boys and girls (Eysenck, Easting, & Pearson, 1984). Coie and associates (1990) questioned whether behaviors proceeded sociometric categorization, or if the behaviors emerged based on peer perceptions. Unfamiliar children were observed as they began to engage in play over time together. In the formation of these new social groups, boys who were later ranked by their peers as being likeable were found to experience just as much abusive or aversive action as the others who were viewed as less likeable. However, they engaged in those behaviors less frequently, “indicating they were able to control the impulse to retaliate aggressively” (p. 47). Part of peers being accepted, therefore, is the ability to regulate responses through impulse control.

**Prosocial behavior.** Prosocial behaviors are those that are voluntary and intentional and are done with the aim to help or benefit another (Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998; Eisenberg, Spinrad, & Knafo-Noam, 2015; Grusec, Hastings, & Almas, 2011). These behaviors include helping, donating, sharing, volunteering, guiding, collaborating, empathizing, and comforting others, often in the context of a social interaction (Carlo, 2006; Gulay, 2011; Malti et al., 2016; Radke-Yarrow et al., 1983). Prosocial skills emerge early, as is seen when infants cry in response to others’ crying, and when toddlers initiate helpful and comforting behaviors (Grusec et al., 2011). Sharing is also an important prosocial behavior. After examining the emergence of sharing in children, Malti, Gummerum, Keller, Chaparro, and Buchmann (2012) concluded, “human sharing strongly increases in middle childhood, and that this increase is associated with sympathy towards anonymous others and with feelings of social acceptance” (p. 1). Researchers have documented social-cognitive and social-emotional factors that affect the development of prosocial behavior. Children must understand the emotions of
others, evaluate situations in terms of moral standards, plan, and know the situational appropriateness to engage in prosocial behaviors (Grusec et al., 2011).

Research suggests that environmental factors influence prosocial development more than genetic factors (Knafo & Plomin, 2006). Children are influenced by how prosocial their peers are, and feelings of trust in friendship have been found to lead to more prosocial behavior (Grusec et al., 2011; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998). Although negative behaviors have been found to emerge as a result of peer rejection, positive behaviors have been found before and after emergence of social status (Coie et al., 1990).

**Children with Developmental Language Disorder.** It might be expected that sociability would be another area of weakness for children with DLD due to their difficulty in social inferencing, emotional understanding, and self-regulation. Elementary school-aged children with DLD have been rated by their teachers as having significantly lower levels of likeability and prosocial behavior than their peers (Fujiki et al., 1999). However, Toseeb, Pickles, Durkin, Botting, and Conti-Ramsden (2017) followed individuals with a history of DLD and age-matched, typically developing peers from ages 11 to 24. Participants rated themselves on their prosocial abilities, which were found to be within normal limits for both groups. Based on this, prosocial skills appeared to be an area of relative strength for adolescents with DLD. This study noted that the children with DLD had all been placed in language units that may have fostered these skills. This study could indicate that prosocial skills emerge later in these children. Results may also have been influenced by the ability of the adolescents with DLD to accurately perceive and rate themselves. It seems clear that sociability in children with DLD warrants further investigation.
Rating Scales

Behavior rating scales are commonly used clinical assessment tools where appropriate individuals (such as a teacher or parent) rate specific behaviors based on their previous observations and interactions with the child (Campbell & Hammond, 2014). Usually, a teacher records their perception of frequency or intensity of a child’s behavior, rather than counting the direct number of occurrences. Rating scales are, therefore, indirect assessments that rely on perceptions of behavior. However, subjective impressions via rating scales have been found to be reasonably good predictors of observed behavior (Merrell, 1999; Weinrott, Reid, Bauske, & Brummett, 1981). Rating scales are often heavily relied on in clinical use as they are efficient, effective, and simple; and research has found that they are quantifiable, reliable, and valid measures that allow raters to assess a broad range of behaviors in varied contexts. Rating scales can allow for comparison to a normative sample, allow for actuarial prediction of behavior, and capture events that occur rarely (Coie et al., 1990; McConaughy & Ritter, 2008; Merrell, 1999).

However, there are disadvantages to using behavior rating scales. For example, rating scales are not usually equipped to identify the etiology or function of a behavior (i.e., Why did the child act out? What was the child trying to accomplish with their behavior?). The time of measurement can affect validity and how heavily occurrences are weighted into ratings (i.e., Is this a recent development, or something that is no longer seen?), and researchers can vary in how they perceive categories (i.e., How many occurrences define “sometimes” or “often,” and is this consistent across raters?) (Merrell, 1999; McConaughy & Ritter, 2008; Worthen, Borg, & White, 1993). In addition, rating scales are subject to factors such as personal bias, dispositions, or experience of the raters (Nelson, Hart, & Evans, 2008). In spite of these shortcomings, behavior rating scales are common and effective clinical measures for social behavior.
Measurement of Invariance

Although rating scales are invaluable tools for assessing behaviors that occur in social contexts over time, it is important to determine if raters are conceptualizing the behaviors they are rating in the same way for both typical children and for children with disorders. Measurement of invariance is a statistical research tool that compares means across groups to determine whether the underlying construct is the same (invariant) between two groups. It is a tool appropriate for use with (ordinal) categorical items, and compares latent means and other structural parameters (Bowen & Masa, 2015; Pendergast, von der Embse, Kilgus, & Eklund, 2017). Measurements of invariance have recently been applied to research applicable to speech-language pathologists and others interested in special populations. Greenwood, Buzhardt, Walker, McCune, and Howard (2013) used this method to determine if their testing measure accounted equally for behaviors across populations of children, and others have used it to evaluate the functionality of a self-reporting measure for multiple sclerosis (Motl, Mullen, & McAuley, 2012) and whether patients and their families conceptualized items similarly on an aphasia questionnaire (Doyle et al., 2013). A recent analysis by Fujiki et al. (2019) found that some commonly used items used to assess shyness and unsociability in children on teacher rating scales were non-invariant between groups of typically developing children and children with DLD.

In the current study, the Teacher Behavior Rating Scale (TBRS; Hart & Robinson, 1996) was used to compare sociability, analyzed by the factors of likeability and prosocial levels of behavior, in typically developing children and children with DLD. In addition, the study used measurement invariance to determine whether teachers applied rating scale items from the TBRS in the same way when rating children with DLD and typically developing children. For
example, when rating the likeability item “peers enjoy talking with him/her,” did teachers conceptualize this in the same way for children with DLD and their typical peers? The large sample of participants enabled invariance testing that had not been part of prior studies. Gender and age were also considered to establish if these variables were related to item functioning. The following question was posed:

Using appropriate measurement invariance analysis, would children with DLD and typically developing children differ in teacher ratings of prosocial and likeable behavior utilizing a larger comparative sample ($n = 274$ children)?

**Method**

The data analyzed in this study were taken from various previous studies including Brinton et al. (2015), Brinton, Spackman, Fujiki, and Ricks (2007), Fujiki, Brinton, and Clarke (2002), Fujiki, Brinton, Isaacson, and Summers (2001), and Hart, Fujiki, Brinton, and Hart (2004), as well as several ongoing, unpublished studies. Children in these studies attended elementary school at 27 schools in three school districts in the western United States. All data were gathered and analyzed using procedures that were approved by the Brigham Young University Institutional Review Board. Informed consent was obtained from participants.

**Children with Developmental Language Disorder**

The study included 143 participants with DLD, 62 females and 81 males. The age of participants ranged from 5;1 to 12;7 (years; months), and participants were divided into an older and a younger group. The younger group included participants aged 5;1 to 9;11 for males ($M = 7;9, SD = 1;2$) and females ($M = 8;1, SD = 1;4$). The older group ranged from 10;0 to 12;7 for males ($M = 10;11, SD = 0;7$) and females ($M = 10;11, SD = 0;7$).
School speech-language pathologists referred participants who had been identified with DLD. Participants passed a hearing screening administered by school personnel. Intellectual disability was ruled out based on performance within the typical range on a standardized nonverbal intelligence test performed one or more standard deviations below the mean on a formal language test and were receiving intervention services at the time of evaluation. School district personnel ruled out autism spectrum disorder, and no other psychiatric and emotional conditions were reported. All children were monolingual English speakers.

A standardized language measure was administered to verify language deficits. One hundred twenty-six participants completed one of two formal language measures, the CELF-R or CASL. The remaining 17 participants were not assessed as part of this study because recent testing was on file with the school. The Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999) was used as the qualifying test for 93 participants. Children were administered age-appropriate core subtests to find a composite standard score. Children who scored at least one standard deviation below the mean qualified as participants in the group with DLD. The Clinical Evaluation of Language Fundamentals—Revised (CELF-R; Semel, Wiig, & Secord, 1987) was administered to 35 participants. Children with a total language score more than one standard deviation below the mean qualified for the group with DLD.

**Typically Developing Children**

Typically developing children were selected as a comparison group immediately after participants with DLD were identified. The sample included 131 additional children, 74 male and 57 female. These participants were also categorized into an older and younger group. The younger group ranged in age from 5;3 to 9;11 for both males ($M = 8;0, SD = 1;0$) and females ($M$
The older group included children from to 10;0 to 12;6 for both males ($M = 11;0, SD = 0;7$) and females ($M = 10;9, SD = 0;7$).

Children were selected for this group as controls for participants with DLD. They were randomly selected from children that were (a) within the same general education classroom, (b) the same gender, and (c) within seven months of age as the participant with DLD. These children were enrolled in expected school placement (grade). In addition, teachers reported typical academic achievement with no history of special services. Hearing status was reported as unremarkable.

Nonverbal cognitive testing was used to confirm group status for 49 participants. Various tests were used, and full breakdown of testing used is included in Appendix B. Participants were required to score within the typical range. Testing was not performed on the other participants, as classification based on teacher report precluded further testing.

Ninety of the typically developing children were also assessed for language using the CASL (Carrow-Woolfolk, 1999). These children were administered age-appropriate core subtests to find a composite standard score. Children who scored at or above a standard deviation below the mean qualified as participants in the typically developing group. The remaining 41 participants did not participate in a language assessment. However, judgments of typical language development were based on the criteria described above.

**Assessment Instrument**

The TBRS (Hart & Robinson, 1996) was used to assess the social behavior of children as observed by their teachers. Although the TBRS is not a commercially published measure, Hart et al. (2004) described the psychometric properties of this instrument for elementary-age children in detail.
The TBRS is a questionnaire with a three-point rating scale that measures various social behaviors. Teachers were instructed to rate each child while “thinking about the child’s present behavior relative to others in this age group that you know or have known” (Hart & Robinson, 1996, p. 1). Each item was rated as never (score of 0), sometimes (score of 1), or often (score of 2). Two versions of the TBRS were utilized with this study: a shortened version (70 items) and a full-length version (160 items). Items of interest to this study were the same in both versions of the scale. The longer version required about 10 minutes to complete, and the shorter version required about five minutes. The full-length version was used to assess 220 participants, and the shortened version was used to assess 54 participants.

Teachers completed TBRS questionnaires for all participants. In order to reduce rater bias, items of interest were randomly dispersed on the questionnaire. Classroom teachers were not informed about the specific purposes of the study. However, teachers knew which children in their classes were receiving language intervention services.

This study examined items related to two subtypes of sociability: likeability/impulse control and prosocial behaviors. The likeability/impulse control subscale contained items that assessed the emotional control and acceptance of children with their peers during cooperative and rough and tumble play. The prosocial behavior subscale contained items that assessed children’s friendly, comforting, and helpful behaviors with their peers.

The full-length TBRS originally contained eight items as part of the likeability/impulse control factor. Hart et al. (2004) examined these items and found only five of these items were best distinguished as contributing to one factor. This study therefore only analyzed five items from both the full-length and shortened versions of the TBRS. The five items specific to likeability/impulse control were as follows:
• L1: Other children like to be with child
• L2: Peers enjoy talking with him/her
• L3: Is cooperative during rough and tumble play with peers
• L4: Peers accept this child easily into ongoing peer group activities
• L5: Controls temper in conflict situations with peers

The items relating to prosocial behaviors on the TBRS were as follows:
• P1: Offers to help other children having difficulty with a task in the classroom
• P2: Offers to share materials (e.g., pencils, erasers) when used in a task
• P3: Helps other children who are feeling sick
• P4: Shows sympathy to someone who has made a mistake
• P5: Comforts a child who is crying or upset.

Procedure

All teachers completed the TBRS for a child with DLD and a typical child in their regular education classroom. There were a few cases where the data for a member of a pair could not be used, resulting in slightly different sizes of the language groups in the current sample. Teachers were asked to compare the child’s behavior to others in their age group. As indicated earlier, all items were rated using a three-point scale (0 = child never displays this behavior, 1 = child sometimes displays this behavior, 2 = child very often displays this behavior). Primary classroom teachers were assumed to provide the most accurate judgment of a child’s overall social functioning in the school setting. Ratings occurred at least two months into the school year to allow teachers to get to know the children they were rating.

Preliminary analysis examined factor analysis and measurement invariance prior to group comparison. The first likeability item (L1, “other children like to be with this child”) had no
response ratings of 0 (never) for children with typical language. For further analysis to continue therefore, scores of 0 and 1 (never and sometimes, respectively) were coded as the same response for factor analysis for both typical children and children with LI. Exploratory factor analysis determined whether individual items were measured with the same construct on both the likeability and prosocial subscales. This factor analysis led to dropping two likeability items, L3 (“is cooperative during rough and tumble play with peers”) and L5 (“controls temper in conflict situations with peers”) due to low factor loading and high factor cross-loading.

Next, each subscale item was analyzed for invariance according to Multiple-Indicators-Multiple-Causes (MIMIC) analysis. The three remaining likeability items (L1, L2, and L4) were each found to exhibit scalar. Four of the five items on the prosocial subscale were also invariant, but P1 (“offers to help other children having difficulty with a task in the classroom”) was found to be noninvariant due to invariance of thresholds between children with DLD and typical language children. Although it was non-invariant, P1 was used in further analysis, as non-invariance in two of the 15 thresholds (13.3%) is less than previously established parameters for invariance, which is less than 20% threshold non-invariance (Dimitrov, 2010).

After establishing partial scalar invariance, the two groups could be compared. To compare overall prosocial and likeability levels, ratings for each question were added to have a total prosocial or likeability level for each child. The likeability scale had three items, resulting in a possible score of 0 to 6 for each child. The prosocial scale’s five items resulted in a possible score of 0 to 10 for each child. The total rating score for both the prosocial and likeability scales were compared for children with developmental language disorder and their peers with typical language using independent samples t test.
Results

This study was designed to determine whether children with DLD would differ from typically developing peers in teacher ratings of prosocial and likeable behaviors. After establishing partial scalar invariance, the two groups were compared. To compare overall prosocial and likeability levels, ratings for each question (which were 0 for never, 1 for sometimes, or 2 for often) were added to have a total prosocial or likeability level for each child. The likeability scale had three items, resulting in a possible score of 0 to 6 for each child. The prosocial scale’s five items resulted in a possible score of 0 to 10 for each child. The total rating score for both the prosocial and likeability scales were compared for children with developmental language disorder and their peers with typical language using independent samples t-test.

Likeability

Three items were analyzed for the likeability subscale: “other children like to be with this child” (L1), “peers enjoy talking with him/her” (L2), and “peers accept this child easily into ongoing peer group activities” (L4). The combined scores for each item’s rating resulted in a possible scale of 0 to 6 for each child (see Figures 1 and 2).

An independent-samples t test was calculated comparing the mean likeability score of typical children to the mean score of children with DLD. Scores on the likeability scale were higher for typical children ($M = 5.62, SD = 0.99$) than for children with DLD ($M = 3.61, SD = 1.48$), $t(250) = -13.112, p \leq .001, d = 1.58$). Levene’s test indicated unequal variances ($F = 37.869, p < .001$), so the degrees of freedom were adjusted from 272 to 250.
Figure 1. Frequency of total likeability scores for typically developing children.

Figure 2. Frequency of total likeability scores for children with DLD.
**Prosocial Behavior**

Five items were analyzed for the prosocial subscale: “offers to help other children having difficulty with a task in the classroom” (P1), “offers to share materials (e.g., pencils, erasers) when used in a task” (P2), “helps other children who are feeling sick” (P3), “shows sympathy to someone who has made a mistake” (P4), and “comforts a child who is crying or upset” (P5). The combined scores for each child resulted in a range of 0 to 10 for the prosocial score (see Figures 3 and 4).

An independent-samples *t* test was calculated comparing the mean prosocial score of typically developing children to the mean score of children with DLD. Scores on the prosocial scale were higher for typically developing children (*M* = 8.04, *SD* = 2.07) than for children with DLD (*M* = 5.28, *SD* = 2.81), *t* (259) = -9.253, *p* ≤ .001, *d* = 1.11. Levene’s test indicated unequal variances (*F* = 11.077, *p* = .001), so the degrees of freedom were adjusted from 270 to 259. This study found that children with DLD had lower levels of prosociability and of likeability than their typically developing peers.
Figure 3. Frequency of prosociability scores for typically developing children.

Figure 4. Frequency of prosociability scores for children with DLD.
Discussion

This study examined teacher ratings of two aspects of sociability, likeability and prosocial behavior. Initially, measurement invariance analysis was performed to determine if teachers evaluated likeability and sociability in a similar manner for both children with DLD and their typically developing peers. In establishing group invariance, teachers were found to have similar constructs for both groups, with the exception of question P1, “offers to help other children having difficulty with a task in the classroom.” Despite the non-invariance for this item, P1 was used in further analysis as the overall parameters for accepted invariance thresholds were met (Dimitrov, 2010). Teachers reported that children with DLD demonstrated lower levels of both likeability and sociability when compared with their typically developing peers.

Measurement Invariance Analysis

To establish that teachers had the same theoretical construct for each item, measurement invariance was performed prior to other analyses. The single non-invariant item on the prosociability scale P1 (“offers to help other children having difficulty with a task in the classroom”), indicated that teachers conceptualized this behavior differently for typically developing children than they did for children with DLD. It is possible that teachers perceived offering to help peers having difficulty in class as a more demanding task for children with DLD than the behaviors probed by the other items. For a child to assist a peer in a classroom task requires academic competency and efficiency, which was not inherent in the other items regarding prosociability. Teachers may have perceived children with DLD as being unable to assist their peers with school work. Teachers may have assumed that children with DLD could not be finished with their own work accurately in a timely manner and would therefore be less equipped to assist others. Teachers may also have assumed that children with DLD would not be
proactive enough to approach peers with offers to help. In any event, teachers evidently conceptualized the ability to help peers with classroom tasks differently for children with DLD than they did for typically developing children.

It is interesting to consider the implications of the scalar invariance analysis findings for item P1. These indicated that children with DLD needed to have more prosocial skills to receive the same rating as a child with typical language skills. Scalar invariance for this item was also characterized by differences in thresholds to change ratings for the two groups. These indicated that children with DLD also needed a higher differentiation between prosocial levels to increase their score as compared to typically developing children. In other words, in comparison to typically developing children, a child with DLD needed to show more prosociability for a teacher to perceive it, as well as higher prosociability to increase their rating from a response of never to a response of sometimes. It is possible that teachers did not expect children with DLD to help others, therefore the children needed to exhibit more of these behaviors than their peers to be recognized by their teachers.

Prosociality

In addition to “offers to help other children having difficulty with a task in the classroom” (P1), the following four items made up the prosocial subscale; “offers to share materials [e.g., pencils, erasers] when used in a task” [P2], “helps other children who are feeling sick” [P3], “shows sympathy to someone who has made a mistake” [P4], and “comforts a child who is crying or upset” [P5]. Ratings of prosociability in typically developing children exhibited relatively little variability, and teachers rated these typically developing children higher than they did children with DLD. In contrast, teacher ratings of children with DLD were not only lower,
they showed considerably more variability. This suggested a wider range of prosocial behaviors in children with DLD in comparison with their peers.

It seems reasonable that the children with DLD would have lower scores in this scale, as the emotion understanding ability that underpins prosociability may have been weak in these children (Brinton et al., 2015; Ford & Milosky, 2003; Spackman et al., 2006; Vendeville et al., 2015). For example, these children may have been less likely to note the emotional state of their peers, which is a precursor to demonstrating prosociable behaviors. It is also likely that the children with DLD were less likely to understand what initiated a peer’s emotional state or how to help with it. Another possible barrier to participation for the children with DLD was the fact that offering to help or comfort others also requires a child to be proactive. Since many children with DLD have been characterized as being withdrawn, shy, or reticent (Fujiki et al., 2019), the children in this study might have experienced difficulty initiating prosocial responses. These children may have struggled both with the emotional understanding to recognize emotional states, as well as the required emotion regulation to initiate a prosocial response.

**Likeability**

Likeability refers to peer acceptance and might be described as the ease with which a child is included by their peers. A child who is perceived as being less likeable is unlikely to be well-integrated into collaborative work and play activities. After factor analysis, three likeability items remained: “other children like to be with this child” (L1), “peers enjoy talking with him/her” (L2), and “peers accept this child easily into ongoing peer group activities” (L4). Overall, teachers perceived children with DLD as being less likeable than their typically developing peers. Not only did teachers rate these children as less likeable, teachers also perceived more variability in their likeability than in children with typically developing language
skills. For example, of the 131 participants with typically developing language, teachers did not rate a single child as never being liked by their peers, but teachers very frequently rated children with DLD in this way. In other words, limited likeability did not appear to be a consideration in typically developing children, but it was evident in children with DLD. This finding is particularly concerning, as it suggests that the children with DLD lacked the socially “protective” factor of being viewed favorably by their peers.

**Directions for Future Research**

This study offered valuable insights into the constructs of likeability and prosociability. This study confirmed the validity of using the TBRS as a tool to investigate the complex relationship between language and likeability in future research. The general invariance for the TBRS items indicated that this rating scale was generally a reliable tool to assess sociability in this population. However, the fact that one item was non-invariant underscores the importance of assuring that individuals completing rating scales are, in fact, conceptualizing specific behaviors in the same way for different populations. In designing and employing rating scales, analysis of measurement of invariance should be conducted to ensure that rating scale items are assessing the same construct in children with disabilities and typically developing children.

The TBRS facilitated an efficient analysis of the behavior of a relatively large number of children. Like all rating scales, however, the TBRS probes raters’ perceptions of behavior rather than direct observations of actual behavior. Rating scales may be influenced by factors such as time, situational influence, and rater bias. Additional research is warranted to determine how well teachers’ perceptions reflect actual behaviors in children with DLD in various social contexts. In addition, future study could investigate the influence of additional factors such as family dynamics or severity of language impairment on prosociability and likeability.
Conclusions

The results of this study support the concept that developmental language disorders do not affect language in isolation, and that children with DLD demonstrate distinct social deficits when compared to their peers with typically developing language. Likeability and prosociability tap into two important aspects of sociability, the ability to reach out to peers and be accepted when doing so. This study suggested that the children with DLD demonstrated significantly lower levels of sociable behavior than their peers on both prosocial and likeability subscales. This finding should be considered in light of research investigating the way in which children with DLD interact with their peers in social contexts, such as school. Previous study has indicated that children with DLD are more shy and withdrawn than typically developing children (Fujiki et al., 2019). The social withdrawal frequently noted in children with DLD should be considered in light of the way that these children perform when they do interact with their peers. For example, if a relatively shy child demonstrated positive, prosocial behavior on the occasions when they talked to their peers, there would be less concern about their socially reserved nature. The current study, however, suggests that children with DLD are notably less likeable and less prosocial than their typically developing peers. The combination of high levels of withdrawal and limited prosocial behavior is likely to put children at risk for peer isolation and rejection. The results of this study indicate that these children are not fully accepted by their peers, nor do they engage in the helpful, comforting behaviors that encourage peer acceptance and build friendships. Children with DLD, therefore, are in a particularly fragile peer situation.

The findings of this study, combined with previous research, underscore the fact that many children with DLD experience poor social outcomes that can have a negative impact on their quality of life. These outcomes are associated with difficulties not only in receptive and
expressive language processing, but also in pragmatics and social and emotional learning. Not only is further research concerning likeability and prosociability in children with DLD warranted, evident deficits should be taken into account when planning intervention and further research for this population. Intervention should center not only on weaknesses in structural language, but also on the social and emotional ability that strengthens sociability.
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1198-1208.

behavioral evidence for varying forms and functions of nonsocial behavior in


APPENDIX A

Informed Consent Files

Informed consent was obtained from each parent and teacher. Assent was obtained from each child. Wording varied on across consent forms for different studies, depending on overall goals of the research project. Example of IRB-approved consent forms are on the following pages.
Parental Permission Form

Introduction: I am Professor Martin Fujiki, Brigham Young University. I am doing research to develop therapy procedures to help children with communication problems improve their social interactional skills. Your child is being invited to participate because he/she is currently receiving speech language services in Alpine School District at Grovecrest Elementary School.

Procedures: I am asking you to enroll your child in a 12 to 14-week intervention study. During this time your child will be enrolled in intervention that will focus on teaching social communication skills that help him/her better understand the emotions of others. The goal will be to help your child interact more appropriately with peers and adults. Therapy will be provided by a combination of BYU graduate students in Communication Disorders and your child's school speech pathologist. All treatment will take place at your child's school. There will be two to three treatment sessions per week, each lasting about 30 minutes. All treatment sessions will be video recorded. These sessions will work on helping the child to understand better the emotional responses of others. All treatment sessions will take place during the regular school day. In addition, your child may be given additional testing to make sure that he/she meets the study criteria. Some of this testing may have been done already, but if not it may take up to an additional two hours of time to complete. If the testing has already been done, we would like to request your permission for the school clinician to make this information available to us. All treatment sessions will be video recorded to allow researchers to analyze the effectiveness of the treatment. The recordings will be erased following completion of the analyses.

As part of the assessment and follow up I will be asking you to complete a paper copy of a social skills questionnaire for your child before and after the intervention takes place.

Risks/Discomforts: There are minimal risks associated with this treatment. You child may miss class for one extra session of therapy a week during the course of the study. Your child's school clinician will either be present or close by during all therapy sessions to handle any questions or difficulties that may arise as a result of working in the treatment conditions. Clinicians and supervisors will consult regularly to make sure that your child is not experiencing any problems in the treatment conditions. The only other discomfort is that the questionnaire I will ask you to complete will take about 20 minutes of your time.

Benefits: The primary benefit to your child is the potential growth resulting from receiving intensive intervention during the course of the study. There are benefits to society in general in that this study may result in more effective treatment methods for children with social communication problems.

Compensation: There is no compensation associated with participation in the study.
Confidentiality: Your child’s participation will be confidential. All materials will be stored in locked cabinets in a locked lab at BYU. Names will be removed from research materials and neither your name nor your child’s name will ever be used in connection with any presentation of this research. **Video images will be stored on a secure hard drive in a locked lab at BYU. These images will be used to document how well your child responds to the intervention.** These images will be stored for six years to allow analysis and then destroyed.

Participation: Participation is voluntary. If you give permission to include your child in the study, he/she will also be asked if he/she would like to participate. Even if you give consent, you and your child have the right to withdraw at anytime or refuse to participate entirely without jeopardy to your class status, grade or standing with the school.

Questions about the Research: If you have any questions concerning the study, please contact me. My phone number and email address are (801) 422-5994, martin_fujiki@byu.edu.

Questions about your Rights as a Research Participant
If you have questions regarding your rights as a research participant, you may contact the BYU IRB Administrator, A-285 ASB, Brigham Young University, Provo, UT 84602, 801-422-1461, irb@byu.edu.

I have read, understand, and received a copy of the above consent and of my own free will allow my child to participate in the study.

Signature_________________________________________ Date__________

Printed name_____________________________________

Video Release Form
As noted above, I will be making video recording of your child during participation in the research. Please indicate what uses of these video recording you are willing to permit, by putting your initial next to the uses you agree to and signing the form at the end.

1. _____ The video recordings can be studied by the research team for use in research project.

2. _____ Short excerpts from the video recordings can be shown at scientific conferences or meetings.

3. _____ Short excerpts from the video recordings can be shown in university classes.

Institutional Review Board
08/02/13 08/01/14
Approved Expires
I have read the above descriptions and give my consent for the use of the videotapes as indicated by my initials above.

(Signature) ___________________________ (Date) ___________________________

Name__________________________________________________________
Teacher Permission Form

Introduction: I am Professor Martin Fujiki, Brigham Young University. I am doing research to develop therapy procedures to help children with communication problems improve their social interactional skills. Children who are receiving speech and language services are being invited to participate in this research.

Procedures: Children with communication problems will be enrolled in a 12 to 14-week study. During this time intervention will focus on teaching social communication skills. Therapy will be provided by a combination of BYU graduate students in Communication Disorders and the child’s school clinician. All treatment will take place at school. As part of the assessment and follow up I will be asking you to complete a social skills questionnaire for each child in the study before and after the intervention takes place.

Risks/Discomforts
There are no known risks/discomfort aside from the time that it will take to complete the questionnaire. It is 79 questions long and will take about 10 minutes, per child, to complete.

Benefits
Completing this questionnaire will help me determine if the social communication intervention is effective. Overall, this research will help educators work with the social problems experienced by most children with communication problems.

Confidentiality
Be assured that participation will be confidential. All materials will be stored in a locked cabinet at BYU. Names will be removed from research materials and neither your name nor your students’ names will ever be used in connection with any presentation of this research.

Compensation
I will compensate you $5 for each questionnaire completed as a “thank you” for your participation. You will receive the $5 shortly after turning in the questionnaire.

Participation
Participation is voluntary. You may withdraw at any time. Withdrawal or refusal to participate will not affect employment at your school or your relationship with BYU.

Questions about the Research
If you have any questions concerning the study, please contact me. My phone number and email address are (801) 422-5994, martin_fujiki@byu.edu.
Child's Assent

Introduction

My name is _______. I work at Brigham Young University. I study the way that children talk to other people. I am working with some children in Mrs./Ms./Mr. _______’s class. I would like your help.

What Will Happen (Procedures)

I will ask you to do several things. We will listen to stories and then act them out. I will also show you pictures of faces to see if you can tell what emotion the person is feeling. I will also tell you stories and see if you can tell what emotion the people in the stories are feeling. You will do all the work at school. You will come to work with me during your speech time.

Possible Problems (Risks)

You will miss some class time. I will work with Mrs./Ms./Mr. (Child’s teacher) _______ to make sure than you do not miss things in class that are really important or really fun.

Good things that will happen and what you will get (Benefits and Compensation)

You will get to pick a sticker or small prize every time you work.

Who will know about this work (Confidentiality)

You, your parents, and your teacher will know that you are working with us. No one else at your school will know. We will not put your name on any of our papers. We will not put your parents’ names or your teacher’s names on any of our papers. We will keep all of our papers and work locked up in a cabinet at BYU.

Working with us (Participation)

You do not have to work with us if you don’t want to. You may quit this work any time you want to. You will still get your prize.

Questions

If you have any questions, please ask me. You can also ask your parents or your teacher. If you want to ask someone else questions about this work, you may contact the BYU IRB Administrator A 285 ASD, Brigham Young University; Provo, UT 84602; 801-422-1461, irb@byu.edu.

______ I want to take part in this study.

______ I do not want to take part in this study.

Signature ______________________________________

Date ____________________________

Institutional Review Board
08/02/13 08/01/14
Approved Expires
## APPENDIX B

### Additional Participant Information

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<tr>
<th>All Participants</th>
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<th>Participants with DLD</th>
<th>General Information</th>
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<tr>
<td>Speech-Language Services</td>
<td>Enrollment in language intervention (pull out service delivery model)</td>
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<th>Individual Testing from various studies</th>
<th>Language Testing to Establish or Document DLD</th>
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<td>35 CELF-R¹, TOLD-2²</td>
</tr>
<tr>
<td>Fujiki, Spackman, Brinton, &amp; Hall (2004)</td>
<td>41 CASL³</td>
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<td>Brinton, Spackman, Brinton, &amp; Hall (2007)</td>
<td>24 CASL, TOLD-P:2⁴</td>
</tr>
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<td>Brinton et al. (2015)</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

Note:
1: CELF-R = Clinical Evaluation of Language Fundamentals—Revised (Semel, Wiig, & Secord, 1987)
3: CASL = The Comprehensive Assessment of Spoken Language (Carrow-Woolfolk, 1999)
4: TOLD-2 Primary: Test of Language Development-2: Primary (Newcomer & Hammill, 1988)
7: Matrix Analogies Test (Naglieri, 1985)
8: KABC = Kaufman Assessment Batter for Children (Kaufman & Kaufman, 1983)
9: Leiter-R = Leiter International Performance Scale: Revised (Roid & Miller, 2002)
11: Woodcock-Johnson psycho-educational battery—Revised (Woodcock, Johnson, & Mather, 1990)
12: TONI-2 = Test of Nonverbal Intelligence, Second Edition (Brown, Sherbenou, & Johnsen, 1990)
13: UNIT = Universal Nonverbal Intelligence Test (Bracken & McCallum, 1998)
References


APPENDIX C

Annotated Bibliography


**Purpose of the Study:** Children with pragmatic language impairment (PLI) or social communication disorder (SCD) “show disproportionate difficulty with the pragmatic as compared with the structural aspects of language” (233). Social communication interventions (SCIP) have “little robust evidence of effectiveness” (233). This study addressed that problem: the authors designed an intensive social communication intervention (SCIP) for children with PLI to assess whether it was effective in “improving (1) language skills and (2) observed functional pragmatic ability and broader social communication of [children with PLI] within a small-scale randomized controlled trial” (234).

**Method:** Children were referred by SLTs (speech language therapists) across the North West of England and South East Scotland. Criteria for referral was the children referred were that they were between 6 years and 10 years 11 months, had pragmatic communication problems, were receiving intervention services through their schools, primary language were English, school agreement to accommodate intervention and assessment visits, had no diagnosis of autism, were able to cooperate with direct intervention, and no evidence of “severe difficulties in emotional development, behavior needs, unintelligibility, or hearing” (235). Children were then
screened by a parent questionnaire to measure their overall communication skills and a non-verbal reasoning test. Informed consent was obtained from the parents, child (if able), school, teacher, learning support assistant, and relevant local authorities.

The 88 children were randomly assigned in a 2:1 ratio to receive intensive social communication intervention or treatment as usual. Assessments were performed by a research assistant blind to the treatment allocation; however, due to the nature of the intervention, families, schools, and those delivering the intervention knew the treatment allocation group. Reassessments occurred within two weeks of completing the assessment, and then 6 months following the completion.

The CELF-4 had been predefined as the primary outcome measure, but other outcome measures were obtained through Targeted Observation of Pragmatics in Children’s Conversation (TOPICC), a pragmatic ratings scale (a subset of the CCC-2), Expression, Reception, and Recall of Narrative Instrument, and parent- and teacher- reported outcomes.

Each child in the treatment group received “16 to 20 individual face-to-face one-hour sessions….in the school over the course of one school term” (236). Intervention was individualized but within the specific framework of the design of SCIP. SCIP was delivered by two specialist research speech and language therapists and five specially trained therapy assistants, and those in the treatment as usual continued seeing their school SLT. Treatment fidelity was >80%.

**Analysis and Results:** Analysis of outcomes for the social intervention and treatment as usual showed no significant difference on the primary measure of the CELF-4 or the measure of narrative ability. Children with more impaired language ability showed a stronger trend of improvement with the social intervention treatment group than children with higher initial
CELF-4 scores. Social communication intervention showed significant differences on blind ratings of overall conversational quality (TOPICC), however only about half of the children actually improved in their conversation, indicating perhaps that some children require longer periods of intervention. Significant effects were found for parent and teacher ratings as well, although one measure of rating (CCC-PRAG) didn’t show significant improvement until the six-month follow-up. It is possible that parents reported positive changes as a bias effect, but “intervention contained multiple integrated components and these were not explicitly labeled by therapists” (241). A potential bias in the structure of the study is time difference spent in intervention between the two groups: improvement could be seen as the result of increased contact with specialists. However, the social communication intervention was compared to the treatment currently being received at schools, therefore it created a valid comparison between the SCIP and improvement that would have occurred in current treatment and so has ecological validity.

**Conclusions:** It is likely that this intervention is “effective at improving overall conversational quality but not structural language skills in 6-11-year olds who have significant pragmatic and social communication needs compared with treatment as usual” (242). Social communication intervention demonstrated improvements in children with PLI that were not found on formal language measures but were measurable with ratings from blind raters in conversation and parents and teachers. Intervention for children with PLI requires complex constructs, and it is likely that effects will not be uniform, due to different impairment profiles. Some children may require longer periods of time to increase in these skills. The overlap in needs for children with PLI and those with ASD indicate that SCIP may be an effective intervention with these children.
Relevance to Current Work: This study compared the effectiveness of social communication intervention to standard intervention, as measured by formal tests and parent and teacher ratings of pragmatic skills.


Purpose of Study: This study examined the ability of children with language impairment to dissemble (hide) their emotions as socially appropriate in hypothetical situations and low-cost and high-cost natural settings as compared to peers with typically developing language skills.

Method: Participants were referred by their school speech-language pathologists. The study involved 22 children with language impairment and no other known disorders between the ages of 7;1 and 11;0 years. Each child was matched with an age and gender matched peer from their class who also participated in the study. Each child was assessed by the CASL to obtain a standardized language score to confirm group assignment and the UNIT to measure non-verbal IQ. A series of tests that assessed emotional intelligence were then administered. The tests assessed emotion identification in pictures, emotion conveyed in tone of voice, and a dissemblance task. Each child responded to 10 hypothetical social scenarios, and then four natural setting situations requiring dissemblance were administered by two examiners.

Analysis and Results: Both groups of children scored high on comprehension questions for the hypothetical scenarios. In the hypothetical social situations, children with LI and typically developing children demonstrated similar understanding of social display rules, but children with
LI were less likely to follow those rules to dissemble the emotion. Children with LI and typically developing children dissembled emotions similarly in low-cost naturalistic settings. In high-cost natural settings where motivation played a crucial role in dissemblance, children with language impairment were less likely to dissemble emotions and were more likely to display more negative intense emotions than typically developing children.

**Conclusions:** In hypothetical scenarios, children with LI could identify what social display rules dictated, but they were less likely than their typical peers to recommend that a character dissemble emotions. In naturalistic situations, children with LI had more difficulty than their typical peers in dissembling their emotions when they personally had a motivation in the situation (high-cost scenario). Variation in the performance of children in both groups implied that this dissemblance is an emerging skill, but children with LI seem to lag behind their emotion peers.

**Relevance to Current Work:** This study considered emotional dissemblance in various settings in children with language impairment.


**Purpose:** This study presented a meta-analysis of the effects of school-based social and emotional learning (SEL) programs. SEL programs are designed to target self-awareness, self-management, social awareness, relationship skills, and responsible decision making.
**Method:** Studies for comparison were found through various means, resulting in many studies that weren’t used in previous reviews. Studies were included or excluded based on several criteria to focus on studies that emphasized SEL skill development. Dichotomous coding of intervention format, use of SAFE (sequential, active, focused, and explicit) practices, and reported implementation problems were analyzed with the outcomes of social and emotional skills, attitudes towards self and others, positive social behaviors, conduct problems, emotional distress, and academic performance.

**Analysis and Results:** The study-level mean showed that SEL programs had a statistically significant impact, but there was great variability between the results of studies, suggesting that one or more variables may moderate outcomes. Students demonstrated enhanced SEL skills, attitudes, positive social behaviors, and academic performance. Fewer conduct problems and lower levels of emotional distress were also noted. Not all studies included follow-up data, but those that did still demonstrated statistically significant improvement in outcomes, although it was reduced from data immediately following the study. Single and multi-component programs were both shown to be effective, although classroom programs delivered by non-school personnel showed fewer significant outcomes. Programs that used all four SAFE practices were found to have more positive outcomes, but these programs also more likely to be teacher-led and so results may have been confounded by that variable. Other explanations for results were examined by looking at possible bias from nested designs and publication bias.

**Conclusions:** Current research has found that “SEL programs yielded significant positive effects on targeted social-emotional competencies and attitudes about self, others, and school” (417). Teachers and school staff effectively conduct the programs and SEL programs can be implemented at all education levels and in schools that are urban, suburban, or rural. The studies
that measured academic performance supported other research showing that SEL programs
enhances the academic performance of students. Two variables predicted positive outcomes: the
use of SAFE practices and implementation programs. This indicated that “beneficial programs
must be both well designed and well conducted” (418). Further research should be done to help
standardize the measure of social and emotional skills.

Relevance to Current Work: Social-emotional learning programs were found to have
positive effects on social-emotional competencies, positive social behaviors, behavior effects,
and academic performance.

Differences in children with language impairment. Journal of Speech, Language, and
Hearing Research, 46, 21-30.

Purpose of Study: This study examined if children with language impairment have
difficulty identifying facial expressions, integrating that knowledge with other verbal and visual
information to make a social inference, and if inferencing difficulties are modality-specific.

Method: Twelve children with LI and twelve typically developing children aged 5 to 6
from both inner city and suburban schools participated. Children participated in a standardized
language and nonverbal IQ assessment. Children were asked to produce a facial expression
associated with the emotion words and asked to match facial expressions to emotions to check
comprehension prior to listening to stories. Nine stories with two simple actions were developed
for each of four emotions and were adapted to each of the modalities (verbal, visual, and
concurrent). Stories were presented in a varied mode in a random order for each child. A cartoon
character was the center of each story, and gender was ambiguous. The audio recording was presented with pronouns to match the child’s gender.

**Analysis and Results:** Children in both groups were able to identify happy, mad, and sad from pictures, although a few children in both groups struggled identifying surprise and were coached to call it surprise. All children showed comprehension by pointing to the appropriate facial expression to match the emotion. In the inferencing task, “children with LI were not as proficient in inferring emotional reactions” (25) as their typically developing peers. Concurrent modality presentations resulted in a statistically significant difference than the two modalities singularly for both groups. No statistically significant difference was found between visual or verbal presentations. “Children with LI had more difficulty making appropriate inferences, regardless of emotion or mode of presentation” (25). Children with LI were more likely than their peers to make errors of a different emotion valence.

**Conclusions:** “Children with LI do differ from their typically developing peers in processing social information” (27). Children with LI could identify basic emotions in line drawings accurately but demonstrated difficulty integrating that information to create a social inference that predicted character emotion. Children in both groups were most accurate in identifying happiness in comparison to other emotions. Children with LI were more likely to make errors of in the valence of an emotion. This could have poor social consequences in real life, especially when compounded with their decreased ability to integrate that information to make social inferences when compared to their peers. Modality of presentation was found to not be significantly different for auditory or visual input, but for children with LI, their ability to make an emotional inference was improved with material being presented both verbally and visually.
Relevance to Current Work: This research addresses the ability to children with LI to infer emotional reactions.


Purpose of Work: This chapter claims that successful intervention for children with language impairment (LI) requires more than addressing expressive and receptive language in isolation. Social communication was defined as the integration of the following areas; pragmatics, social cognition, social interaction, and language processing. This chapter established a theoretical and empirical basis for this approach, and then presented a framework and intervention pattern.

Summary: “A social communication approach involved a broad view of a child’s ability to communicate within his or her social world” (443). Various studies have shown that children with language impairment have difficulty participating in conversation when compared to their peers. These differences can be attributed to more than language structure and meaning, as there is a lack in overall social understanding that is apparent. Further studies have shown that social and emotional learning is affected in children with LI. A more complete understanding of these effects is visible when social communication is examined, rather than simply language processing. This “approach to intervention facilitates social and emotional learning to support social communication and may thus be applicable for children who present with a variety of clinical profiles and labels” (422).
The theoretical basis for social communication intervention was presented:
“Communication may be affected by deficits not only in the linguistic knowledge but also in aspects of social and emotional learning. These limitations, in turn, directly affect the experiences, opportunities, and relationships that contribute to a child’s quality of life. A social communication approach is built on the assertion that for intervention to be effective, the clinician must integrate knowledge, behaviors and dispositions across the domains of development that support communication” (423).

There are four main subsets of social communication: pragmatics (social codes for how language is to be used, such as turn-taking), social cognition (ability to make inferences, take the perspective of others, and express meaning and intent), social interaction (desire and opportunity to share experiences and emotions) and language processing (producing and comprehending the structure and vocabulary of language). An examination of the literature for the empirical basis for a social communication approach concluded that “most published studies examining social communication interventions for children with LI, PLI, and related diagnoses demonstrated statistically significant gains” (429).

A framework for assessment and decision making was presented, which took into account the stakeholders, communication needs, and general development factors to prioritize decision making while examining their strengths and deficits of social communication. This approach to assessment shaped the intervention program. Key components to this approach included goal selection to meet social communication needs that are a priority to stakeholders, a “plan-do-review” structure, monitoring progress, and involving stakeholders. Further directions needed for this approach were increasing the understanding about the developmental relationship
between language development and social cognition and adapting intervention to each child specifically.

**Conclusions:** Social communication intervention looks at the child’s language processing as well as pragmatics, social cognition, and social interaction. “The primary objective of a social communication perspective is to situate communication within the important contexts of the child’s life.” (426).

**Relevance to the Current Work:** This chapter discussed the need to approach treatment for children with language impairment by assessing their social communication needs.


**Purpose of Study:** This study was designed as a preliminary effort to understand the relationship between language impairment and emotion regulation. It examined if children with LI differed from their peers in regulating their emotions, and if gender and age affected the ability of children to regulate emotion.

**Method:** Forty-one children with LI between ages 6 to 9 or 10 to 13 with no other known impairments were referred by their school SLP. Each child was age and gender matched with a child from their classroom at random. Their classroom teacher completed the Emotion Regulation Checklist.

**Analysis and Results:** Typically developing children were rated significantly lower than children with LI, with group membership accounting for 70% of the variability. Children with LI
showed more within-group variability for lability and negatively than typical children did. Boys with LI were rated lower than other groups on the emotion regulation subscale.

**Conclusions:** Emotion Regulation appears to be problematic for children with LI, which may be related to reticent and withdrawn behavior seen previously. Children with LI received lower scores with a greater variability in ratings than typical children did. “Maturity and experience did not appear to have resolved the difficulties with emotion regulation for children with SLI in this study” (108). Girls showed stronger emotion regulation skills than boys in both groups, but the difference was particularly evident in children with LI.

**Relevance to Current Work:** This study investigated emotion regulation in children with LI


**Purpose of Study:** This study was designed to examine if children with LI differed from typical language peers in their withdrawn and sociable behavior. Children with LI were also examined to see if sociable and withdrawn behaviors were influenced by age or gender.

**Method:** Forty-one children with language impairment (ages 5 to 8 and 10 to 13) were referred by their school SLP and then randomly matched for age and gender with a classmate. Each child was assessed according to the Teacher Behavior Rating Scale, and appropriate assessment items were rated to measure the subtypes of withdrawn and sociable behavior (reticence, solitary-active withdrawal, solitary passive withdrawal, likeability, and prosocial behaviors).
Analysis and Results: Five sets of 2 by 2 by 2 ANOVAs were completed. Withdrawn and sociable subtypes were completed in separate analyses. Teachers rated children with LI as being significantly more reticent than their typical peers. Boys with LI were more likely to engage in solitary-active withdrawal than other subgroups. Boys were overall more likely to engage in solitary-passive withdrawal, especially boys with LI. Children with LI were perceived as being significantly more reticent than their typically developing peers. Typically developing children were rated as having statistically significant higher likeability and prosocial behaviors. Some children with LI scored within the typical range for all subtypes of withdrawn and sociable behavior.

Conclusions: Children with LI experienced social problems in both withdrawn and sociable behaviors. “If language impairment alone explained social difficulty, we might expect less variability in the group with LI” (191). Children with LI showed variability in levels of both withdrawn and sociable behavior that weren’t related to the severity of the impairment. “Formal language tests are not sufficiently discriminating to describe aspects of language impairment that sabotage social functioning” (192).

Relevance to current work: This paper describes the sociable and withdrawn behaviors of children with language impairment.

**Purpose of Study:** This study was designed to probe the relationship between language, reticence, and emotion regulation in children with LI, specifically how emotion regulation and language might predict reticence.

**Method:** Forty-three children with LI (CA: 5-8 and 9-12) who met inclusion criteria were referred by their school SLP and were then randomly paired with an age- and gender-matched typically developing peers from their classes. Teachers completed the Emotion Regulation Checklist and the Teacher Behavior Rating Scale for each child. The CASL, a formal language measure, was administered to each child.

**Analysis and Results:** Data from the teacher-based assessments were compared for differences between children with LI and typical children. Regressions analyses compared the links between language, emotion regulation, and reticence via a MANOVA for each age/language group. Emotion regulation and CASL scores were found to be uniquely correlated as well as equally powerful significant predictors of reticence scores, regardless of age or language group assignment.

**Conclusions:** Children with LI have lower emotion regulation skills and higher levels of reticence when compared to their peers. Both emotion regulation abilities and language scores were predictors for reticent behaviors. “The nature of SLI cannot be understood independent of emotional and social behavior” (645).

**Relevance to current work:** This study deals with the emotional development of children with language impairment.

Purpose of Study: This study examined whether children with LI differed from their typical peers in their ability to interpret prosody in a narrative passage. It was also examined whether these differences were specific to certain emotions and if there were gender differences in task performance.

Method: Nineteen children with LI and 19 of their age and gender matched peers between 7;9 and 10;10 years were chosen from local school districts. Language measures and nonverbal IQs were confirmed group membership. Children listened to the same short passage read with happiness, anger, fear, or sadness. Response cards with images and words were provided to facilitate responses and children were trained to use them.

Analysis and Results: A main effect for emotion was found with typical children performing better than children with LI, although misidentification varied by the emotion. Children identified happiness most readily, and fear was the most difficult emotion to infer. The interaction between group and the type of emotion was not significant.

Conclusions: Children with LI performed more poorly identifying emotion based on prosody, and these differences couldn’t be accounted for by other factors such as age or gender. These differences appear to be the result of a difference of emotional understanding in natural settings. Children with LI were able to recognize prosodic cues of happiness quite readily. Children in both groups were prone to errors in interpreting the emotions conveyed in a passage, but children with LI were more prone to confuse negative emotions such as fear and sadness. Even children with typical language were not as accurate as adults when completing the task, showing that emotional understanding is still emerging in typically developing children.
**Relevance to Current Work:** This study examined children with LI and their emotion understanding by evaluating their ability to determine emotion based on prosodic cues.


**Purpose of Study:** This review was carried out by an ASHA ad hoc committee to evaluate the evidence of treatment for social communication disorders in school-aged children with language impairment (LI).

**Method:** Eleven clinical questions were considered by the committee. Eight studies that met criteria were included in the study. Each study was rated as being exploratory in nature because of low ratings of quality indicators, and results of the review were descriptive rather than quantitative in nature. These studies addressed three of the questions developed by the committee, including effect of conversation/discourse, pragmatics, and narrative treatments.

**Analysis and Results:** Although the preliminary results suggest that social communication approaches may be efficacious, the low ratings for study design indicated that this research was still in the early stages for children with LI. Many clinical questions formed by the ad hoc committee had not been adequately addressed in the literature up to this point, which could indicate that some approaches are used more with other diagnostic groups. Participants and treatment procedures for addressing social goals between studies varied greatly.

**Conclusions:** Recommendations for standard clinical practice could not be made at this time based on empirical data, and evaluation of intervention methods will depend on more
systematic studies in the future. More studies and examination of what constitutes good research in this area are needed.

**Relevance to current work:** This review examines the variability and incomplete picture formed by studies that utilize a social communication approach for treating children with language impairment.


**Purpose of Study:** This study was designed to examine diagnostic indicators by “Comparing rigorously defined groups of children with pragmatic language impairment, high-functioning autism, and specific language impairment.” (1187)

**Method:** Sixty-five 6;0 to 11;11 year old children identified as having a pragmatic language impairment (PLI), high-functioning autism (HFA), or specific language impairment (SLI) in the absence of other disorders were referred. All children received a nonverbal IQ test. Group allocation occurred using the following criteria: children were assigned to the HFA group if their ADOS-G score exceeded 10, to the PLI group if they had an abnormal score on the CCC-2, and to the SLI group if language scores were more than a SD below the mean. Measures of peer social interaction, repetitive and restrictive behaviors and interests (RRBIs), and language were then administered to characterize classification.

**Analysis and Results:** Statistical analysis was performed to see if diagnostic groups could be defined by the children’s social interactions, RRBIs, and language. Each group showed
difficulty with peer social interactions, but children with HFA were most affected and children with SLI were least affected. RRBIs demonstrated the greatest difference between children with HFA and PLI. Receptive language only predicted the group with SLI. Both the groups with PLI and SLI had lower expressive language scores than receptive language scores. Expressive and receptive scores were roughly the same for children in the HFA group (with a slight tendency towards superior expressive language).

**Conclusions**: Children with PLI did not meet the qualifications of having social and nonsocial behaviors affected and should not be considered as having a ‘mild form of autism.’ HFA and PLI were distinguished by the presence of RRBIs. It was suggested that “social communication disorder” should be a term applied to children with PLI rather than children with subthreshold autism scores across all categories. This study indicated that there is “an inherent degree of complexity which is simply not accounted for in current, category focused, diagnostic frameworks” (1194). Further studies on a larger scale are needed to continue to define these differences.

**Relevance to current work**: This study characterizes distinctions between HFA, PLI, and SLI.


**Purpose of Study**: Many studies have shown children with language impairment are at risk for social difficulties. This study compared the relationship between “levels of LI and solitary-active withdrawal, solitary-passive withdrawal, reticence, likeability, and prosocial
Behaviors of children with LI were compared with those of typically developing peers and across differing levels of severity for LI.

**Method:** Participants were 41 children with SLI and 41 typically developing children. Speech-language pathologists from 3 school districts referred children with SLI on their caseloads. These children were matched with typically developing children (randomly selected after matching classroom, age, and gender). Teachers completed the Teacher Behavior Rating Scale (TBRS) for each child from their classroom (the child with LI and their matched typically developing child). Items from the TBRS relating to social and withdrawn behavior were assessed. CELF-R was administered to the children with SLI.

**Analysis and Results:** Data from the CELF-R were divided with median splits (higher scores were the moderate group, and lower scores were the severe group). Children with SLI had higher measures of withdrawal (particularly reticence) and lower measures of sociability than children with typical language. Girls with SLI had higher scores for prosocial behavior than boys. The severity of the language impairment was linked more to social behaviors (especially pro-social behaviors) rather than withdrawn behaviors (reticence).

**Conclusions:** It appeared that the severity of a language impairment did not affect the withdrawal behaviors in children with LI, although the severity of the LI was associated with their prosocial behaviors. “On the basis of these findings, it is difficult to argue that reticence can be attributed entirely to difficulties with processing limitations or to limited opportunities for social learning” (658). These conclusions were limited by only one standardized measure classifying the severity of LI and the lack of a normative sample for the TBRS.

**Relevance to current work:** This study examined the relationship between language level, reticence, and prosocial behaviors in children with SLI.

**Purpose of Study:** This study was designed to assess the concerns of the mothers of adolescents with language impairment (LI). Researchers looked at the language, literacy and IQs of mothers of children with LI and compared these factors to their children’s language and cognitive levels. Mothers’ concerns were examined to see if concerns could be related to the mothers’ own IQ, literacy skill, educational background or occupational status.

**Method:** Children from a former study on language impairment were recruited to participate when they were 13 to 15 years old. Fifty-two families were selected to participate, as all others didn’t meet criteria for inclusion. Demographic information was collected from the families, and mothers participated in cognitive and literacy measures. A question from the Autism Diagnostic Interview-Revised was the prompt for parental concerns. An additional category of educational responses was added to code concerns that arose in interviews. The responder ranked the categories in order of importance. Adolescents were assessed with language and nonverbal cognitive measures of intelligence.

**Analysis and Results:** Mothers of adolescents with LI were found to have IQs, literacy abilities, and educational qualifications within the means and distributions that would be expected from the general population. Maternal education was found to be significantly linked to the Verbal IQ, and word reading and comprehension skills of their children. Most mothers reported one to two concerns for their child. Concerns were widely distributed across categories, although “surprisingly few primary concerns are about the young people’s speech and language
difficulties” (186). No relationships were found between the number of mother’s concerns and or their child’s IQ, language, or literacy abilities.

Conclusions: [Mothers] of adolescent children with a history or SLI also have serious and wide-ranging concerns for young people even when their children are adolescents, but interestingly, concerns about speech and language difficulties were not prominent” (191). The number and type of concern didn’t relate to the child’s cognitive or language abilities either. “SLI is long-term in nature, with difficulties widening with age to include limited NVIQ and associated behavioral and psychiatric difficulties in adolescence” (191). A child’s outcome was found to be most closely associated with associated with maternal IQ, literacy, educational and occupational status.

Relevance to current work: This study found that among mothers of adolescents with a history of LI, social concerns were much more common than concerns about speech or language difficulties.


Purpose of Study: This study examined how children with LI inferred emotions elicited in specific social situations when asked open ended questions.

Method: Forty-three children with LI and 43 age- and gender-matched peers between the ages of 5 and 12 participated in the study. Children were read a short story (similar to Ford and Milosky’s use) where a main character is in a scenario and the child was asked what emotion the
main character felt in an open-ended statement. Verbal responses and pointing to the correct emotion were both accepted as correct responses. Pilot tasks confirmed the response cards didn’t make the task more difficult for either group of children. Each child received training and was asked to respond to four emotions in four situations, ordered so no two scenarios for the same emotion were included. All participants were recorded.

**Analysis and Results:** Scales and categorization for each item were used to analyze the responses of each child. Main effects were found for emotion and age factors, and emotion and age appeared to interact. Happiness was identified most accurately, followed by sadness and anger. Older children and more typical children were more accurate than their counterparts. Mistakes in identifying fear and anger as sadness were much more common in younger children of both language groups.

**Conclusions:** Few emotional valence errors were noted, and a difference was found in children with LI and typical children in their ability to infer emotions, even though tasks were specifically designed to have language demands within the abilities of the children with LI. Even if they incorrectly identified the emotion that would be elicited by an event, children were very accurate in their ability to link their responses to the emotion-eliciting event. Younger children and children with LI were more likely to describe what an emotion felt like with inappropriate remarks or ones that repeated the emotion of eliciting event. Children were likely to provide synonyms or alternative scenarios to describe how emotions felt. Age group differences were expected, but children with LI were more likely to have their verbal abilities more taxed by the tasks, which was also expected due to the verbal and abstract nature of the task. Children with LI were able to talk about their emotions, but in a vaguer way and lacked strategies to talk about the emotions. Children with LI may require more frequent and intense emotion instruction.
Relevance to Current Work: This study examined how children with LI have different emotion understanding than their typically developing peers.


Purpose of Study: This study was designed to examine the ability of children with language impairment to infer emotions via a drawing task. Their performance was compared to that of typically developing peers. This allowed an assessment of emotional inference without requiring language to respond or limiting choices by providing response options.

Method: Twenty-two children with language impairment aged 6 to 10 years at a specialized school were included. Typically developing peers who were matched for age and gender. were chosen from nearby schools and met selection criteria according to teacher reports. Three stories with similar story structure were selected for the task to probe for happy, mad, and sad emotions. Children listened to the audio story (to prevent possible facial models being shown by a reader) and drew facial expressions on story characters in booklets at designated stopping times. No time limits were imposed.

Analysis and Results: Trained raters unfamiliar with exact details of the study evaluated the drawings. Analysis involved group assignment, between-subjects variation of emotion identification, and within subjects. Typically developing children produced more drawings demonstrating the target emotion. There was a significant difference between the performance of typically developing children and children with LI, regardless of whether the children with LI presented with expressive or both expressive and receptive deficits.
**Conclusions:** Children with LI made errors in inferring emotions that were not due to language comprehension errors but rather as part of a slower development of emotional knowledge. Typically developing children were more likely to depict neutral expressions in their errors, whereas children with LI were more likely to choose emotions of a different valence. This could explain why inferring emotions in the context of social situations is particularly challenging for children with LI.

**Relevance to Current Work:** This study relates to children with LI and their ability to infer emotions.