



2018-06-01

The Effect of a Social Communication Intervention on the Correct Production of Emotion Words in Children with Language Impairment

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The Effect of a Social Communication Intervention on the Correct Production of Emotion
Words in Children with Language Impairment

Annelise Luddington

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

The Effect of a Social Communication Intervention on the Correct Production of Emotion Words in Children with Language Impairment

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Master of Science

Children diagnosed with Language Impairment (LI) often have difficulty with aspects of social communication. This thesis evaluates the effects of a social communication intervention focused on facilitating the correct production of emotion words in four elementary school-aged children with LI. Researchers monitored changes from pretreatment baseline data, through the intervention, and ended with posttreatment follow-up data for the emotions *happiness*, *surprise*, *fear*, *anger*, *sadness*, and *disgust*. Based on baseline measures, emotion categories in which the child showed limited proficiency were targeted for the 20 intervention sessions. The emotions targeted were different for each child. Each intervention session contained a combination of storybook therapeutic strategies such as story enactment, story sharing, and modeling by the clinician to help increase the child's emotion understanding. The child participated in emotion recognition and emotion inferencing tasks. The data for each participant was analyzed individually and formatted into figures. Data analyzation was performed using percentage of non-overlapping data (PND) which provided insight into how successful the intervention was for each of the targeted emotions. The results of each child's emotion based words were varied, some participants making good progress and others showing little or no gains. These results suggest that the intervention was effective for some of the children and should continued to be refined.

Keywords: emotion recognition, emotion understanding, language impairment, social communication, social communication intervention, school-aged children

ACKNOWLEDGMENTS

I would like to express my gratitude to my committee, Dr. Martin Fujiki, Dr. Bonnie Brinton, and Dr. David McPherson, who provided me with the feedback and council that I needed to write this thesis. I would especially like to thank Dr. Fujiki who continually assisted me in completing this challenging task. I am grateful for his patience; he spent many hours editing my submissions and helped me resolve my questions. Through this experience and his tutelage, I have gained a greater understanding and appreciation for the field of social communication.

My parents, Kimberly and Steve Luddington, have been a source of unparalleled support and encouragement during all my years of education and, in particular, my first year of graduate school. I am glad they emphasized the importance of higher education in our home, which motivated me to pursue my goal of obtaining a graduate degree. Through it all, they have selflessly given me their time, support, and love. In addition, my fiancé Mike has supported me with optimism, encouragement and company as I worked to meet my thesis deadline.

I am grateful for Julia Hetheron, who worked with me to code, organize, analyze and graph the data. Julia was a constant source of help and advice, and much needed friendship during this extensive process.

I am lastly thankful for the participants of the study and the clinician, who through their participation in this study, provided me with this valuable opportunity to learn more about the importance of emotion understanding in the social communication of children with language impairment.

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DESCRIPTION OF THESIS CONTENT

This thesis, *The Effect of a Social Communication Intervention on the Correct Production of Emotion Words in Children with Language Impairment*, is written in a journal article format and includes each participant's linguistic profile, the data from intervention, and the subsequent figures. The data were taken from a larger, more comprehensive research study. Appendix A contains an annotated bibliography. Appendix B contains the results of the Clinical Evaluation of Language Fundamentals-5 (CELF-5), which was administered to every participant; and the results of the Children's Communication Checklist-2 (CCC-2), which was completed by each participant's teacher. Appendix C contains the emotion word coding manual to ensure there was reliability between the coders. Appendix D consisted of the research participation form given to and signed by all of the children's parents.

Introduction

A large body of research involving children with language impairment (LI) has focused on the syntactic and semantic limitations that these children experience. However, in recent years it has become apparent that many children with LI also have problems with various aspects of social communication, in addition to structural language difficulties, (Adams, 2005; Adams, 2008; Adams, Lockton, Gaile, Earl, & Freed, 2012; Brinton, Spackman, Fujiki, & Ricks, 2007; Fujiki & Brinton, 2015; Fujiki, Brinton, & Clarke 2002). This recognition has led to consideration of what types of interventions would be the most effective for the social communication difficulties that these children experience (Adams, Lockton, Freed, et al., 2012; Gerber, Brice, Capone, Fujiki, & Timler, 2012). The purpose of the current study was to evaluate a social communication intervention for children with LI that was designed to increase the appropriate production of emotion words.

Social Communication

Based on the work of Adams, Lockton, Gaile, et al. (2012), successful social communication can be considered as the result of the complex relationship between three interdependent elements: language processing, pragmatics, and social and emotional learning. Language processing involves linguistic form and content, and thus includes syntactic, phonologic, and semantic knowledge. Pragmatics involves specific interactional skills such as the ability to produce speech acts and to participate in conversations. Social and emotional learning is a broad area that includes social cognitive abilities such as emotional intelligence and theory of mind. Although all three areas are critical, the particular focus of this study involves the interaction of language processing and social and emotional learning as reflected in the ability to produce emotion words. The limitations of children with LI in acquiring vocabulary

have long been recognized (see Leonard, 2014). However, emotional intelligence in these children is less well understood. Thus, the following section provides a general review of emotional intelligence and its relationship to children with LI.

Emotional Intelligence in Children with LI

Emotional intelligence is the ability to recognize, express, regulate, and understand the emotions of others as well as one's self (Salovey, Detweiler-Bedell, Detweiler-Bedell, & Mayer, 2008). Emotional intelligence plays an important role in social interaction as most social exchanges require the effective expression, understanding, and regulation of emotion. Because the intervention that will be described later in this paper focuses heavily on aspects of emotional intelligence, this section focuses on this topic.

A child's ability to understand, regulate, and appropriately express emotion is critical to successful social interaction (Saarni, 1999). Although it has often been assumed that children with LI have relatively typical emotional development, there is accumulating evidence that these children may have difficulty with various aspects of emotional intelligence, including the perception of emotion, emotion understanding, and emotion regulation (Brinton et al., 2007; Ford & Milosky, 2003, 2008; Spackman, Fujiki, Brinton, Nelson, & Allen, 2005; Taylor, Maybery, Grayndler, & Whitehouse, 2015).

Perception of emotion. Basic emotions such as anger, fear, happiness, sadness, and possibly disgust and surprise, have unique, discernable facial expressions (Denham, 1998). This provides physical clues that the child can use to infer what emotion another person is experiencing. Children learn to understand facial expressions before they are able to label them with a specific emotion word. For example, infants as young as two months of age respond to happy expressions with babbling and smiles (Flin & Dziurawiec, 1989). Within the first couple

of years of life children can recognize basic emotions and rely on them to correctly respond in social interactions with other individuals. To examine the ability of children with LI to identify facial expressions of emotion, Spackman et al. (2005) showed participants with LI and typically developing children black and white standardized pictures of facial expressions (Matsumoto, & Ekman, 1988). Both groups of children performed at a similar level when identifying the emotions of *happiness*, *anger*, *sadness* and *fear*. However, when identifying the emotions *disgust* and *surprise*, typically developing (TD) children performed significantly better than children with LI. Taylor, et al. (2015) examined the ability of four different groups of children (children with LI, children with autism spectrum disorder (ASD) with LI, children with ASD without LI, and typically developing children) to identify emotions. These groups were shown pictures of faces expressing six emotions (*happiness*, *sadness*, *anger*, *fear*, *disgust* and *surprise*) and asked to identify the correct emotion. Children were also presented with auditory stimuli in which a sentence was read with a tone to convey a certain emotion. Participants had to identify the correct emotion by matching it to a face which represented the emotion. The children with ASD and LI, and those with LI performed more poorly when identifying the emotion than either the typically developing children or the children with ASD without LI.

The ability to recognize emotion in prosody is also a basic ability that develops relatively early in development. In a study examining the ability of children with LI to identify emotions using prosody, Fujiki, Spackman, Brinton, and Illig (2008) asked children with LI and their typical peers to indicate which emotion (*happiness*, *sadness*, *anger* and *fear*) was portraying in a seven-sentence long story, read to convey a particular emotion. Children with LI performed significantly more poorly in identifying emotions than TD children. *Happiness* was the easiest emotion for the children to identify and *fear* was the hardest emotion to identify.

Emotion understanding. Emotion understanding is defined as the “ability to discern and understand others’ emotions, using situational and expressive cues that have some degree of cultural consensus as to their emotional meaning” (Saarni, 1999, p. 5). Not only does emotion understanding require the child to be able to identify and perceive specific emotions, it requires complex reasoning to make causal and emotion inferences during communication (Ford & Milosky, 2008). Several researchers have found that children with LI have difficulty with aspects of emotion understanding.

Ford and Milosky (2003) examined the ability of children with LI and their typically developing peers to make inferences about emotions. Children with LI were presented with short scenarios in which a character was likely to experience a particular emotion. Children with LI had difficulty inferring what emotion the character would experience. Further, children with LI made significantly more valence errors than their typical peers (e.g., *happy* when the correct answer was *sad*). These valence errors occurred 53% of the time in the children with LI compared to 19% of the time in the typical children.

Building on the work of Ford and Milosky (2003), Spackman, Fujiki and Brinton, (2006) examined the ability to infer emotion in elementary school-age children with LI and their TD peers. These researchers used a task based on that developed by Ford and Milosky (2003). The children were presented with a short scenario in which the protagonist, Chris, participated in a scenario that would lead to a specific emotional experience (e.g., Chris loves balloons, Chris receives a balloon. Chris is ____). The children were asked how Chris would feel in each of the scenarios, why he would feel that emotion, and then what it meant to experience the emotion (i.e., How does it feel to be happy?). Children with LI were significantly less accurate in their emotion inferences. Additionally, their descriptions of how an emotion felt were less

sophisticated than their peers. Taken together, the Ford and Milosky (2003) and Spackman et al. (2006) studies suggest that children with LI have difficulty inferring which emotions would be experienced in relatively common scenarios.

Further investigating the ability of children with LI to make inferences about emotion, Ford and Milosky (2008) asked children with LI and TD children to read scenarios with three elements “(i.e., It was Twinky’s birthday. He/she opened a present. It was a big teddy bear,” p. 371). The children were simultaneously shown a picture of the character experiencing an emotion. The picture either matched or did not match the emotion expressed in the scenario. The authors measured the children’s reaction time in providing a response, with a longer reaction time being indicative of the participant making inferences while listening to the scenario and looking at the picture. A shorter reaction time was interpreted as indicating that there was no “online” inferencing taking place when the child considered the unmatched picture. The matching pictures elicited a quicker response time from TD children than the pictures which did not match. However, children with LI had the same reaction time for matched and unmatched pictures, which indicated that they were not using emotion knowledge to make inferences during the narrative. The authors concluded that TD children were more likely to make emotional inferences while interacting than children with LI. Although the children with LI were able to label emotions, they were not able to complete the more complex task of emotion inferencing.

Denham (1998) stated that once children can label emotions and describe situations that would cause a person to feel a certain emotion then they would be able to infer emotions. Ford and Milosky (2008) suggested that it is possible that children with LI do not understand enough about situations that cause certain emotions.

In addition to making inferences about the emotions a scenario might elicit, children must also perform more complex emotion understanding tasks. One such task involves dissemblance, or hiding an emotion when it is socially appropriate to do so (Brinton et al., 2007). For example, a child may dissemble a negative emotion when given a disappointing gift by a friend and instead respond with a positive emotion. This is done to adhere to social expectations of behavior and to maintain good relationships (Saarni, 1999). Brinton and colleagues (2007) found that when presented with a narrated situation in which the emotion the character felt should be dissembled, children with LI answered that it should be hidden significantly less often than their TD peers. These results indicate that some children with LI do not fully understand the social consequences of failing to dissemble an emotion.

Brinton, Fujiki, Hurst, Jones, and Spackman, (2015) studied children's ability to dissemble emotions using hypothetical scenarios and naturalistic low and high cost circumstances. The participants performed a task similar to that used by Brinton et al. (2007). Children were presented with a hypothetical situation in which the character should dissemble an emotion. Intermittently, between those situations, they were also presented with four naturalistic situations in which dissemblance would be appropriate. Three of the situations were considered low cost, meaning that although a lack of dissemblance by the child may hurt the feelings of the examiner, it would not affect the child. For example, the children were shown an ugly painting done by the examiner. They were then asked what they thought of the painting, the appropriate answer being to dissemble their emotions. At the end of the session the participants were presented with a high cost situation that directly affected them. The children were given a disappointing prize for their participation and asked what they thought of it.

Children with LI did not dissemble as often as their typical peers when presented with the hypothetical scenario, replicating the results of Brinton et al. (2007). With respect to the naturalistic opportunities to dissembled, Brinton et al. (2015) found more varied results. There was not a significant difference in the ability to dissemble between TD children and children with LI in the low-cost situations. In the high-cost situation, TD children dissembled their emotions more than children with LI, producing a notable trend ($p = .058$). Children with LI displayed their negative response twice as often and more intensely, while TD children were more hesitant to display a negative response. “The ability of children with LI to dissemble is a complex issue involving a number of influential factors, such as motivation, emotion understanding, and social display rules” (Brinton et al., 2015, p. 333). Dissembling is an important aspect of social communication. It appears that children with LI may not fully comprehend the negative effects of not dissembling emotion and the effect it can have on a relationship.

Emotion regulation. Emotion regulation refers to “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals” (Thompson, 1994, p. 28). Emotional regulation helps a child to participate in interactions and activities that will aid them in developing language and building relationships (Fujiki et al., 2002). To study emotion regulation in children with LI, Fujiki et al. asked elementary teachers to complete the Emotion Regulation Checklist (ERC) to rate children with LI and their TD peers. The 82 participants were grouped by their age, age 6-9 and 10-13. Participants with LI were matched with a TD child in their class who was the same age (within 7 months) and the same gender. Children with LI scored significantly more poorly than their peers on emotion regulation. Surprisingly, older

boys with LI performed the very worst, suggesting that their emotional regulation did not improve with age. It was of interest that there was no correlation between the scores on the ERC and scores on the Clinical Evaluation of Language Fundamentals-Revised: Screening test (CELF-R). This suggested that emotion regulation skills were not related to the severity of the language deficit.

Fujiki, Spackman, Brinton and Hall (2004) studied emotional regulation further to determine if emotional regulation and language ability could predict reticent behavior, a negative social behavior frequently observed in children with LI. Using a regression analysis, it was found that emotional regulation and language ability accounted for 43% of the variance. This finding indicated that both language and emotion regulation made an important contribution to the reticent behavior experienced by children with LI. Further analysis showed that language skill and emotional regulation were both important predictors of reticence. These findings indicate that children with LI are not displaying reticent behaviors during interactions entirely due to lack of structural language skill.

Research in Social Communication Interventions and LI

Although there is a need for intervention for children with LI with social communication deficits, investigations of the efficacy of social communication interventions for these children are relatively rare. Illustrative of this, an ad hoc committee of the American Speech-Language-Hearing Association (Gerber et al., 2012) performed a systematic review of pragmatic interventions for school-age children. The review identified eight efficacy studies involving children with LI between the ages of 5 and 11 that were completed between 1975 and 2008. Gerber and colleagues issued a call for more research to be done with larger sample sizes, homogenous participant groups, and if possible, a more systematic research process using

manualized treatment. At the time that the systematic review (Gerber et al., 2012) was being completed, a randomized control trial study of pragmatic communication skills was being conducted by colleagues at the University of Manchester (Adams, Lockton, & Freed, et al., 2012).

Adams, Lockton, Freed, et al. (2012) identified 88 participants. Social communication intervention was provided to these children on a 2:1 ratio, with control children receiving regular intervention provided by their school clinician. The remainder received a manualized social communication intervention. The program included many different components that allowed the clinician to adjust the therapy to meet the individual child's needs. Children were assessed pretreatment, immediately posttreatment and six months posttreatment. The researchers found that, based on the standardized assessments used, the participants' overall structural language performance and narrative ability did not differ from the children being treated with traditional therapy techniques. There were however, significant treatment effects found in overall conversation quality, social communication, and related behavior as rated by teachers and parents. Thus, the children did not differ from peers receiving traditional intervention to improve structural language skills. However, the children did make interactional gains not seen in the group receiving traditional intervention. Adams, Lockton, Freed, et al. stated that children with PLI who receive even a small amount of specialized, targeted intervention, have a potential for improvement.

Purpose of the Current Study

The purpose of the current study was to analyze the effectiveness of a social communication intervention for children with LI. The intervention focused on emotion expression and emotion understanding using a story retell/enactment methodology. This study

asked the questions: (a) Was the intervention associated with an increase in the appropriate production of emotion words? and (b), When the children made errors, were the errors in the same valence of emotion as the targeted emotion?

Methods

Intervention Overview

This thesis is one part of a larger research project, conducted to analyze the effectiveness of a social communication intervention for children with LI. This project employed a case study design, which examined the emotion word production of each child and monitored changes from pretreatment baseline data, through 20 intervention sessions, and in posttreatment follow-up data. The emotion word categories that were evaluated were: *happiness*, *surprise*, *anger*, *sadness*, *fear*, and *disgust*. The purpose of this thesis was to evaluate the level of the child's correct productions of these emotion word categories. Each session recording was evaluated by a research assistant to determine which emotion words were used and, by doing so, determine which emotion categories were used appropriately and which categories were misunderstood.

Participants

Five children initially participated in the general intervention (3 boys, 2 girls), however, one of the girls was removed from this study due to her previous participation, which made it difficult to isolate the impact of the current semester's treatment. The participants ranged in age from 5;10 to 11;0 (years; months). These participants were selected by the school speech-language pathologist, who identified children within the caseload who were receiving intervention for LI and also had deficits in social communication. After participants who met the study's guidelines were identified, families of the children were contacted to determine their

interest in having their children participate in the project. The parents who allowed their children to participate gave their written consent.

As noted, each child had received a diagnosis of LI and had participated in speech and language intervention provided through the school. Each child also participated in a pure tone hearing screening conducted by a school district audiologist or speech-language pathologist and results were unremarkable. The school psychologist assessed the participants to eliminate the possibility of general intellectual disability. However, children who had previously presented with attention deficits were included in this study.

The researchers administered the Clinical Evaluation of Language Fundamentals-5 (CELF-5; Wiig, Secord & Semel, 2013) to obtain a standardized measure of each participant's language abilities. The Children's Communication Checklist-2 (CCC-2; Bishop, 2006) was also administered to provide more detailed information on pragmatic skills. The data from the CCC-2, as well as the CELF-5 subtest scores are presented in Appendix B.

Following testing, treatment was initiated. The intervention was delivered by a member of the research team, but was coordinated with the school speech-language pathologist so that the treatment was in harmony with the current IEP goals for the child. The treatment is described in greater detail in a later section. Each of the participants is described in detail, as follows.

AA (11:0 years; months). AA was a Caucasian female with a diagnosis of specific learning disorder (SLD) and LI. From kindergarten to 2nd grade, AA was enrolled in a mainstream classroom with pull-out resource services provided. In 3rd grade, AA was in a small-group classroom for children with learning disabilities, where each child received individual direction. In 4th grade she returned to a mainstream classroom. At the time of this study, AA was enrolled in a 5th grade mainstream classroom with self-contained resource

services and pull-out speech-language intervention provided. AA's speech and language goals focused on clearly communicating her thoughts in order to successfully participate in social conversations and be understood by her communication partner. On the CCC-2, AA had difficulty on the nonverbal communication and social relations subtests, and her scores on the structural aspect of language (i.e., speech, semantics and coherence) were also low. AA's core score on the CELF-5 was in the 5th percentile.

According to her clinician, AA was able to effectively communicate at a basic conversational level but struggled to elaborate on details. She lacked social inferencing skills required for higher level communication. When the conversation required a performance beyond her interactional skills, AA made up for her lack of ability by controlling the conversation. The clinician noted that AA struggled to read social and nonverbal aspects of communication. AA had pragmatic difficulties and her conversational turns were often long and drawn out. AA's teacher mentioned that in the classroom AA was well-mannered, helpful, and cooperative and she was eager to interact with other students. But, because of her language deficits, AA sounded immature in comparison to peers of the same age.

BB (10:2). BB was a Caucasian male who qualified for special services at age 6:2 due to his diagnosis of LI. He began special education services at age 6;6, with a diagnosis of SLD, with deficits in reading, writing, and math. At the time of this study, BB was enrolled in a mainstream 4th grade class and was enrolled in resource services. He received speech and language intervention for articulation and language problems. The CCC-2 scores indicated deficits in nonverbal communication, social relations and initiating conversation.

The clinician reported that BB's conversations were typically off topic and one-sided. When the conversational topic was of interest he would fully participate. But, when confronted

with an uninteresting topic introduced by someone else, he was not fully engaged and struggled to show interest and respond appropriately. The school speech-language pathologist indicated that BB had little to no ability to read social cues and he struggled with theory of mind, in particular, appreciating the opinions of others. BB had difficulty making social inferences, and throughout the intervention he needed the assistance of the clinician to interpret social cues within the context of pictures and stories. This difficulty with inferencing was particularly problematic during higher level social interactions such as conversations and other interactions with peers. BB's teacher indicated that in class, BB was impulsive and struggled to stay on task and monitor his own negative behavior. To help with these behaviors, BB's teacher often assigned other students to aid him in classroom assignments and to help monitor his behavior during activities. BB's mother reported problems of a similar nature at home, including a short attention span, overstimulation during play, overreaction to problems, and an overall lack of self-control.

CC (9:11). CC was a Caucasian male, diagnosed with LI and attention deficit disorder (ADD). At age 9 CC was evaluated and diagnosed with SLD and, as a result, qualified for special education services for the subjects of reading and math. At the time of this study, CC was in a mainstream 4th grade class and received pull-out resource services in math and reading for up to three hours a week. CC was also enrolled in speech-language intervention which focused on improving articulation, resonance, and language skills. Formal assessment with the CCC-2 revealed deficits on the context, nonverbal, and social relations subscales. CC's speech and language scores were also low (5th percentile in semantics, 9th percentile in coherence and below the 1st percentile in speech), thus indicating notable deficits in both language processing and pragmatic skills.

Although CC's communication was still often passive, his clinician indicated that he had made progress and that his communication had matured throughout intervention. However, CC still allowed others to dominate communication interactions and had a difficult time initiating conversation with both adults and peers. His contributions to conversation were often off topic and he used laughter or other conversational fillers to compensate for the communication breakdowns that occurred due to his deficits in structural speech and language abilities. The clinician also reported that CC had a difficult time following directions and required several repetitions of a command before he could complete a task. CC's frequent speech sound errors made it difficult for his communication partners to understand him and this may have contributed to his lack of confidence and his passivity during social interactions.

DD (5:10). DD was a Caucasian male. Before age 3, DD received early intervention services. He was then assessed for special education services through an early childhood assessment center, and diagnosed with significant delays in social/emotional development and expressive/receptive language. These results qualified him for a special-needs preschool which focused on math, writing, occupational therapy and speech-language services. DD was also diagnosed with Attention Deficit Hyper Active Disorder. Speech and language goals focused on aspects of both articulation and language (syntax and semantic goals). On every subtest on the CCC-2, DD scored on or below the 9th percentile and his core language score on the CELF-5 was in the 5th percentile.

The school clinician reported that DD had both syntactic and semantic deficits in language production that made participation in conversational interactions difficult. It was also noted that these problems did not hinder basic social interactions but seriously impacted more complex exchanges. In conversation, DD's communication was one-sided and focused on

himself. The clinician also mentioned that DD had a short attention span and needed consistent redirection when following directions or answering a question. The classroom teacher commented that although DD wanted to be helpful with classroom duties, he would try to assist at inappropriate times. In the classroom, DD struggled to stay engaged, on task, and exhibit appropriate behavior for the setting. DD was interested in interacting with peers but was impulsive and forceful when initiating interaction which often resulted in rough play and other inappropriate behaviors. His mother reported that DD struggled with understanding the meaning behind facial expressions and nonverbal cues and that he had difficulty responding correctly to others' emotions and expressions.

Procedures

The intervention was delivered by a graduate student clinician under the supervision of the school speech-language pathologist. The project, as a whole, was supervised and designed by two university-based doctoral level speech-language pathologists who specialized in clinical research with children who have LI.

Each child's IEP goals for social-language intervention were incorporated in the study through the specific activities used in the intervention. The intervention sessions included stories that would help increase the child's emotion understanding using characters with practical experiences with emotions. The therapy sessions occurred twice a week for 20 minutes, resulting in 20 treatment sessions total. Every session occurred in a quiet room set aside for therapy at the child's elementary school. All sessions were video recorded for later analysis.

Baseline

Tasks were administered for three repeated sessions before the intervention began to establish a baseline. The tasks probed the child's social and emotional learning abilities. At the

end of intervention, the same tasks were administered for three sessions to gather follow-up data. Four different tasks were included in this battery. An emotion inferencing task was administered using a gender-neutral character, “Chris” (Ford & Milosky, 2003, 2008; Spackman et al., 2006). The participants were shown a picture and read a scenario and then asked to identify what emotion Chris felt in the scenario. Another task administered was an emotion recognition task, where the children were shown black and white standardized pictures of facial expressions and asked to identify what emotion the person was experiencing (Matsumoto & Ekman, 1988). An additional emotion naming task was given which had a picture with a person experiencing one of the following emotions: *happy, surprise, sad, anger, disgust, or fear*. The picture also contained context clues as to why the person may feel a certain way (e.g., a mother who is looking at a child who has just broken a glass vase or a person looking at a snake in the shower). The child identified which emotion the person was feeling and why they felt that emotion. The last task given was The Edmonton Narrative Norms Instrument, which contained three stories which were told through sketches (Schneider, Dube, & Hayward, 2005). The task was comprised of a series of questions asked by the clinician about what was taking place in the picture, what emotion the characters felt and why they felt that emotion. There were other measurements as well, such as a traditional language sample that was administered pre and post treatment.

Intervention

Every session contained a combination of the following therapeutic strategies: story sharing, story enactment, and journaling. The storybooks that were selected for use in the intervention all had rich emotional content, a concrete story structure, and language that was easily understood. In every story, the student clinician pointed out important concepts, which included; emotion knowledge (e.g., emotion words and sources for the emotion), and prosocial

character behaviors. Each storybook had a script provided for the clinician which was systematic but that could also be altered if the child struggled with a particular issue (Craig-Unkefer & Kaiser, 2002). Complex sentences were modeled throughout the intervention. Once the participant had read the story with the help of the clinician, the child and the clinician would use toys and other props to enact the story. During this enactment, the clinician would help the child to recognize the characters' perspective, emotions, and the sources of those emotions. Special emphasis was placed on modeling the appropriate use of emotion words. At the close of every session, the child participated in a journaling activity to review the story structure, highlight emotions, and help the participants relate personal experiences to what was learned from the story. These activities were used to facilitate social and emotional learning, promote prosocial behavior, and encourage participation in group interactions. The activities were designed to be clear and understandable to the children with impaired language skills.

Analysis

Each session was video recorded. These recordings were transferred to an external hard drive where they were analyzed by research assistants. Every emotion word that the child produced was noted and then further analyzed in an effort to answer the questions posed by the study. Each emotion word produced by the child was categorized into one of six emotion categories: *happiness*, *sadness*, *anger*, *disgust*, *surprise* and *fear*. The child did not have to produce the exact label of the category to receive credit for producing an emotion word. For example, if a child used the words "excited," "glad," or "cheerful," then the word would still be categorized as *happy*. Periodically the child would produce a word that did not fit into these six categories (e.g., bored). These words were categorized as *other*. Additional categories were added for words indicating *interest* (e.g., like, love) and for *contempt* (e.g., hate, dislike). These

three categories were excluded from the study, however, which focused primarily on the six emotion categories listed above.

After an emotion was recorded and placed in an emotion category, it was analyzed to determine if the child's use of the word was correct according to the context. For example, if the character in the story was feeling the emotion *sad*, but the child labeled the emotion as *mad*, then the child's production of the word *mad* would be marked as incorrect and counted as an error in the use of the word *sad*. The emotion that the child should have said, *sad*, was listed in the "Category in Error" section.

There were several parameters of information that was recorded for each emotion word production. The first of these was "Target and Production Match." If the word the child produced matched the emotion category that the clinician was targeting, then they would receive a plus sign indicating their answer was correct. If it did not match then they would receive a minus sign for their error. The time of production was recorded to ensure that easy review of data was possible. "Type of Production" described the circumstances in which the emotion word was produced (spontaneously, repetition, questions or cued by clinician or the storybook). The final category examined "Valence." In order to be marked correct, the valence of the emotion word produced needed to be the same as the targeted word. For example, if the targeted emotion was *happy* which has a positive valence, but the child said *angry* which has a negative valence, then the valence would have been marked incorrect because the valences are opposite of each other. However, if the targeted emotion was *sad* and the child labeled the emotion as *angry*, both valences are a negative so this example would be scored as correct.

All of these data were recorded during the baseline, intervention, and follow-up sessions and the percentage of appropriate usage in each section was calculated. The data from the

baseline and follow-up data were comprised of the same tasks to provide data that were comparable and could show change.

Three research assistants were involved in the coding of the videos. Each assistant was trained to code the data using an emotion word coding manual (see Appendix C). Before the assistants began coding, they coded the same ten recorded sessions to establish reliability. These ten sessions were compared to a master coding of the same ten sessions. The coding results from the research assistants agreed with the control coding by at least 92%.

Results

The intervention focused on facilitating words to convey the emotions of *happiness*, *surprise*, *fear*, *anger*, *sadness* and *disgust*. Of these emotions, only categories in which a child showed limited proficiency were targeted in intervention. Thus, the specific emotion categories that were targeted varied from child to child. Usage was evaluated by calculating the percentage of correct production of emotion words representing the targeted emotions. Each participant's data were analyzed individually. When the participant made an error, and mislabeled an emotion, the category of the targeted emotion was penalized. For example, if the targeted emotion was *anger* but the child answered with *happy*, then the *anger* category would be penalized. This error shows that the child did not understand the proper use of the targeted emotion.

Figures 1 through 4 present the percentage of the correct emotion word usage produced by the child in each targeted emotion category. The graphs include a point for each session where one or more emotion word was targeted. Because each emotion was not targeted in every session, a break in the graph appears when an emotion word was not targeted. This break represented the difference between an emotion that was not targeted and an emotion produced

incorrectly, which appeared as a 0% on the line. Above each point is the total frequency of possible emotion word productions per session. This provided perspective as to how many productions the percentage was based on (e.g., a correct production of 100% based on 10 utterances is more significant than a correct production of 100% based on one utterance).

For every participant the percentage of nonoverlapping data (PND) was used as an additional measure of the effectiveness of the intervention. To calculate the PND, the highest point in the baseline data was determined and every point that exceeded that point was added to a running total. This number was then divided by the total number of data points. In this study, the PND percentages were considered extremely effective if the percentage fell between 91% and 100%, moderately effective if the percentage fell between 71% and 90%, minimally effective if the percentage fell between 50% and 70% and not effective if the percentage fell below 50% (Schlosser, Lee, & Wendt, 2008).

AA

AA demonstrated proficiency for words expressing the emotions *happiness*, *sadness*, *disgust* and *anger* in baseline so these categories were not targeted. Appropriate production of words for *fear* and *surprise* are presented in Figure 1.

Fear had some variation in the baseline but rose to 100% in intervention at session eight which lasted for four sessions. The remainder of the sessions showed variability but then dropped to the mid-to-low range during the follow-up data.

Most of the errors AA made were due to the overgeneralization of *sadness*, which was a common error for AA. Across the sessions, *sadness* was overgeneralized 59 times throughout intervention. Twenty of those times it was used in place of *fear* and 18 times it was used for *surprise*.

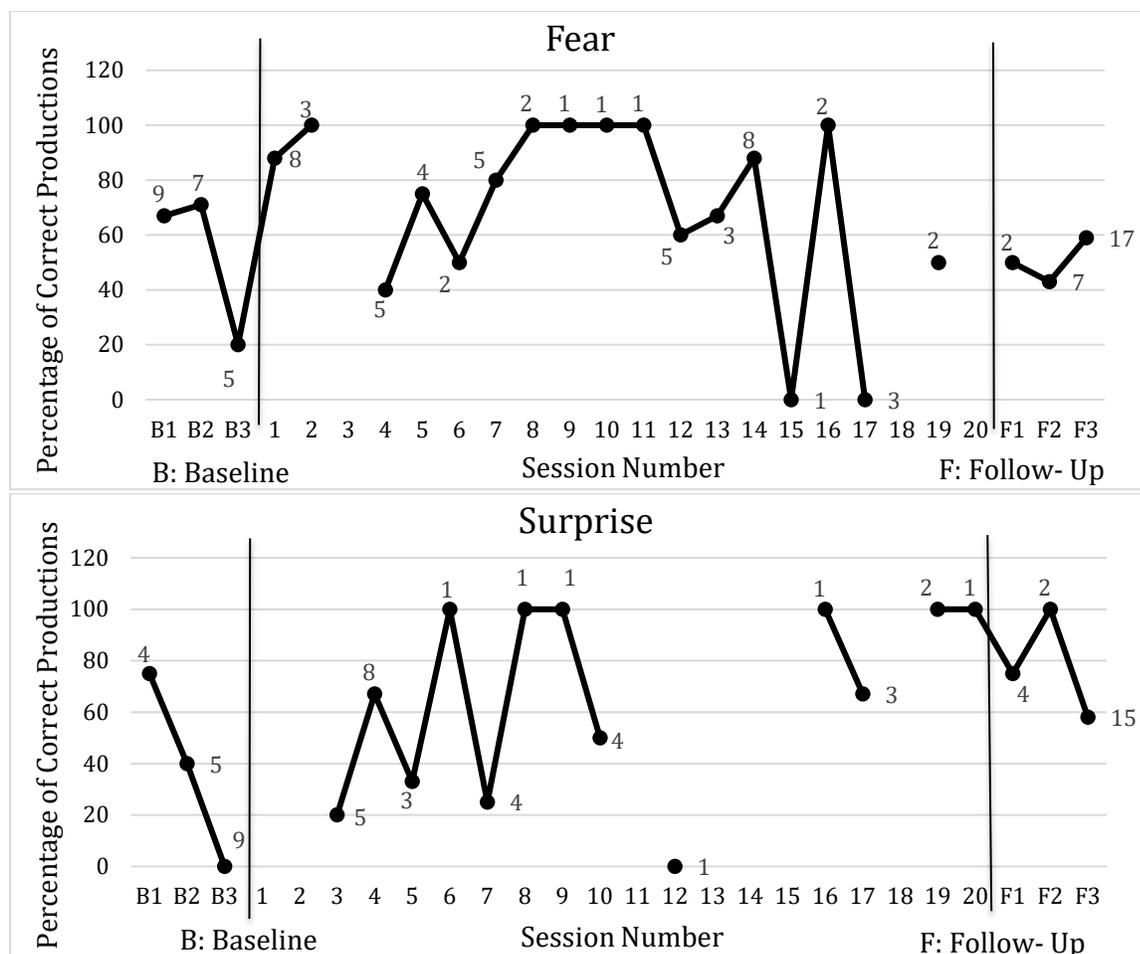


Figure 1. Percentages of correct production for fear- and surprise-based words by AA per session. The frequency of occurrences per session is reported above each data point.

As treatment continued, AA's overuse of *sadness* did not decrease. In the three baseline sessions, AA used *sadness* in place of *fear* four times. In the follow-up data, she used *sadness* in place of *fear* nine times. Her use of *fear* actually increased from baseline to follow-up. All the *fear* errors (30) in the baseline and follow-up data occurred in the Edmonton task (Schneider et al., 2005) or the inferencing task using the character Chris. During treatment sessions, when participating in the emotion identification tasks, AA only misidentified *fear* three times. The PND for *fear* was 50%, suggesting that the treatment was not effective for teaching this emotion. Of AA's 30 errors, 76% of them were in the correct valence.

Surprise began with a declining baseline but improved somewhat in the first half of therapy sessions. There were several occurrences throughout the intervention of 100% performance. However, these percentages were based on one or two repetitions of the word during the session. The lower percentages were based on a higher number of productions, which suggests that this level of performance was more indicative of AA's understanding of *surprise*. AA's PND of 47% indicated that the treatment for this emotion was not successful. It was of note, however, that performance in follow-up testing was consistently higher than her performance in baseline. It was also of note that 78% of her errors were within the correct valence. This was relatively low considering that AA was 11 years old.

BB

The emotions targeted in intervention for BB were *disgust* and *surprise*. BB showed proficiency in baseline for the other emotion categories (*happy*, *sadness*, *anger*, and *fear*). BB's production of words for *disgust* was 0% in baseline. Appropriate production increased mid-way through treatment to 100% and then dropped somewhat in follow-up. In the baseline sessions, the 0 percentages were the result of BB using *fear* and *anger* instead of *disgust*. Of BB's 13 errors in the category of *disgust*, four involved substitutions of *anger*, five errors involved substitutions of *fear*, and three involved substituting *sad* for *disgust*.

BB improved during treatment with the support of the clinician. Out of the 10 opportunities to produce *disgust* words during the follow-up testing, CC made six errors, which still represents an improvement over baseline. Only one of BB's errors was in the wrong valence. The PND was 67% indicating that this was a minimally effective intervention for this emotion category.

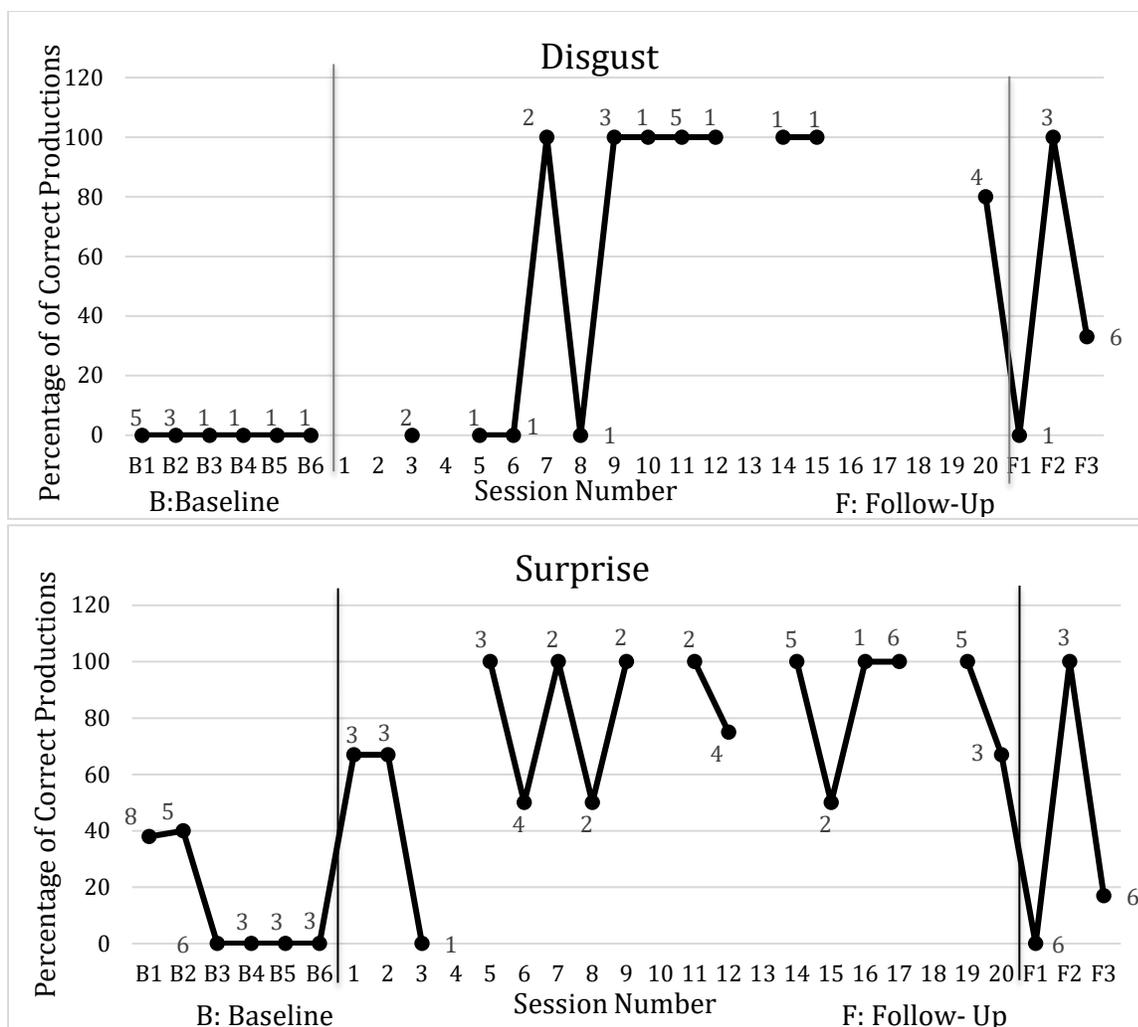


Figure 2. Percentages of correct production for disgust- and surprised-based words by BB per session. The frequency of occurrences per session is reported above each data point.

Productions of words in the category of *surprise* showed a relatively stable baseline, followed by a notable increase during intervention. Follow-up data were highly variable. In the 42 errors made in the *surprise* category, 24 of them were the incorrect use of *fear*. BB's overgeneralization of *fear* in the place of *surprise* did not improve from follow-up to baseline. In the follow-up data, BB had two errors in identifying emotion and eight errors in the inferencing portion. In the first half of treatment there were only nine occasions in which he used *surprise* when another word was targeted. But after session 10 there were 27 occurrences

in which *surprise* was overgeneralized. He did not produce similar errors in baseline, but made but 11 in the follow-up data.

In general, performance reflected increased ability to use words to convey *surprise*. This impression is also supported by the PND of 84%, which indicated that intervention was moderately effective. Although there were frequent ups and downs in performance, overall, BB showed improvement.

CC

CC showed proficiency in *fear*, *anger*, *happy*, *disgust*, and *sadness* in baseline. The emotion category targeted in intervention was *surprise*. CC made notable improvements during the intervention sessions and in the follow-up data. The PND for this category was 82%, indicating that the intervention was moderately effective for CC. Out of 43 total errors, 11 involved substitutions of *happy*, 10 involved *anger*, nine involved *sadness* and 10 involved *fear*.

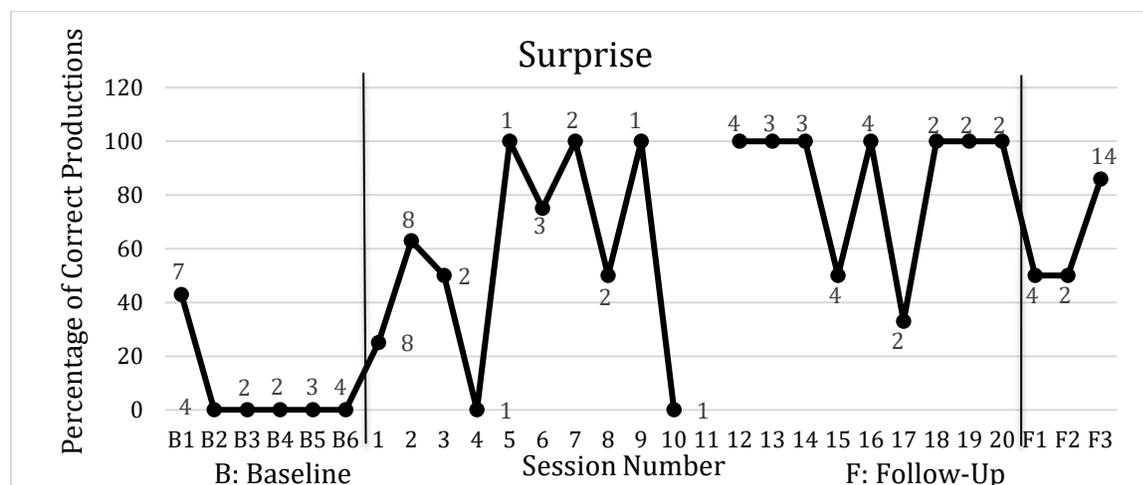


Figure 3. Percentages of correct production for surprise-based words by CC per session. The frequency of occurrences per session is reported above each data point.

No particular emotion was overgeneralized. Only three errors involved the incorrect valence. Although the follow-up data were lower than the treatment data, they were considerably higher than baseline.

DD

The emotions targeted for DD were *fear*, *disgust*, *surprise*, and *anger*. Based on baseline data, DD demonstrated proficiency with the categories of *happiness* and *sadness*. DD had relatively little understanding of the remaining emotions, all of which were targeted in intervention. *Anger* was produced the most (112 times during treatment, with 23 errors). During intervention, he incorrectly labeled *anger* with general statements such as, “not good, “bad mood” or “not happy,” four times. In the follow-up data, of 11 errors, 6 of them involved these general substitutions.

Baseline testing indicated that DD had some knowledge of the emotion category of *anger* before the intervention began. Although his follow-up data dropped, the results of his intervention sessions revealed good progress. The PND was 75%, indicating that intervention was moderately effective for this emotion. *Fear* followed a trend similar to *anger*. Although the PND was not quite as high (67%), DD did seem to gain an understanding of emotion category of *fear*. However, DD did commonly use *sadness* and *anger* instead of the targeted emotion *fear*. Out of the 53 errors made throughout treatment, 32 of them were misidentified as *sadness*.

Surprise was consistently low and performance did not reach mastery level. DD most commonly confused a positive *surprise* for *happy* and a negative surprise for *anger* or *sadness*. DD’s understanding did not appear to improve from baseline to follow-up or throughout treatment. This is confirmed by the low PND of 14%.

The intervention was minimally effective for *disgust* which had a PND of 54%. DD’s production improved during the treatment sessions, but dropped at follow-up.

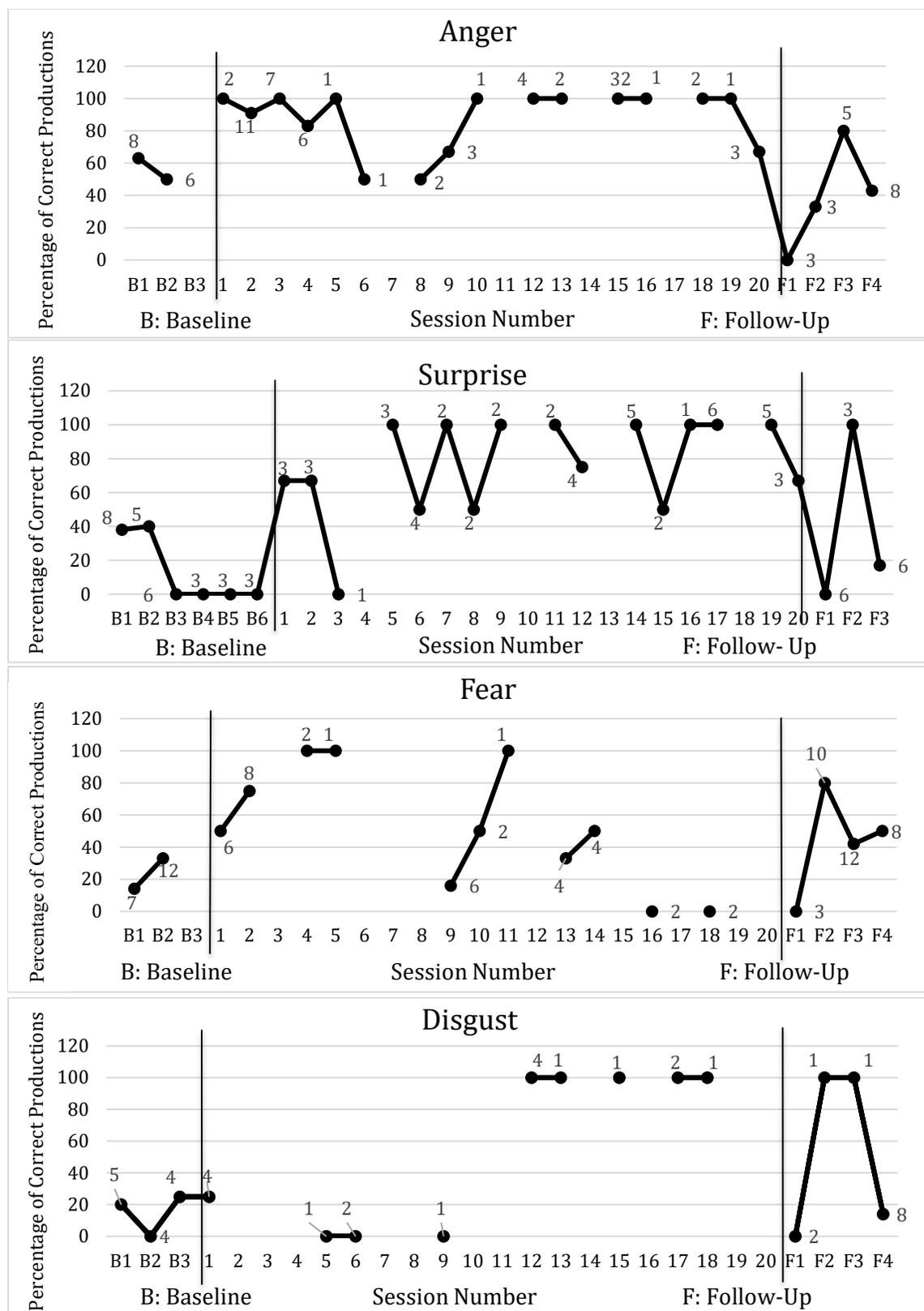


Figure 4. Percentages of correct production for anger-, fear-, disgust- and surprise-based words by DD per session. The frequency of occurrences per session is reported above each data point.

DD commonly used *anger* for *disgust*. Of the 24 errors made throughout the intervention, 17 of them were due to the incorrect substitution of *anger*. This pattern did not change as treatment progressed and during follow-up data. Although DD struggled to identify and produce emotion words in the correct context he was proficient in identifying the correct valence. For the emotions targeted, DD had 12 valence errors in the baseline sessions and 14 valence errors in the follow-up data. Of the errors DD made, he used the correct valence for *fear*, 87% of the time; *disgust*, 96%; *surprise*, 94%. For *anger*, 78% of his errors were within the correct valence which is relatively low for a basic emotion.

Discussion

This study examined one aspect of the efficacy of a social communication intervention. The specific focus of this study was the production of words representing the basic emotion categories of *happiness*, *sadness*, *fear*, *anger*, *disgust*, and *surprise*.

Individual Findings

AA. AA used the word *sadness* to describe any negative emotion which she did not know how to identify. This particularly affected her progress in learning to identify and use the emotions *fear* and *surprise*. AA consistently made these errors, suggesting that they were not outliers and that she did not have a firm understanding of *surprise*. With respect to *fear*, it was somewhat surprising in session 19, that AA used a sophisticated variation of this word when she used the word “shy” to describe how a character in the text felt about going to school for the first time. This substitution showed that AA did have some understanding that *fear* can take different forms that vary in nature and intensity.

Fear and *surprise* both produced variable patterns of performance in baseline and follow-up. AA identified *fear* and *surprise* correctly in pictures where a person was displaying a facial

expression, which showed that she could correctly identify the emotions in some contexts. AA was not able to identify *fear* or *surprise* in more complex situations in which she had to infer how a person was feeling based on contextual cues and knowledge of emotion. *Surprise* and *fear* also had similar PNDs of 47% and 50% and were rarely used as incorrect labels for other emotion words. This was not surprising, because AA did not understand the categories well enough to overgeneralize usage. *Sadness* was almost always used when AA did not know the answer.

It is concerning that at age 11, AA made as many errors as she did, and showed difficulty producing words for relatively basic emotions such as *fear* and *surprise*. Additionally, about 20% of AA's errors involved errors in valence (e.g., *happy* for *sad*). Although not an intervention target, it was also curious that AA made some errors identifying *happy*, which also involved valence errors. It was notable that although errors involving *happy* were rare for all the participants, when they did misidentify *happy*, then they also were likely to make a valence error.

BB. BB's intervention focused on *disgust* and *surprise*. The majority of BB's errors in the *disgust* category occurred during the emotion identification task. There were not many occurrences of the word *disgust* in the books that the children studied, and these were the main contexts in which BB could learn about the emotion category of *disgust*. During this intervention task, there was no explicit support given from the clinician. So, although the BB was repeatedly exposed to *disgust*, he may not have learned it well enough to be able to apply it in the inferencing tasks contained in the follow-up data. This may have been why his performance dropped in follow-up.

BB showed an increase in the category of *surprise*, but his progress was hindered by his overuse of *fear*. The intervention could have been more successful had he not overgeneralized

fear. As was the case with AA in her overuse of *sadness*, if BB did not know an emotion, he would automatically identify it as *fear*, especially with the emotion *surprise*.

The PND of 84% on *surprise* indicates that the intervention was moderately effective for him. BB rarely used *surprise* inappropriately in the first half of treatment, most likely because he did not understand it well enough to use it spontaneously. Interestingly, as his understanding of *surprise* increased, BB began to use it more as an incorrect label for other emotions. Despite his errors, BB did show progress. BB had the highest PND of any of the participants on *surprise*.

CC. CC was proficient in every emotion category except for *surprise*. He had a low percentage in baseline because he consistently used *fear*, *anger*, and *happy* for the target emotion *surprise*. *Surprise* can be a difficult emotion to understand due to the fact that one may have a good *surprise* or a bad *surprise* making it more complex to understand. However, identifying valence was not a problem for CC. In his errors, he did not consistently overgeneralize any particular emotion due to his proficiency in all the other emotions.

During the treatment sessions, CC's understanding increased. This was most likely due to the continual modeling and support given by the clinician. Without that support, his follow-up data dropped slightly. In follow-up, although his performance appears to have dropped somewhat from intervention, it was still higher than his baseline performance. Thus, his understanding of the appropriate use of *surprise* increased, however, it still did not reflect mastery.

DD. DD appeared to be eager to learn at the beginning of treatment and was excited by the treatment activities. However, the task of identifying and labeling emotions was difficult for DD and by the end of the intervention he seemed to tire of the activities. This was shown in

follow-up session 3 in which he had difficulty sitting still and asked for multiple bathroom breaks. Several times during the session, when asked a question by the clinician, he would not look at the stimulus and still produce an answer. Although in the follow-up testing, all participants displayed a desire to move on to other activities, DD was by far the most distractible. This likely had a negative effect on his follow-up data. For example, in the follow-up sessions for *anger*, a significant number of his responses were very general (i.e., bad mood, not good, or not happy). In the follow-up sessions he also seemed to adopt this strategy when required to express a word for the category of *anger*. This may have been due to his distractibility and that he just wanted to rush through the task. However, this hypothesis is questionable because he did not rush through the testing in a similar manner on any of the other emotions. It may have also been that DD was not able to perform as well because he did not have the continual modeling and support of the clinician during follow-up that he had in the intervention. The large amount of errors he made caused the drop in DD's follow-up data after high percentages during his treatment sessions. His use of general words for the category of *anger* (e.g., bad mood) was interesting because according to the data and the 75% PND, he seemed to have made a good deal of progress in using *anger*, but also used the most general substitutions to describe it.

DD was proficient in identifying the correct valence in the majority of his answers for all emotions. The near equal number of valence errors in both baseline sessions and follow-up sessions indicates that he already had this knowledge before beginning intervention. The general answers such as "bad mood" in the place of *anger* reflect his generally appropriate knowledge of valence but also his lack of emotional competence in more complex emotion tasks.

DD was never able to grasp *surprise* beyond understanding the general valence (negative *surprise* or positive *surprise*). DD, similar to some of the other participants, did not use

emotions as incorrect labels when he did not understand them. DD did not understand *surprise* and therefore never used it as an incorrect label. The same was true for the emotions *fear* and *disgust* which were used minimally as incorrect labels. DD commonly used *sadness* as an incorrect label when he did not know the targeted emotion.

Although DD's PND for *fear* was not as high as *anger*, there were a couple instances throughout treatment where he seemed to have a thorough understanding. This is not shown in the data, as he only achieved 100% three times on repetitions of one or two occurrences. But in one instance, when describing how Little Llama reacted when his mother went downstairs, he used a more sophisticated form of *fear*, "fret," independently with no cues from the clinician. DD also did surprisingly well on Follow-up 2 where he answered questions about a situation where the characters were running at the pool and one of them fell and hurt himself. DD showed a good understanding of *fear* by answering questions correctly about how Zebra would feel nervous about his friend getting hurt without cues from the clinician. Despite these successes, this emotion category was still developing and DD required modeling from the clinician to complete more complex inferencing tasks.

Although *disgust* rose to 100% throughout the therapy sessions it is important to realize that two of the four responses in Session 12 were repetitions, said within 5 seconds after the clinician prompted him. So, this individual session was not as meaningful as it appeared.

General Implications

While the emotions targeted for each participant varied, all four participants showed an improvement in at least one emotion. Some participants made a greater degree of progress than others. AA and DD produced the smallest amount of growth while CC and BB showed more progress.

Although the emotions targeted varied per participant, all four participants displayed poor understanding of *surprise* in baseline. *Surprise* is a complex emotion because it can have a negative or positive usage, which increases the emotions with which it could be confused. Every participant made progress in *surprise* except for DD. BB made the most progress with PND of 84% and CC close behind at 82%. These were the highest PNDs of the study. Overall, the best outcomes were seen for the emotion word category of *surprise*.

The participants were generally proficient in identifying the proper valence and this was the case in all emotions except for *happy*. One would assume that *happy* would rarely if ever be misidentified, and especially not mistaken for a negative emotion. However, when the participants did misidentify *happy* there were valence errors to varying degrees per participant. Of the errors involving *happy*, CC responded with 0% (out of 6 errors) in the correct valence, AA with 40% correct (out of 5 errors), DD with 33% correct (out of 12 errors) and BB with 50% correct (out of 4 errors). Overall, errors using *happy* were rare, and it may be the case that if the context was difficult enough for the child to produce an error on *happy*, it also was difficult enough to produce a valence error.

Limitations of Study

A major limitation of the study was that it involved a case-study design rather than a true single-subject design. Although initially structured as a multiple baseline single-subject design, several limitations precluded the use of this design. These included the fact that children varied markedly on the targets being tracked, as well as limitations imposed by the school schedule and the number of baseline sessions that could be taken. The case-study design made it impossible to determine causation, although some participants did make notable growth on specific emotions.

As mentioned previously, therapy sessions were conducted twice a week for 20 minutes. This is a relatively short amount of time, and it seems likely that each participant would have benefitted from more time per session or a longer duration of the intervention. The fact that several of the children did well in the intervention, and then produced a drop-off in the follow-up sessions, suggests that the concepts they were learning required more intensive intervention to solidify them.

Another limitation was that, despite efforts made to deliver the intervention as consistently as possible, slight variations occurred due to the individuality of each client's needs. Although there was a script provided, the clinician was allowed to take some liberty in providing different levels of cues and types of cues to the child. These varied according to the response and understanding of the child. Even activities themselves varied slightly to retain the interest of the child. For example, AA lost interest in the story retell but was excited when the clinician presented a similar alternative. The clinician videoed AA on an iPad while she did the story retell and called this "The AA show." AA then watched the show at the end of the session. The storybooks used provided another source of variability. The children were occasionally permitted to choose which book they wanted to read. Although each book was chosen because of its emotional content, there was variation between books. These variations may have influenced the results.

The participants had different levels of attentiveness, which likely affected their results. Some children appeared to have lost their desire to continue in the intervention and by follow-up seemed to be tired of the repetitive nature of the questions and tasks. In one video, DD's video was segmented into four parts because he took that many breaks to get a drink or go to the

bathroom. While none of the other participants were this extreme, there were noticeable delays in responding, fidgeting and difficulty focusing by the end of follow-up 3.

Directions for Future Research

This was a semester long study, with two 20-minute intervention sessions a week. It is likely that the children would have shown greater improvement had the intervention been delivered over a longer period of time and with greater intensity. In particular, the children that struggled may have needed more time to grasp the concepts being taught. Given time, the children may have been able to have more encounters with the emotions that they did not understand and the emotions that did not occur in therapy as frequently. It is recommended that future interventions be of longer duration and of greater intensity.

In the future, it would also be interesting to conduct a study with more participants. Because each child with LI is very different, it would help to have a larger number of participants to provide more information about how different children with LI respond to this treatment. Additional participants would make it possible to determine if interesting observations made during the study were representative of children in general or unique to specific children.

For future research, it may also be beneficial to involve more explicit teaching of the emotions in the structure of the sessions. Although the treatment sessions were designed to teach the emotions, the clinician rarely gave feedback or criticism of the child's response. The clinician taught through frequent examples and modeling of the targeted emotion but did not comment on the validity of the child's response. Occasionally the clinician suggested an additional emotion to the child's response but never suggested that their answer was incorrect. This resulted in errors being perpetuated throughout therapy and into the follow-up data. It

might benefit the participants to have a short segment of the interventions in which their errors were specifically corrected.

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APPENDIX A

Annotated Bibliography

Adams, C., Lockton, E., Freed, J., Gaile, J., Earl, G., McBean, L., ... & Law, J. (2012). The Social Communication Intervention Project: A randomized controlled trial of the effectiveness of speech and language therapy for school-age children who have pragmatic and social communication problems with or without autism spectrum disorder. *International Journal of Language & Communication Disorders*, 47(3), 233-244.

Purpose: To examine the effectiveness of a manualized intervention in increasing language skills and social communication in children with LI.

Methods: 88 children who had difficulties with pragmatic and social communication, ages 5;11 through 10;8 were selected. Each was randomly assigned to the manualized social communication intervention or to their normal treatment. Baseline data was taken before treatment and then follow-up data was taken immediately after treatment and 6 months post treatment. This data was based on outcome measures from the CELF and a structured observation, which measured narratives, a parent reported measure of pragmatic and social communication skills, teacher ratings of learning skills in the classroom and a blind rated perception of conversational competence.

Results: There was no significant change in the primary outcome measure for structural language ability or narrative ability in the two treatment groups. There were significant improvements in conversational competence, pragmatic and social communications and participant's classroom learning skills as measured by the methods of assessment.

Conclusion: This intervention was effective for improving conversational competence in children with LI. Focused intervention provides the potential for change. Even if therapy is a short time, children can increase their language skills although some children may require more time spent in therapy.

Relevance to Current Work: The current study uses an intervention manual the same structure. The current study is focused on improving emotional understanding for children with LI rather than the focusing on pragmatic abilities.

Adams, C., Lockton, E., Gaile, J., Earl, G., & Freed, J. (2012). Implementation of a manualized communication intervention for school-aged children with pragmatic and social communication needs in a randomized controlled trial: The Social Communication Intervention Project. *International Journal of Language & Communication Disorders*, 47(3), 245-256.

Purpose of the Study: To provide research about social communication intervention using a randomized control trial model.

Method: 57 children between 5;11 and 10;8 years old, were selected based on their diagnosis of SLI, normal non-verbal IQ's, and low scores on the CCC-2. Children were referred to participate in this study by their speech therapist. Before beginning treatment, the participants were assessed using formal and informal procedures. The assessment and intervention procedures were outlined in a manual. The manual included several different components of intervention that it could be tailored to meet the child's individual language needs. Therapy was provided for three hours each week.

Analysis and Results: The researchers found that pragmatic, metapragmatic and narrative skills were the areas the participants were most lacking in the intervention. To have a successful social communication language study it is important to have a good working environment where the child can focus, supportive parents, a proficient therapist. Therapy should be focused on the areas of language that will help them to most progress.

Conclusions: Substantial time and effort is required when implementing an intervention manual. In order for clinicians to be able to learn from studies and intervention conducted in research, the researchers should outline their assessment and intervention procedures concisely.

Relevance to Current Work : The current work also used a script and specific program used for all four children. The script could be altered to the children's needs. Both studies examined the effects of intervention on children with LI.

Bishop, D. V. M., & Norbury, C. F. (2002). Exploring the borderlands of autistic disorder and specific language impairment: A study using standardized diagnostic instruments. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 43(7), 917-929.

Purpose of Study: To provide evidence that pragmatic language impairment is different than autism and that it is not just another label for autism.

Methods:

This paper was comprised of two studies, which were then compared to one another. Study 1 was comprised of 21 participants, ages 6-9. Participants were divided into groups, either SLI or PLI, according to their scores on the CCC. Thirteen children were assigned to the group with PLI and 8 children were assigned to the group with SLI. The children were given the Autism Diagnostic Observation Schedule- Generic (ADOS-G) and the parents completed the Autism Diagnostic Interview-Revised (ADI-R), and the Social Communication Questionnaire (SCQ).

Study 2 was comprised of 11 children with SLI, 18 with PLI, 6 children diagnosed with high-functioning autism and 18 normally developing children. The procedures were the same as Study 1 except that participants were not give the ADI-R.

Analysis and Results: The agreement between the diagnoses was assessed and there was good agreement between the ADI-R and the SCQ. There was not agreement between the diagnosis reached by the parent surveys and the diagnosis based on the ADOS-G. However, the researchers did not find a high rate of undiagnosed cases of autism. Of the children already

diagnosed with PLI, some showed different features of autism and a small minority fit the criteria for autism based on the parent reports and direct observation. The scores from all the tests given show the heterogeneity of children with LI.

Conclusion: Although many children with PLI and SLI had some autistic features, they did not fit into the label of ASD.

Relevance to current work: The current work is focused the social and emotional understanding aspect of LI. Although the label PLI is not used in the current work, this study and the current project are focused children with LI and additional social issues.

Brinton, B., Fujiki, M., Hurst, N. Q., Jones, E. R., & Spackman, M. P. (2015). The ability of children with language impairment to dissemble emotions in hypothetical scenarios and natural situations. *Language, Speech, and Hearing Services in Schools*, 46(4), 325-336. doi:10.1044/2015_LSHSS-14-0096

Purpose: To investigate the ability of children with LI to dissemble emotions when socially appropriate.

Methods: 22 children, ages 7 through 11, who were identified as having LI, were selected by the school speech language pathologist and then age and gender matched with a peer in the same classroom. Every child participated in a series of emotion recognition tasks. They were also presented with 10 hypothetical situations and four naturalistic situations where they had to judge whether there was need for emotional dissemblance. Of the four naturalistic situations, three of them were low cost meaning that a child's dissemblance or lack of, may affect the examiner's feelings but would not affect the child. One of the situations was high-cost meaning that if the child dissembled the emotion then they would lose the prize they had earned through participating.

Results: In the hypothetical situations children who were TD were significantly more likely to dissemble emotions than children with LI. The low-cost situations showed little difference between the LI group and the TD group. However, the high-cost situation showed that children with LI were twice as likely not to dissemble as typically developing children.

Conclusion: Children with LI had less understanding about display rules and what is appropriate in social situations. Dissemblance was still emerging in both groups during the age range from 7 to 11.

Relevance to Current Work: Dissemblance of emotion requires emotion understanding which is the focus of the current work.

Brinton, B., Fujiki, M., & McKee, L. (1998). The negotiation skills of children with specific language impairment. *Journal of Speech, Language, and Hearing Research*, 41(4), 927-940.

Purpose: To examine the ability of children with LI to negotiate with their peers to reach a mutual decision.

Methods: Fifty four children participated in this study. Six of them were labeled as target children who were diagnosed with SLI, ages 8:10 to 12:5. Six other target children were matched to these children based on language age. Six additional target children were matched to these children based on chronological age. Each of these children were put in a group with two other age matched, TD children, where they participated in a negotiation to determine the prize they would receive for working together. During the negotiation the amount of utterances was recorded to indicate the target child's level of participation. To examine the actual negotiation, the interpersonal negotiation strategy (INS) model was used.

Results: The children with SLI did not produce fewer utterances than their typically developing peers in the negotiation process. They did, however, negotiate at a significantly less sophisticated negotiating level and they were rarely involved in the final stages of the negotiation when their group made the decision when compared to the target children in the language-matched and age-matched groups.

Conclusion: Children with SLI were not able to function at the same level as their peers in the negotiation task. They lacked age appropriateness and had difficulty being flexible in negotiations.

Relevance to Current Work: The current work is focused on the social communication aspect of language, in particular emotion understanding. While this research focuses on negotiations, social emotional learning skills are important in both tasks.

Brinton, B., Spackman, M. P., Fujiki, M., & Ricks, J. (2007). What should Chris say? The ability of children with specific language impairment to recognize the need to dissemble emotions in social situations. *Journal of Speech, Language, and Hearing Research*, 50(3), 798-811.

Purpose: To evaluate children diagnosed with SLI and their ability to dissemble emotions according to social rules.

Method: There were 19 children with SLI and 19 TD children who participated. Children were between the ages of 7;9 and 10;10. The children were presented with 10 situations in which a fictional, gender-neutral character faced a situation requiring that the emotion they experienced should be dissembled due to social rules. The children responded to questions, which were then sorted according to their ability to dissemble the emotion.

Results: The dissemblance task was difficult for children with SLI and TD children. The area in which children with SLI differed from typical children was knowing when it was acceptable to display emotions and when they should hide them.

Conclusion: Children with SLI have a less developed emotional knowledge and problems with language; this could combine to cause difficulties in their social interactions with others.

Relevance to Current Work: Both research works are investigating aspects of social communication in children with LI.

Briscoe, J., Bishop, D. V., & Norbury, C. F. (2001). Phonological processing, language, and literacy: A comparison of children with mild-to-moderate sensorineural hearing loss and those with specific language impairment. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, 42(3), 329-340.

Purpose: The purposes of this study were to (a) determine how a mild to moderate sensorineural hearing loss (SNH) in school aged children influenced phonological discrimination and awareness and phonological short-term memory, (b) to determine if the level and patterns of phonological skills of children with a SNH was similar to children with SLI, and (c), to determine if phonological impairments in children with a SNH are similar to other language and literacy impairments.

Methods: A group of 19 children with a SNH loss and a group of 20 children with SLI, all ages 5-10, participated in this study. An additional group of older children with SLI, ages 11-13 also participated. Control group A was made up of 20 TD children, ages 5-10, who were matched with the younger SLI group according to age and gender. An additional control group was made up of younger TD children, ages 4-9, who were matched with the group of older children with SLI, based on similar raw receptive vocabulary scores. All children met the requirements set forth by the researchers. Standardized non-verbal and linguistic assessments were administered as well as tests assessing phonological skills and short term memory tests. Phonological discrimination, phonological awareness, expressive phonology, nonword repetition and digit recall were also assessed through various tests and tasks. Data was analyzed by univariate ANOVAs.

Results: Both groups of children with SLI scored significantly lower on three of the four linguistic tests compared to the control groups. Both groups with SLI, in comparison with the control groups, showed deficits on word finding and the core language tests. Children with SNH showed a different pattern than children with SLI; the only language score that was similar for both groups was the nonword repetition score. On all other language tests there was no significant difference between children with SNH and the control groups. On the phonological discrimination task and phonological awareness tasks, both the groups with SLI and the group with SNH had similar scores and differed significantly from their TD peers.

Conclusion: A hearing loss can impair phonological skills and in particular phonological short-term memory but it does not affect verbal memory or literacy. Children with SLI had a problem with short-term memory and seemed to have a limitation on processing capacity which may cause some of the language problems in children with LI.

Relevance to Current Work: The current work examines children with SLI. Although, it focuses more on the social communication aspect of the disorder rather than the language and phonological aspects.

Conti-Ramsden, G. (2003). Processing and linguistic markers in young children with specific language impairment (SLI). *Journal of Speech, Language, and Hearing Research* 46(5), 1029-37.

Purpose: To examine the performance of children with SLI on 4 potential markers to identify SLI and determine how accurately these markers were in identifying children with SLI.

Methods: Thirty two children with SLI and 32 TD children, ages 52 months to 70 months, were matched according to age and gender. Children were tested on the linguistic markers as well as their overall language and cognitive abilities. The marker tasks included the following language processing markers: non-word repetitions and the recall of numbers; and the following linguistic markers; tasks focused on past tense and tasks involving plurals. The performance of the two groups on the four markers was analyzed using an analysis of variance (ANOVA). Each marker's accuracy, sensitivity and specificity was analyzed.

Results: Children with SLI had significantly lower scores on all four markers in comparison to the TD children with whom they were matched. Non-word repetitions and past tense were determined to be the most accurate markers in the identification of SLI.

Conclusion: Children with SLI have a wide range of difficulties with both linguistic and processing type tasks. Tasks involving non-word repetition and past tense would be useful in describing the linguistic profiles of individuals with SLI. Because TD children also need to develop these skills, it would be a valuable tool in further language research.

Relevance to Current Work: The current work is focused on intervention for children with SLI, although it examines the social communication aspect of LI rather than the linguistic aspect.

Craig-Unkefer, L. A., & Kaiser, A. P. (2002). Improving the social communication skills of at-risk preschool children in a play context. *Topics in Early Childhood Special Education*, 22(1), 3-13.

Purpose of Study: To test the response to a social communication intervention of pre-school age children that showed early signs of language delay and behavior problems.

Method: Six preschool age children at risk of language delay and behavior problems were chosen based on their Preschool Language Scale-3 score and their CCC score. The baseline sessions occurred three times per week for 10 minutes and children's play was recorded and coded. Intervention occurred three to four times a week for 20 minutes. The children were divided up into three groups with two children per group. The intervention included different forms of play, starting with modeling from the interventionist to give the child structure for their play, a period of no prompting and then a five-minute review session. The children's utterances were coded and MLU and word count were analyzed to determine the lexical diversity of the child's play.

Results: All children, except for one, increased their descriptive utterances, average use of requests, MLU and lexical diversity. The study was not able to determine whether the child's

gains resulted from the planning session or the play session as they received prompts during both sessions. It is also possible that they already knew these forms and this intervention merely encouraged them to use them.

Conclusion: Children will benefit from play that is structured and may require some prompting and encouragement to use forms that they know. With the extra practice and models, their language can become more diverse and complex. Early intervention is important for children showing a risk of language delay or difficulty.

Relevance to Current Work: Social communication and its importance are discussed in the current work. The current work is focused on a specific aspect of social communication, emotional understanding.

Ford, J. A., & Milosky, L. M. (2003). Inferring emotional reactions in social situations: Differences in children with language impairment. *Journal of Speech, Language, and Hearing Research, 46*(1), 21-30.

Purpose: To examine the difference between children with SLI and typically developing children ability to read and infer the emotions of others.

Methods: Twenty four kindergarteners, 12 with SLI and 12 typically developing, participated in the study. The task was to correctly label pictures using one of the following emotions: mad, sad, happy and surprised. When presented with a narrative with verbal information, visual information or both, the child would have to infer the emotions that the character felt based on the context. There were nine short stories for each emotion, making up 36 short stories.

Results: Both children with SLI and typically developing were able to correctly label the emotions on faces and comprehend the situation with 100% accuracy. When making inferences about how the character felt, children with LI had more difficulty regardless of the way it was presented. They struggled to identify all of the emotions.

Conclusion: Children with SLI had a more difficulty making inferences of what emotion the character was feeling based on event and social context. Children with LI also confused positive and negative emotions.

Relevance to Current Work: This study focuses on children with LI and their ability to label and infer emotion. The current work looks at the same task and emotions with the addition of disgust and fear.

Ford, J. A., & Milosky, L. M. (2008). Inference generation during discourse and its relation to social competence: An online investigation of abilities of children with and without language impairment. *Journal of Speech, Language, and Hearing Research, 51*(2), 367-380. doi: 10.1044/1092-4388(2008/027).

Purpose: To investigate if children with LI and their TD peers make inferences while processing conversations (online) as well as examine the variables which predict the ability to make emotional inferences and how that ability relates to social understanding and competence.

Methods: A group of 32 preschool children, ages 4;6 to 5;7 were selected to participate in this study. There were 16 children with LI and 16 TD children. The children completed a series of tasks concerning, language, cognitive function, emotions and inferencing tasks on a computer which measured their responses and response time. The inferencing task was a short scenario with a gender-neutral character in which the child made inference about emotion. Data was analyzed using an analysis of variance.

Results: TD children were more likely to make online inferences about emotion than children with LI. Children with LI did not make online inferences. The ability to make emotional inferences was predicted by various language skills and vocal response time.

Conclusion: The ability to make emotional inferences in discourse comprehension is an important aspect of social competence. TD children make online inferences about emotion during conversations but children with LI failed to do so.

Relevance to Current Work: The current work also explores the ability to inference emotions.

Fujiki, M., Brinton, B., & Clarke D. (2002). Emotion regulation in children with specific language impairment. *Language Speech and Hearing Services in Schools*, 33(2), 102-111.

Purpose: To determine if emotion regulation influenced the social outcomes of children with SLI.

Methods: Forty two children with SLI and 42 TD children, ages 6 to 9 and 10 to 13 were referred to participate in the study by school SLPs. Each child met the participation requirements set forth by the researchers. Every child with SLI was matched according to age and gender with a TD peer. The child's school teacher filled out the Emotion Regulation Checklist for the child with SLI and the TD child they were matched with. High numbers on the scale were equated with good emotional regulation ratings.

Results: As a group, TD children had higher overall ratings on the ERC, when compared to children with SLI. On the Lability/Negativity and Emotion Regulation subscales, the ratings for boys with SLI were the lowest. Older children with SLI had lower ratings than young children with SLI.

Conclusion: Children with SLI had generally lower ratings on emotional regulation than did their TD counterparts. Emotion regulation could be a contributing factor to social outcomes in children with SLI. The effects of emotional regulation on social outcomes in children with SLI should be investigated more extensively.

Relevance to Current Work: The current work is also focused on learning more about the factors contributing to the social communication and social outcomes in children with LI.

Fujiki, M., Spackman, M. P., Brinton, B., & Hall, H. (2004). The relationship of language and emotion regulation skills to reticence in children with specific language impairment. *Journal of Speech, Language, & Hearing Research, 47*(3), 637-646.

Purpose: To investigate the interaction between language performance, reticent behavior and emotion regulation in children with SLI.

Methods: Forty three children with SLI and 43 TD children, ages 5 through 8 and 9 through 12 were selected. School speech language pathologists referred the children with SLI. All participants met the qualifications established by the researchers. The participants with SLI were matched by gender and age (within 6 months) with a TD peer in the same school classroom. Forty three school teachers completed the ERC, the measure of emotion regulation, for the participants in their class. The Teacher Behavior Rating Scale was completed by the teacher as a measurement of reticence and the CASL was administered to measure language ability.

Results: Based on a regression analysis of scores from the CASL, ERC, and TBRS, it was found that the language scores and emotion regulation scores were equally significant predictors of reticence and accounted for 43% of the variance in that score.

Conclusion: Children with LI not only struggle in language areas but also with emotion regulation. Together these issues predict a large amount of the variance in social reticence.

Relevance to Current Work: The current work is also focused on an aspect of emotional intelligence in school-age children with SLI.

Fujiki, M., Spackman, M. P., Brinton, B., & Illig, T. (2008). Ability of children with language impairment to understand emotion conveyed by prosody in a narrative passage. *International Journal of Language and Communication Disorders, 43*(3), 330-345.

Purpose: To further examine the emotion understanding of children with LI by looking at their ability to identify an emotion conveyed through prosody.

Methods: Nineteen children with LI, ages 8-10, were matched by age with 19 TD children. The children listened to an audio recording which conveyed the emotion of happiness, fear, anger or sadness. The child then responded with the emotion that they believed to be correct.

Results: The task was more difficult for children with LI than for their TD peers. Children with LI were able to recognize happiness and fear similarly to their TD peers. Fear and sadness were often confused by both groups of children. Fear was the hardest emotion for the children to identify, while happiness was the easiest. However, TD children accurately identified it 78% of the time while the group with LI could identify it less than half of the time.

Conclusion: The difficulties that children with LI had in identifying emotions did not come from a difficulty understanding prosody, but from a difficulty understanding emotion conveyed by prosody.

Relevance to Current Work: The current work also examines the ability to recognize emotion, however, it is focused more on recognizing emotions on faces and inferring emotions based on context.

Gerber, S., Brice, A., Capone, N., Fujiki, M., & Timler, G. (2012). Language use in social interactions of school-age children with language impairments: An evidence-based systematic review of treatment. *Language, Speech, and Hearing Services in Schools, 43*(2), 235-249.

Purpose of Study: To provide a systematic examination of treatments of social communication disorders in language impairment.

Method: The American Speech-Language-Hearing Association (ASHA) formed a committee to evaluate research in language and social communication in school age children. The research analyzed me certain qualifications. According to these qualifications, a total of eight studies were identified that qualified for the evidence based systematic review. The number of participants ranged from single participant to groups of 20 and ages 5-11. Some of the studies had broader social and language goals while other were more focused. The amount of treatment varied between treatments.

Results: Within the individual studies there were improvements in topic management, initiations, topic maintenance and cohesion with in conversation, and an increase in the production of narratives.

Conclusion: There is a need for further research in the field of social communication with school age children with language impairment before a particular treatment can be considered efficacious. Based on this review, their findings indicated that treatment for language and social communication is “in it’s infancy.” Although a randomized control trial study on pragmatic communication skills was in the process at the time, the results were not included.

Relevance to Current Work: The research showed the need for more research on language and social communication. The current study provides more research in the treatment of social communication problems in children with language impairment.

Ryder, N., & Leinonen, E. (2014), Pragmatic language development in language impaired and typically developing children: Incorrect answers in context. *Journal of Psycholinguistic Research, 43*(1), 45-58.

Purpose: To examine the incorrect answers of children with SLI about short scenarios, in hopes that the answers would reflect whether they used world knowledge, or gathered knowledge from context to answer the question.

Methods: Thirty children with SLI, 12 with PLD (pragmatic language disorder), and 23 TD children ages 5-6 and 7-11, were selected as participants based on criteria set by the researchers. Two tasks were administered, the first was a two-sentence scenario read verbally followed by a question. The second was a storybook that included pictures. Several questions were asked throughout the story. The incorrect answers of the participants were analyzed.

Results: Younger children and children with SLI leaned on world knowledge and prior experiences when answering questions. The participants drew upon world knowledge when the question was pragmatically complex. As a group, children with LI answered with irrelevant answers more than TD children. Children with LI were unable to use contextual information to make an inference.

Conclusion: Children learn over time what information is relevant and how to utilize context information. While open questions are common in a classroom setting, some children with SLI or PLD do not understand verbal questions being posed to them and therefore do not respond with relevant information. They need help understanding the important information.

Relevance to Current Work: Participants in the current work were tested on their ability to infer what emotion a person would feel when given a short hypothetical situation.

Spackman, M. P., Fujiki, M., & Brinton, B. (2006). Understanding emotions in context: The effects of language impairment on children's ability to infer emotional reactions. *International Journal of Language and Communication Disorders, 41*(2), 173-188.

Purpose: To examine the ability of children with LI to infer emotion in specific social situations.

Methods: Forty three children with LI, ages 5-12, were matched with and 43 TD children according to age and gender. Participants were presented with scenarios and asked which emotion that the character felt, explain why the character felt that way and how it felt to experience that particular emotion.

Results: Happy was most accurately identified, then sadness, fear and anger. Older and typically developing children were more accurate in their responses in comparison to younger children and children with LI. The most confusion occurred in fear and anger which were incorrectly labeled as sadness.

Conclusion: Although children with LI seemed to comprehend the situation, they still struggled to perform at the same level as typically developing children when inferring emotions.

Relevance to Current Work: The current work includes similar emotion inferencing tasks and works with children who have LI in a case study setting.

Spackman, M. P., Fujiki, M., Brinton, B., Nelson, D., & Allen, J. (2005). The ability of children with language impairment to recognize emotion conveyed by facial expression and music. *Communication Disorders Quarterly, 26*(3), 131-143.

Purpose: To investigate children with language impairment (LI) and their ability to judge emotion on faces and in music.

Methods: Two studies were conducted with 43 children with LI and 43 TD children. Ages ranged from 5 to 8 and 9 to 12 years old. In first study the child was asked to identify emotions on faces. In second study the child listened to portions of classical music and identified what emotion was portrayed.

Results: When identifying emotions on faces, children with LI identified the emotions of happiness, sadness, anger and fear as accurately as TD children. But did not identify surprise and disgust as accurately as TD children. In differentiating between anger and surprise, the older children performed better than the younger children. When identifying emotions in music, TD children and older children did significantly better than children with LI and younger children.

Conclusion: The findings found were consistent with prior research and emphasize the difficulty that children with LI have in recognizing and inferring emotion.

Relevance to Current Work: The pictures used to do the emotion task were the same ones used in the current work. Both this research and the current work are focused on emotion recognition and inferencing.

Stanton-Chapman, T. L., Denning, C.B., & Jamison, K. R. (2012). Communication skill building in young children with and without disabilities in a preschool classroom. *The Journal of Special Education, 46*(2), 78-93.

Purpose of Study: To evaluate the turn taking skills of children by investigating the child's ability to initiate conversation and the response.

Methods: Eight participants, between ages three and five, were selected from a preschool classroom. All children were found to have language difficulties as indicated by their score on the PLS-4 and poor behavior and social skills according to their classroom teacher. The children were classified by similar birthdays into pairs. Baseline data were collected before treatment. Intervention was comprised of play centered around themes such as going to the grocery store or doctor. In the first part of the sessions, communication was modeled through storybooks read to the child. The child then played using the constructs modeled by the interventionist.

Results: The intervention was highly effective with all participants. Intervention increased the number of social and conversational initiations with an immediate peer response.

Conclusion: Social intervention in conversation initiation and response is important, even at a young age. Children with language difficulties need individualized support from their teachers to aid them in their social communication. Children who have scaffolding from teachers learn better. This study was systematic and seemed to help the children improve more than in casual approaches.

Relevance to Current Work: The intervention strategies used in this study are similar to those used in the current work with storybooks and modeling by the clinician.

Taylor, L. J., Maybery, M. T., Grayndler, L., & Whitehouse, A. J. (2015). Evidence for shared deficits in identifying emotions from faces and from voices in autism spectrum disorders and specific language impairment. *International Journal of Language & Communication Disorders*, 50(4), 452-466.

Purpose: To examine the difference in children with SLI, children with ASD and TD children in their abilities to recognize emotions on faces and in voices.

Methods: Twenty nine children with ASD, 18 children with SLI and 66 TD children were recruited by a variety of sources; school SLP's, newspapers, private clinics etc. These children met the criteria provided by the researchers. The children were shown pictures of emotion on faces and asked to identify them as one of the following six emotions: happy, sad, disgust, fear, surprise and anger. The auditory task was comprised of a simple sentence that was said/read in the manner of the six emotions tested and the child had to identify it. The child completed both tasks a total of 24 times each.

Results: All groups did worse than expected. Children with SLI and children with ASD and LI had similar difficulty with both tasks and all emotions. Although children with ASD and normal language performed better than those with ASD and LI, they still struggled to identify the more complex emotions such as surprise and disgust.

Conclusion: Children with SLI and children with ASD with LI have similar language difficulties and thus have some similar emotion identification difficulties. These language disorders also affect social communication.

Relevance to Current Work: These are the same six emotions examined in the current work. The emotion identification task was also the same as in the current work only with different pictures used.

APPENDIX B

Clinical Evaluation of Language Fundamentals-5 (CELF-5)

Participant	CELF-5 ¹ Percentile Rank Scores					
	Age	Sentence Comp ²	Word Structure	Formulated Sentences	Recalling Sentences	Core Percentile
VA	5:07	25	9	1	5	5
	Age	Word Classes	Semantic Relationships	Formulated Sentences	Recalling Sentences	Core Percentile
VU	09:10	50	2	16	5	9
XW	10:01	<1	16	9	2	2
ZY	10:11	5	2	25	2	4

Note. ¹Clinical Evaluation of Language Fundamentals-5 (CELF-5). ²Sentence Comprehension.

Children's Communication Checklist-2 (CCC-2) and Clinical Evaluation of Language Fundamentals-5 (CELF-5) Scores

Instruments	Participants				
	MG	KJ	PW	JS	VA
CCC-2 ¹ Subtests					
Speech	1	<1	<1	25	1
Syntax	25	<1	16	50	2
Semantics	5	5	5	50	1
Coherence	1	37	9	9	<1
Initiation	37	2	50	37	9
Scripted Language	25	50	25	37	9
Context	16	16	9	25	5
Nonverbal Communication	5	5	9	16	<1
Social Relations	5	2	5	1	<1
Interests	37	50	25	37	5
GCC ² percentile	5	3	6	23	<1
SIDI ³	9	7	9	-6	1
CELF-5 ⁴					
Core Percentile	4	2	9	9	5

Note. ¹Children's Communication Checklist-2 (CCC-2). ²General Communication Composite. ³Social Interaction Difference Index. ⁴Clinical Evaluation of Language Fundamentals-5 (CELF-5).

Emotion Word Coding Manual

Guidelines for Each Coding Category

Emotion-Based Word (Child’s Production) – Write (verbatim) the emotion word as it is produced by the participant.

Category of Child’s Emotional Response – Group each emotion word into the category that is most closely synonymous to its actual meaning (e.g., mad will be grouped under anger; excited will be placed under happiness, etc.). Emotional categories will coincide with those defined by Dunn et al. (1987):

Happiness (H): like, love, happy, enjoy

Surprise (Su): surprise, surprised, confused

Anger (A): mad, angry

Fear (F): afraid, frightened

Disgust (D): used to describe feelings toward sensory feelings, smell, taste, sight, etc., Words like “smelly” and “yucky” are only coded when used as a feeling. (e.g. when the child is shown a picture of a boy eating a worm and when asked how the boy feels the child says “yucky.”)

Contempt (C): used to describe general feelings of dislike towards a person, laughing at someone meanly, “I hate the boy.”

Sadness (Sa): unhappy, sad, miserable

Category in Error (Target Production) –The production is considered correct if it is the same word (or a form of the same word) that the clinician is attempting to elicit. Spontaneous productions that are contextually appropriate are also considered accurate. Productions that are not the same as the word or category the clinician attempted to elicit are considered inaccurate and record the intended category of emotion state. For example, the clinician was attempting to elicit sad but the child said happy, the category in error was sad.

Production and Target Match – Compare the child-produced emotion word category and the target category. If they match, then it is counted as correct. If they do not match, it is counted as incorrect. For example, if the child produces a word in the happiness category and the target word category was happiness it would be counted as correct. But if the child produces a word in the sadness category but the target word category was happiness it would be counted as incorrect.

+ = Correct (production and target word match)

- = Incorrect (production and target word do not match)

Time of Production – Write the exact time in the clip that the emotion word is produced (e.g., 18:42).

Type of Production – Write the amount of support that is required in order to elicit each emotion word produced:

Spontaneous (S): The participant produces the emotion word without any modeling or cueing from the clinician. This also includes when the participant is looking at a book and produces the emotion word without reading it, being asked a question, or being cued in any way.

Cued (C): Emotion words produced after phonological cues (e.g., the clinician says “/s/” in order to elicit “sad”), semantic cues (e.g., “He fell in the water, he is not smiling, he looks ___.”), closed cues (e.g., “The boy is feeling ___”), or gestural/visual cues (e.g., using pictures of faces expressing emotions, like a frowny face; emotion words that are seen printed in a story and read) are coded as cued productions.

Question (Q): The child produces the emotion word following a question (e.g., “How is the boy feeling?”). The question does not need to be specifically about emotion, but produces an emotion word following any question asked by the clinician (e.g., “What is the boy doing?” and “What did she bring you?”). If the clinician gives two choices (e.g., “Is the boy sad or happy?”) and the child picks in answer that is counted as a question.

Repetition/Imitation (R): The clinician produces an emotion word and within the next five seconds, the child repeats it (or a simplified form of it). If either the clinician or child produces other verbalizations before the child repeats the word, it is not counted as a repetition. If the clinician gives two choices (e.g., “Is the boy sad or happy?”) and the child picks an answer that is not counted as a repetition.

Correct Valence vs. Incorrect Valence – Valence is considered correct if the word produced matched the valence of the intended word. Words produced of a different valence as the intended word are considered to have incorrect valence (e.g., saying “happy” instead of “sad” is incorrect valence because the two are positive and negative; saying “mad” instead of “sad” is correct valence because the two are both negative. Surprise can be positive or negative depending on the context. If the character or child is coming out better than he or she started, than the valence is positive. If the character or child is coming out worse than he or she started, than the valence is negative).

+ = Correct Valence

- = Incorrect Valence

Specificity—Specificity is considered correct if the word produced is correct and appropriately specific in the context. It is considered incorrect if the emotion word is inappropriate in the context or if the word is correct but not specific (“not happy” for “sad”).

+ = Correct specificity

- = Incorrect specificity

Overextended – Any emotion word that is overextended to situations will be noted. If the child says ‘happy’ for any situation where there is an emotion word needed, ‘happy’ is being overextended. If the emotion word produced by the child is not being overextended, than this column may be left blank.

Special Coding Considerations

Code the following:

1. Specific names for emotions (e.g., sadness, happiness, anger, etc.)

2. Adjective forms of emotion words (e.g., excited, scared, annoyed, etc.)
3. The verbs like, love and hate
4. Words describing facial expressions associated with specific emotions (e.g., “She feels frowny” Or “That’s a scary face”)
5. Verb forms of emotion words that are produced in a way to elicit emotion (e.g., to excite, to surprise, to frighten, etc.)
6. Child’s response is phrased as “feels ____” or when the child answers the question “how does he feel?”

Do not code the following:

1. Adjectives describing actions or appearances (e.g., funny, cute, silly, weird, etc.)
2. Expletives and interjections (e.g., Whoa! Hey! Dang it, etc.)
3. Apologies and “sorry”
4. Crying, in pain, laughing, smiling, determined

If the child reads the emotion-based word aloud or asks, “How do you spell (emotion word)”, the production is not coded.

If the child produces the same emotion word multiple times in succession, the number of emotion words coded will depend on the situation. If the child is repeating the same word but in response to different contexts, continue to code each repetition (e.g., “sad” turn page “sad”). However, if the child is repeating the emotion word in regards to the same context, code only the first repetition (e.g., while looking at the same page, “sad, yeah sad.”)

If the emotion word produced is the repetition of the clinician’s production, valence does not need to be coded.

For productions such as “not (emotion word) or “don’t (emotion word)” (e.g., “I’m not happy” or “I don’t like oranges”), judge the emotional category based on the context of each individual utterance.

For questions about what should or should not be considered an emotion-based word and which emotional category each word belongs to, refer to the appendix of emotion words compiled by Johnson-Laird and Oatley (1989).

APPENDIX D

DEPARTMENT OF COMMUNICATION DISORDERS
 BRIGHAM YOUNG UNIVERSITY
 136 TAYLOR BUILDING
 PROVO, UTAH 84602-8605
 (801) 422-4318 FAX: (801) 422-0197



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.

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. 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 clinician. All treatment will take place at your child's school. There will be two or 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 is likely to already have been done but it not it may take 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 session 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 locked labs 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 two 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 any time 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 Administration 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.

Printed Name _____

Date _____

Signature _____

Date _____

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 tapes you are willing to permit, by putting your initials next to the uses you agree to and signing the form at the end.

1. _____ The videotapes can be studied by the research team for use in the research project. .
2. _____ Short excerpts from the videotapes can be shown at scientific conferences or . ; meetings.
3. _____ Short excerpts from the videotapes can be shown in university classes.

I have read the above descriptions and give my consent for the use of the videotapes as indicated by my initials above.

Printed Name _____

Date _____

Signature _____

Date _____

THE EDUCATIONAL PROGRAM IN SPEECH-LANGUAGE PATHOLOGY IS ACCREDITED BY THE
COUNCIL ON ACADEMIC ACCREDITATION OF THE AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION