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Agreement Between Parent and Teacher Ratings of Social Communication Abilities

on the Children's Communication Checklist–Second Edition

Courtney Lynn Millar Hammond

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

Agreement Between Parent and Teacher Ratings of Social Communication Abilities on the Children's Communication Checklist–Second Edition

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The Children's Communication Checklist-Second Edition (CCC-2) is a behavior rating scale developed to address the difficulties of assessing social communication in children. It was designed to be completed by a parent rater. However, since it would be helpful to know the extent to which ratings are context-dependent, this study looked at the agreement between parent and teacher ratings on the CCC-2 as well as the percent agreement on the severity of disorder. Twelve parent-teacher pairs completed the CCC-2 for children who had a documented developmental language disorder with specific impairment in social communication. Cohen's kappas, Cohen's weighted kappas, and percent agreement of severity of disorder were calculated. Kappa results ranged from less than chance agreement to fair agreement. When differentiating between scores that represent disorder and no disorder, parent and teacher percent agreement for the CCC-2 10 subscales range from 42% to 75%. Further delineation between no disorder, disorder, or severe disorder yielded percent agreement ranging from 17% to 50%. Overall percent agreement on the general communication composite was 92%. Results indicate that while parents and teachers have poor to fair agreement on the exact nature of a child's social communication strengths and weaknesses, they largely agree when a social communication problem exists. Lack of agreement likely resulted from the parent and teacher seeing the child in different contexts which required a somewhat different set of social communication abilities, or a difference in rater perception of what is within the developmental norms. These findings suggest that the best indication of a child's social communication profile may lie in a holistic assessment of performance in all the important contexts in a child's life, including school and home.

Keywords: social communication, Children's Communication Checklist-2, behavior rating scales, parent teacher cooperation

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGMENTS	iii
TABLE OF CONTENTS.....	iv
LIST OF TABLES	vi
DESCRIPTION OF THESIS STRUCTURE.....	vii
Introduction.....	1
Social Communication Assessment.....	3
Rating Scales.....	4
The Children’s Communication Checklist.....	6
Parent and Teacher Agreement on Behavior Rating Scales	8
Method	10
Participants.....	10
Materials	11
Procedure	13
Statistical Analysis.....	13
Results.....	14
Parent-Teacher Agreement on the CCC-2	14
Parent-Teacher Agreement on Ratings of Severity of Disorder	17
Discussion.....	18
Parent-Teacher Ratings Agreement	18
Analysis of Parent-Teacher Agreement on Severity of Disorder	20
Summary.....	22

Limitations and Future Research 23

References 24

APPENDIX A: Annotated Bibliography 30

APPENDIX B: Cohen’s Kappa Grids 51

APPENDIX C: Parent Consent Form 61

LIST OF TABLES

Table 1	Parents' and Teachers' Ratings on the CCC-2	15
Table 2	Cohen's Kappas and Weighted Kappas for Parents' and Teachers' Ratings on CCC-2	16
Table 3	Percent Agreement of Parents and Teachers on Disorder Severity	17

DESCRIPTION OF THESIS STRUCTURE

This thesis, *Agreement Between Parent and Teacher Ratings of Social Communication Abilities on the Children's Communication Checklist–Second Edition*, adheres to the requirements for thesis submission and journal publications in the field of communication disorders. An annotated bibliography is included in Appendix A. Appendix B contains Cohen's kappa grids for each subscale of the Children's Communication Checklist-Second Edition. Appendix C contains the parent consent form.

Introduction

Social communication is defined as the ability to use “language in interpersonally appropriate ways to influence people and interpret events” (Olswang, Coggins, & Timler, 2001, p. 53), and includes three interacting components: language processing, social and emotional learning (SEL), and pragmatics (Adams, 2005; Fujiki & Brinton, 2017). Language processing is the ability to understand and produce syntactical, morphological, phonological, and semantic forms (Adams, 2005). Often language processing is left out of discussions on pragmatics and social communication because it concerns the structural form of language, rather than the social and communicative function of language. However, form and function interact in ways that are difficult to tease apart, and without form, there can be no function. For this reason, language processing is a key component in social communication.

SEL consists of the social and emotional skills and behaviors necessary for successful social interactions. Social cognitive skills, such as theory of mind, perspective taking, and inferencing skills are included in this area. Additionally, abilities that traditionally fall under the heading of emotional intelligence such as emotion regulation and emotion understanding are also included under this heading (Fujiki & Brinton, 2017).

Pragmatics can be broadly defined as the use of language in social context. Some of the behaviors considered to be within the domain of pragmatics include conveying communicative intent, participating in various types of conversations, producing narratives, adjusting contributions to social interaction based on shared information, and respecting social norms of politeness (Fujiki & Brinton, 2017).

As might be guessed from considering these three broad areas, mastering social communication can be daunting. Appropriate social communication behavior may vary

considerably from the playground, to the classroom, to formal social situations. Rigidly following social communication conventions for maintaining a topic, taking conversational turns, or using appropriate eye contact learned in one context may be problematic when used in other social contexts.

Given the complexities associated with social communication behavior, it is not surprising that children with a variety of handicapping conditions are at risk for deficits. Social communication impairment, especially in pragmatics and SEL, is a defining characteristic of autism spectrum disorder (ASD; Baron-Cohen, 1988; Bishop, 1989; Tager-Flusburg, 1999). However, social communication problems are not limited to children with ASD, but have also been documented in children with fragile X syndrome (Comblain & Elbouz, 2002; Klusek, Martin, & Losh, 2014), neurodevelopmental disorders (Levy, Tennebaum, & Orney, 2000), Williams syndrome (Laws & Bishop, 2004), attention deficit disorder (Bignell & Cain, 2007; Geurts et al., 2004; Korrel, Museller, Silk, Anderson, & Sciberras, 2017), cerebral palsy and spina bifida (Holck, Nettelbladt, & Sandberg, 2009), and in deaf or hard of hearing populations (Calderon & Greenberg, 2003; Goberis et al., 2012; Thagard, Hilsmier, & Easterbrooks, 2011). Children with developmental language disorders (DLD) also struggle with all three aspects of social communication. In addition to the structural language problems commonly associated with these children, they may also present with difficulties in responsiveness, cohesion, and dissemblance (Bishop, 1998; Bishop, Chan, Adams, Hartley, & Weir, 2000; Craig & Evans, 1993; Fujiki & Brinton, 2017).

The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) introduced a new diagnostic category focusing on pragmatic behavior: social (pragmatic) communication disorder (SPCD). According to the DSM-5, SPCD includes deficits in four

specific areas: (a) communication for social purposes, (b) adjusting communication to meet the context or the listener's needs, (c) following rules of conversation and storytelling, and (d) understanding that which is not explicitly stated (American Psychiatric Association, 2013). The creation of the SPCD diagnosis highlights the pervasiveness of deficits in SEL and pragmatics with or without the problems of language form or function seen in children with DLD.

Social Communication Assessment

Given the prevalence of social communication impairment across a range of populations, and the negative social outcomes associated with these problems, accurate assessment and evaluation are imperative. However, effective social communication assessment comes with many challenges, particularly in the areas of pragmatics and SEL. Various diagnostic frameworks have been presented to assess pragmatic and SEL behaviors (e.g., Kazmarek, 2002; Roth & Spekman, 1984a; Roth & Spekman, 1984b); all of which come with cautions and caveats, including avoiding contrived situations, difficulties in judging and coding for unspoken intent, changes in behavior with the presence of observers or video cameras, and the fact that peer interactions increasingly happen in private, out the examiner's sight.

The available diagnostic frameworks for social communication can be viewed on a continuum of naturalness with norm-referenced standardized tests providing the least natural testing environments and naturalistic observations of interactions being the most authentic. Although assessment of most areas of language, including language processing, includes standardized assessment tools, this practice is problematic in the area of pragmatics and SEL. By nature, norm-referenced standardized tests cannot examine a wide variety of real-life, context-dependent situations among multiple conversational partners as would be required to demonstrate real social communication skill, or lack thereof. Additionally, developmental norms

are limited for pragmatic skills and SEL skills, making scores difficult to interpret (O'Neill, 2014).

Naturalistic observation has its own set of challenges. An adequate behavioral sample that represents the range of the child's abilities would need to include a variety of settings and a number of different communication partners (Johnson, Johnston, & Weinrich, 1984). However, obtaining such a sample is both difficult and time consuming. Additionally, behavioral samples recorded during a naturalistic observation may not actually reflect the full extent of skills a child has in his repertoire or have a sufficient number of exemplars of the target behavior to draw valid conclusions (Adams, 2002). To alleviate some of the drawbacks of naturalistic observation, some examiners have used analogue situations or role play. However, contrived situations and role play may approximate social communication behavior but may not accurately reflect real behavior in real situations (Kaczmarek, 2002). Elicitation of behavior in a contrived context may also shift the balance of power between child and assessor, resulting in a child that becomes more responsive with fewer initiations, which, again, may not reflect real life behavior (Adams, 2002). The best-case scenario, then, for social communication assessment, is one that avoids the pitfalls of norm-referenced standardized tests, namely the lack of context or developmental norms, and minimizes the downside of naturalistic observation, primarily inefficiency.

Rating Scales

To address some of the limitations of both norm-referenced standardized tests and naturalistic observation, many examiners choose a ground halfway between the two: behavioral rating scales. Behavior rating scales provide a standard format for those that are familiar with a child's behavior—typically a caregiver or teacher—to reflect upon their observations of the child in different situations over a period of time and rate those behaviors. Rating scales are less

expensive and less time-consuming than direct observation because a familiar observer can report on a child's repertoire of behaviors without the need to observe those behaviors within a specified observation time. These tools can be especially helpful in social communication assessment because they capture low frequency behaviors that are, nevertheless, very important. However, behavior rating scales also have a number of drawbacks. Chief among them is that they may capture impressions of behavior rather than actual observational data, which makes them susceptible to response bias and error variance (Merrell, 1999). Despite these potential limitations, rating scales are one of the most efficient and reliable methods for capturing and assessing social communication behaviors.

Capitalizing on the strengths of rating scales, the Clinical Evaluation of Language Fundamentals-Fifth Edition (CELF-5; Wiig, Semel, & Secord, 2013), contains two behavioral rating scales: the observational rating scale (ORS) and the pragmatic profile (PP). The ORS asks parents or teachers to rate children on a four-point scale on a wide variety of language behaviors, including items related to the general categories of listening, reading, writing, and speaking. The PP is specific to pragmatic behaviors and focuses on three pragmatic domains: rituals and conversational skills; asking for, giving and responding to information; and nonverbal communication. Both the ORS and the PP were introduced in the fourth edition of the CELF, with the PP being a criterion-referenced assessment tool. The CELF-5 introduced norms for the PP. Research has shown good validity and reliability for both the ORS (Massa, Gomes, Tartter, Wolfson, & Halperin, 2008; Semel, Wiig, & Secord, 1996) and the PP (Wiig et al., 2013).

Other social communication behavior scales have been developed in an effort to introduce tools that address the challenges of social communication assessment, with demonstrated validity and reliability. The Children's Social Behavior Questionnaire (Hartman,

Luteijn, Serra, & Minderaa, 2006), contains 49 items on which parents rate their child's behavior over the previous two months. Others combine a rating scale with other types of assessment methodologies, such as the Communication and Symbolic Behavior Scales (Wetherby & Prizant, 2002), which combines a 3-point rating scale completed by a parent with direct behavioral observation. The Language Use Inventory for Young Children (O'Neill, 2007)—designed as an assessment tool for toddlers and preschoolers—is a 180-item questionnaire that combines a checklist format (89% of the items) with a rating scale (11% of the items). However, both the Children's Social Behavior Questionnaire and the Communication and Symbolic Behavior Scales were developed for specific populations of children who struggle with social communication, specifically pervasive developmental disorders, and autism spectrum disorder, respectively. Additionally, the Language Use Inventory was developed for toddlers and preschoolers. Another behavior rating scale, the Children's Communication Checklist, can be used more widely to assess populations of children for social communication competence, and is normed for ages 4 through 16.

The Children's Communication Checklist

The Children's Communication Checklist (CCC; Bishop, 1998; Bishop, 2003) is a widely used parent-rating scale developed to identify children with social communication impairment and to identify children who may need further assessment for ASD. It is now in its second edition—the CCC-2—and has been translated into 30 different languages. The CCC is divided into 10 subscales which, together, address language processing, SEL and pragmatics. It also includes two composite scores: the general communication composite (GCC), and the social interaction deviance index (SIDI).

Studies indicate that the CCC-2 reliably maps onto the four characteristics of SPCD described in the DSM-5 (Yuan & Dollaghan, 2018), has among the strongest evidence of content validity of 11 social communication assessment protocols (Russell & Grizzle, 2008), demonstrates adequate to good internal consistency (Bishop, 2003), and has good inter-rater reliability (Norbury, Nash, Baird, & Bishop, 2004). With demonstrated validity and reliability, the CCC-2 has been shown to be appropriate as a screening measure (Helland, Biringer, Helland, & Heimann, 2009), to identify children with attention deficit hyperactivity who also have social communication deficits (Timler, 2014), and as a tool to distinguish between children with communication impairments and typically developing peers (Helland et al., 2009; Norbury et al., 2004)

The initial version of the CCC was designed as a rating scale to be completed by school personnel, specifically a classroom teacher or a speech language pathologist. A 2001 study by Bishop and Baird showed the parent rating were closely linked to diagnosis. For this reason, the CCC-2 was designed to be completed by parents, though allowances are made if a parent or caregiver is unavailable. The revised version includes a new rating scale, new item ordering, new subscales, new composite scores, and new questions. Despite these improvements, using a parent as the informant is a limitation in clinical situations such as schools, where there is limited interaction between parents and school clinicians. Further, using a parent as the sole informant overlooks observations of how social communication abilities affect a child's academic and social performance in the school setting. For these reasons it would be very informative to administer the CCC-2 to a classroom teacher, or other school personnel.

Parent and Teacher Agreement on Behavior Rating Scales

Researchers comparing parent and teacher completed rating scales/measures have found that a variety of relationships are possible. For example, parents and teachers separately completed a battery of reporting measures on children with and without ADHD. Results showed good sensitivity on parent-completed ratings, but better overall performance for teacher-completed measures. Researchers also reported that parents and teachers focused on differing aspects of behavior. Parents noticed internalizing symptoms of ADHD, while teachers reported more frequently on elevated disruptive behavioral problems. It was only when parents' and teachers' reports were looked at together that the full picture—both internalizing and externalizing symptoms—of the child were revealed (Tripp, Schaughency, & Clarke, 2006).

On the CELF-4 ORS, a comparison of parent and teacher reports showed that teachers reported slightly higher levels of language and communication difficulties, though the difference did not reach statistical significance. The correlation between parent and teacher ratings was significant, though moderate, for three of the four subscales on the ORS (speaking, reading, writing) as well as the overall ORS score. It was not significant for the listening subscale (Massa et al., 2008). The differences were likely due to parents seeing their child in a different context and with different expectations than a teacher.

Results comparing the performance of teachers and parents on the CCC have produced mixed results. Bishop and Baird (2001) found that inter-rater reliability between parents and teachers was significant, but not as strong as the correlation between the ratings of two school personnel obtained when the CCC was initially developed (Bishop, 1998). However, Bishop and Baird did conclude that parent ratings correlated with the child's diagnosis. Because the main

purpose of the CCC is to diagnose social communication disorders, this close alignment between parent ratings and diagnosis prompted Bishop (2003) to norm the CCC-2 using parent ratings.

There is the possibility that greater classification accuracy can be obtained by including ratings from parents and teachers. Geurts et al. (2004) looked at whether adding the ratings of parent and teacher CCCs would provide more accurate diagnoses. These authors reported that both parent-only ratings and teacher-only ratings differentiated between typically developing children, children with ADHD, and children with high functioning ASD. However, the percentage of correctly classified children increased slightly when parent and teacher reports were combined.

The literature shows different relationships between parent and teacher ratings, and generally indicate that both parent and teacher reports are of value in social communication assessment. Most of these studies focus on the diagnostic value of parent and teacher reports. The purpose of this study was to look beyond diagnostic use of parent and teacher agreement and explore whether the agreement between parent and teacher ratings using the CCC-2 for the same child would provide a better profile of a child's abilities in the different contexts of home and school. Given the context-driven nature of social communication skills, it is reasonable to expect that parents and teachers who see the same child in different settings may vary in their rating responses. However, high levels of agreement would also be of importance, thus demonstrating inter-examiner reliability between teachers and parents. Thus, either outcome would be of interest clinically. The following research questions are proposed:

1. To what extent do parents and teachers agree in their rating of children on each subscale and the GCC of the CCC-2?

2. To what extent do parent- and teacher-completed CCC-2 reports on each subscale and the GCC composite yield the same indication of severity of disorder?

Method

Participants

Participants in this study consisted of the parents and teachers of 12 school-age children who were receiving speech-language services for DLD. Nine participants were male, and 3 were female. These children ranged in age from 5;6 to 11;10 (years; months) with a mean age of 8;8 and a standard deviation of 2;3.

Ten of the participants in this study were selected from an ongoing project to investigate the efficacy of an intervention targeting social communication in children with DLD with particular difficulty in that area, as judged by a certified speech language pathologist. Inclusion in that study required a diagnosis of DLD without comorbid ASD or intellectual disability. For these 10 children, the CELF-5 was administered and a hearing screening completed. The CELF-5 Core Language Score ranged from 53-80 ($M = 70.10$, $SD = 8.88$).

Parents and teachers of an additional two children receiving services from the BYU Speech and Language Clinic were also included in this study. These children had language profiles that matched the inclusion standards for the social communication intervention study, passed a hearing screening test, and participated in language assessment batteries. Based on a combination of formal and informal measures, these two children were judged by certified speech language pathologists to have DLD as well as problems with social communication.

Materials

The CCC-2 is a 70-item rating scale, with 10 subscales: (a) speech, (b) syntax, (c) semantics, (d) coherence, (e) initiation, (f) scripted language, (g) context, (h) nonverbal communication, (i) social relations, and (j) interests.

- *Speech* looks at articulation, phonological simplification processes, and speech intelligibility. (Example item: Simplifies words by leaving out some sounds).
- *Syntax* examines understanding and production of grammatically appropriate constructions, such as pronouns, multiword utterances, and grammatical morphemes. (Example item: Gets mixed up between *he* and *she*).
- *Semantics* investigates the child's use of words and word-finding abilities. (Example item: Forgets words he or she knows).
- *Coherence* probes the child's ability to clearly express his or her intent by using appropriate devices, such as use of pronouns, sequencing, and background information. (Example item: Uses terms like *he* or *it* without making it clear what he or she is talking about).
- *Initiation* addresses whether the child is able to be appropriately assertive and responsive with a communication partner. (Example item: It is difficult to stop him or her from talking).
- *Scripted language* concentrates on whether the child uses language that appears to be repetitious, memorized as a whole, or inappropriate for age. (Example item: Says things he or she does not seem to fully understand or seems to be repeating something he or she heard an adult say).
- *Context* analyzes whether the child is able to adapt their communication to different situational contexts and understand how meaning changes in different contexts, such as in

jokes or with nonliteral language. (Example item: Misses the point of jokes or puns, though may be amused by nonverbal humor such as slapstick).

- *Nonverbal communication* examines the child's use of and understanding of eye contact, facial expressions, gestures, and other nonverbal communicative devices. (Example item: Looks blank in a situation where most children would show a clear facial expression).
- *Social relations* explores the child's interactions with others, such as whether the child plays with other children, or notices when other people are upset. (Example item: Is left out of joint activities by other children).
- *Interest* focuses on presence of restricted and repetitive interests that are typical for children with ASD. (Example item: Shows interest in things or activities that most people would find unusual).

There are seven items per subscale, five representing difficulties experienced in the subscale domain, two representing strengths in that area. A caregiver fills out the report, ranking each behavior on a 4-point scale to indicate the frequency of the behavior (0 = less than once a week, or never; 1 = at least once a week, but not every day, or occasionally; 2 = once or twice a day, or frequently; 3 = several times—more than twice a day, or always).

Each subscale is scored and scaled separately. Additionally, the CCC-2 provides two composite scores: the GCC, and the SIDI. The GCC is compiled from all of the language areas (subscales a–h), while the SIDI subtracts the sum of the scaled scores of subscales a–d from the sum of the scaled scores of subscales e, h, i, and j. The SIDI is primarily used to differentiate between DLD and ASD.

Procedure

After obtaining an informed consent form from each parent, a student clinician gave a parent of each child in the study a CCC-2 to complete. Of the 12 parent ratings, 11 were filled out by a mother, one was completed by a father. Where feasible, the student clinicians gave the CCC-2 instrument directly to the teacher to complete at his/her convenience. In two cases, the parent delivered the CCC-2 to the teacher to complete.

While the primary focus of this study was the pragmatic subscales, scaled scores for each of the subscales and the GCC were computed using the CCC-2 computerized scorer. Diagnostic categories of disorder and no disorder were set accordingly using standard deviation. Children whose scores fell at or above one standard deviation below the mean were placed in the no disorder category. Those that scored more than one standard deviation below the mean fell into the disorder category, consistent with the CCC-2 interpretation guidelines. To measure severity of the disorder, an additional category of severe disorder was used for those children whose score placed them at least two standard deviations below the mean.

Statistical Analysis

To measure parent and teacher agreement, Cohen's kappa statistics were calculated for each CCC-2 subscale and for the GCC. This study employed the commonly used interpretation of kappa coefficients, with 0.01–0.20 indicating slight agreement, 0.21–0.40 indicating fair agreement, 0.41–0.60 indicating moderate agreement, 0.61–0.80 indicating substantial agreement, and 0.81–0.99 indicating almost perfect agreement (Landis & Koch, 1977). Percent of agreement was also calculated to measure the extent of agreement between parent- and teacher-completed CCC-2 rating scales.

Results

Parent-Teacher Agreement on the CCC-2

The first question examined considered the agreement between parent and teacher ratings on the CCC-2. Table 1 presents descriptive statistics for each CCC-2 subscale and the GCC, including parents' and teachers' scaled scores, means, and standard deviations. Subscales are normalized with a mean score of 10 and a standard deviation of 3. Table 1 shows that the average of parents' ratings primarily fell between one and two standard deviations below the mean, with the lowest means (Speech, Syntax subscales) slightly exceeding two standard deviations. The highest parent mean was 6.42 for the interests subscale, and the lowest was 3.33 for the speech subscale. Teachers' means ranged slightly higher with a high of 8.17 for the interest subscale and the lowest average of 4.58 for the speech subscale. Looking at individual pairs of parent-teacher scores shows marked variability.

Twelve parent-teacher pairs each produced 10 subscale rating sets each, resulting in 120 parent-teacher subtest comparisons. Of those 120 rating sets, 19 (16%) were perfect matches. An additional 42 sets (35%) had a one or two scaled-point disparity, making just over 50% of the sets within two scaled points of each other. The largest gap in a score set occurred in the semantics subscale for participant 12; the parent rating yielded a scaled score of 3—more than two standard deviations below the mean—while the teacher rating produced a scaled score of 16, a full two standard deviations above the mean.

The GCC scaled scores are normalized with a mean of 100 and a standard deviation of 15. The GCC is a sum of the scaled scores of the individual subscales, and descriptive statistics follow the same general pattern seen among the subscales, namely that teachers rated the children slightly higher than parents, 45 and 38.50, respectively.

Table 1

Parents' and Teachers' Ratings on the CCC-2

Rater	Children												M (SD)
	1	2	3	4	5	6	7	8	9	10	11	12	
Speech													
Parent	0	8	1	7	5	4	4	3	2	3	0	3	3.33 (2.50)
Teacher	1	8	4	7	8	2	1	3	0	7	4	10	4.58 (3.32)
Syntax													
Parent	0	6	6	9	8	5	2	1	2	0	1	5	3.75 (3.14)
Teacher	0	7	7	5	9	7	1	4	0	8	6	9	5.25 (3.31)
Semantics													
Parent	4	4	7	6	9	7	5	2	4	3	2	3	4.67 (2.19)
Teacher	3	5	4	7	7	5	5	3	1	4	3	16	5.25 (3.79)
Coherence													
Parent	2	3	8	9	4	8	3	2	4	2	3	4	4.33 (2.53)
Teacher	3	3	3	6	3	6	9	2	2	7	4	14	5.17 (3.54)
Initiation													
Parent	9	5	5	7	8	8	2	2	7	6	4	7	5.83 (2.29)
Teacher	7	3	9	7	4	10	4	6	5	12	7	11	7.08 (2.91)
Scripted Lang.													
Parent	7	2	6	9	7	10	7	1	3	4	6	3	5.42 (2.81)
Teacher	5	7	5	5	7	8	10	6	3	9	6	11	6.83 (2.23)
Context													
Parent	4	4	8	9	7	7	4	1	5	3	3	3	4.83 (2.41)
Teacher	4	9	7	6	3	6	7	5	3	7	3	11	5.92 (2.50)
Nonverbal Comm.													
Parent	7	3	12	13	9	6	8	1	6	5	2	4	6.33 (3.73)
Teacher	3	6	9	8	5	6	5	1	2	3	4	8	5.00 (2.52)
Social Relations													
Parent	6	3	3	13	10	9	5	1	4	2	1	2	4.92 (3.87)
Teacher	2	7	8	7	7	5	4	1	2	5	6	6	5.00 (2.30)
Interests													
Parent	8	5	8	6	9	10	8	2	6	5	5	5	6.42 (2.23)
Teacher	6	6	8	12	9	8	10	5	6	9	7	12	8.17 (2.33)
GCC													
Parent	33	35	53	69	57	55	34	13	33	27	21	32	38.50 (16.46)
Teacher	26	48	43	54	46	50	42	30	17	57	37	90	45.00 (18.42)

Note. GCC= General Communication Composite.

Cohen's kappa calculations are presented in Table 2, and the complete Cohen's kappa grids for each subscale are exhibited in Appendix B. Kappas for the 10 CCC-2 subscales ranged from -.056 to .169, indicating agreement ranging from less than chance agreement to slight agreement. Cohen's kappas, however, only take into account exact agreement. Many parent and

teacher ratings differed by one point, which still represents substantial agreement, though is not reflected in the kappa statistic. For this reason, weighted kappa scores were also calculated.

Weighted kappa measures the degree of agreement, with more weight given to those ratings that are close to each other and less rate for those far apart. Weighted kappas ranged from -.050 to .294, signifying less than chance agreement to fair agreement. Using weighted kappas, the three subscales with the highest agreement were syntax, speech, and nonverbal communication. The context, scripted language, and social relations subscales showed the least agreement. Kappa on the GCC indicated chance agreement. The data did not meet requirements to calculate weighted kappa for the GCC.

Table 2

Cohen's Kappas and Weighted Kappas for Parents' and Teachers' Ratings on CCC-2

	Kappa	Agreement Interpretation	Weighted Kappa	Agreement Interpretation
Speech	.156	slight	.281	fair
Syntax	-.008	at chance	.294	fair
Semantics	-.056	less than chance	.175	slight
Coherence	.016	slight	.031	slight
Initiation	-.023	less than chance	.032	slight
Scripted Language	.169	slight	.041	slight
Context	.032	slight	-.050	less than chance
Nonverbal Communication	.077	slight	.209	fair
Social Relations	.008	at chance	.035	slight
Interests	.136	slight	.134	slight
GCC	-.007	at chance		

Note. GCC= General Communication Composite

Parent-Teacher Agreement on Ratings of Severity of Disorder

The second question focused on whether parents and teachers agreed on the severity of the disorder, both in the individual subtests and for the GCC score. Parent-teacher percent agreement on severity of disorder is presented in Table 3. Children were considered to have a disorder in each of the 10 subscales if their scaled score was more than one standard deviation below the mean. Percent agreement on disorder versus no disorder for the 10 CCC-2 subscales ranged from 42% for context to 75% for social relations and speech, with a mean percent agreement of 60%. For the GCC the percent agreement for disorder versus no disorder was 92%.

Table 3

Percent Agreement of Parents and Teachers on Disorder Severity

	Percent Agreement Disorder/No Disorder	Percent Agreement Severity of Disorder
Speech	75%	42%
Syntax	50%	33%
Semantics	67%	42%
Coherence	50%	25%
Initiation	58%	17%
Scripted Language	58%	50%
Context	42%	25%
Nonverbal Communication	67%	33%
Social Relations	75%	33%
Interests	58%	42%
GCC	92%	92%

Note. GCC= General Communication Composite. For disorder/no disorder, children were classified as having no disorder if their scores were up to one standard deviation below the mean, and having a disorder if their scores were more than one standard deviation below the mean. For severity of disorder, the same standard was applied for no disorder, children were classified as having a disorder if their scores were more than one and up to two standard deviations below the mean, and having a severe disorder if their scores were more than two standard deviations below the mean.

To provide a more precise indication of whether parents and teachers agreed on severity, the disorder classification was further broken into disorder and severe disorder. A child that scored within one standard deviation of the mean was classified as having no disorder. A child that scored more than one standard and up to two standard deviations below the mean was classified as having a disorder, while a child that scored more than two standard deviations below the mean was classified as having a severe disorder. Percent agreement for degree of severity between parents and teachers for the 10 CCC-2 subscales ranged from 17% for initiation to 50% for scripted language, with a mean across the 10 subscales of 34%. Percent agreement for degree of severity on the GCC was 92%.

Discussion

The goal of this study was to compare parent and teacher ratings on the CCC-2. This was done by first comparing parent-teacher ratings of agreement on the subscales and the GCC. The second analysis focused on the degree to which parent-teacher ratings agreed on severity of impairment.

Parent-Teacher Ratings Agreement

The first question posed examined the degree of parent-teacher agreement on each of the 10 subscales and the GCC of the CCC-2. The majority of the comparisons were not perfect matches (only 19 of 120) and this was reflected in kappa statistics showing “slight” agreement between parents and teachers. Weighted kappas were also calculated, to provide more consideration for scores that were variably weighed. Still, the highest weighted kappa correlations represented only “fair” agreement, while the lowest represented agreement at “less than chance.” The variability observed in the teacher-child comparisons of the subscales was

also reflected in the overall agreement, indicated by comparison of the parent and teacher GCC scores which produced a kappa statistic of $-.007$.

General descriptive analysis of the means of parents' and teachers' ratings suggested somewhat better agreement. Mean scores for both parents and teachers typically fell between 1 and 2 standard deviations below the mean and the same subscales received the highest and lowest mean scores from both parents and teachers. Even at this general level, however, there were still notable differences. The four lowest parent-produced mean scores were in subscales that tested language form and content: speech, syntax, coherence, and semantics. Parent mean scores were higher for those subscales that covered the pragmatic and the social and emotional learning domains. Teachers' mean scores followed a different pattern. After speech, the next lowest scores were in nonverbal communication and social relations, followed by the language form subscales of coherence, syntax and semantics. Teachers' highest mean scores, after interests, were for initiation, scripted language, and context.

It might be expected that there would be a high level of disagreement between parents and teachers, given the differences in the interactional contexts in which they see the children. It would also be expected that children would do poorer in the school context, which is highly demanding for children with poor language skills. It was thus surprising that teachers generally gave higher ratings than parents (57% of the time). Given the small sample size, this difference may have resulted from chance variation. It would be interesting to see if these findings would also be observed in a larger sample of children.

It is also likely that context influenced specific performance on individual subtests. For example, there may have been fewer opportunities to display certain problems in the school setting in comparison with the home setting. This may have been the case for the initiation

subscale in that there may have been less opportunity in the school setting for the teacher to observe the child talking repetitively about topics that are of little interest to conversational partners.

It is also possible that the experience of the raters played an important role. Most parents can recognize problematic speech sound production. In fact, these problems may over-shadow concerns with other aspects of language. They may be less aware of difficulties in other areas, whereas teachers may be particularly focused on other aspects of language performance. In that teachers often directly work on grammar and vocabulary skills, one might expect them to be particularly focused on these abilities. Additionally, teachers may be more aware of the language knowledge expected for the grade level, while parents may be expecting more mature forms. Parents scores on pragmatic subscales such as nonverbal communication may be explained by the child-parent relationship. Parents become accustomed to the way their child communicates. They may not need nonverbal cues to understand a child's intent, or they may underestimate the importance of their child's nonverbal communication with peers or outsiders. Teachers, on the other hand, see the impact of those nonverbal skills, or lack thereof, in the classroom and with peers. Whatever the reasons for the discrepancy, the lack of agreement underscores the complications and importance of complete social communication assessment.

Analysis of Parent-Teacher Agreement on Severity of Disorder

The second question posed concerns the degree of parent-teacher agreement on the severity of the disorder, which was determined by the child's scaled score, and where it fell in relation to the normalized mean. In the 10 subscales, parents and teachers agreed on whether a child was had a disorder or not 58% of the time. The subscales with the highest percent agreement were speech and social relations. Percent agreement on the speech subscale was not

surprising as it received the lowest mean scores from both parents and teachers and had among the highest weighted kappas of all the subscales. Speech sound errors are among the most noticeable speech and language problems, and do not vary with context, making percent agreement between parents and teachers logical. The high percent agreement for the social relations subscale is not as easy to explain. Weighted kappas showed slight agreement at .035. However, descriptive data show that the mean scores for parents (4.92) and teachers (5.0) in the social relations subscale were quite similar.

The social relations subscale of the CCC-2 was created specifically for autism screening and is not included in the GCC. Consequently, for the purposes of this study relative agreement on disorder in the social relations subscale should be expected, given that none of the children had autism. The subscale with the lowest percent agreement on disorder versus no disorder was context, which also received the lowest weighted kappa score. This finding may largely be explained by the different contexts in which parents and teachers see the child, and the fact that they are not seeing that child perform in other contexts. A parent of a child who communicates reasonably well at home will rate their child highly, unaware that the child has difficulty communicating appropriately within the context of the classroom (which would lead the teacher to give a low score). The same child, then, may be classified differently in terms of severity of disorder.

When disorder was further delineated into severity of disorder (no disorder, disorder, or severe disorder) percent agreement decreased, with total percent agreement at 34%, and only one subscale, scripted language, achieving at least 50% agreement. Agreement on the initiation subscale ranked lowest. The majority of disagreement on severity of disorder occurred when one rater's scores yielded "disorder," while the other's produced "severe disorder." However, 12.5%

of parent-teacher rating pairs had striking disagreement on severity of disorder, with one of the raters scores suggesting no disorder, and the other rater's score producing a score representative of a severe disorder. Again, the discrepancy likely has to do with the differences between a child's performance in a familiar and less formal home setting versus more rule-based and linguistically and socially demanding school setting. However, without looking at both teacher and parent scores, a child who struggles in one context and not another may be at risk for not getting the services they need.

While parents and teachers differed to varying degrees on severity of disorder on the individual subscales, parents and teachers were almost at total agreement on the composite score, the score most widely used for diagnosis. Agreement on the GCC was 92%, with just one parent-teacher rating pair disagreeing on severity of diagnosis. This finding suggests that while parents and teachers may disagree on the exact nature of the social communication impairment, they do agree that one exists. It also suggests that social communication strengths and weaknesses not only vary from child to child, but also vary from setting to setting within the same child.

Summary

In summary, agreement of parents and teachers scaled scores on the 10 subsections and the GCC of the CCC-2 showed low agreement, ranging from less than chance agreement to fair agreement. Both parents and teachers gave their lowest ratings in the subscales that deal with language processing. In general, parents gave higher ratings than teachers on the nonverbal communication subscale as well as other pragmatic subscales, while teachers gave slightly higher ratings than parents to the speech, syntax, and semantics subscales, all measures of language form. Those scaled scores were used to produce the GCC, a composite score that is

used often as an element in the diagnosis of a developmental language disorder. Percent agreement between parents and teachers on the severity of disorder, derived from the GCC, was at 92%. While parents and teachers differ in their ratings about the nature of the child's language, they showed remarkable agreement on the severity of overall language. To get a complete picture of what a child can and cannot do with language in various contexts, including the important contexts of home and school, assessors may consider getting CCC-2 feedback from both a parent and a teacher.

Limitations and Future Research

This study was limited by the size of the sample. With just 12 rating pairs, it is possible that different trends and patterns would emerge from a larger data set. Thus, given that the sample consisted of only 12 children of varying ages and levels of severity, the current study should be considered as a pilot. A larger data base, more carefully controlled for factors such as age, would allow for greater confidence in the results. It would also open up the possibility of additional analyses.

It would have also been helpful to determine if one of the two raters was more accurate, and, if so, which one. However, this type of analysis was not available for all of the participants because some were not evaluated in enough depth by the current investigator to establish a standard. It would be desirable in future research to perform a detailed analysis of participants to determine if parents or teachers were more accurate, using a larger sample. It may be possible that both parent and teacher ratings are accurate for the context in which the child is rated, and this would also be valuable information.

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APPENDIX A

Annotated Bibliography

Adams, C. (2002). Practitioner review: The assessment of language pragmatics. *Journal of Child Psychology and Psychiatry*, 43, 973–987.

Purpose: Adams reviews the types of language pragmatics assessments, and the advantages and disadvantages of each, then makes recommendations for use of current materials and suggestions for future assessment.

Summary: The primary motivation in pragmatic assessment should be to determine the underlying reason for the communication breakdown. Challenges in pragmatic assessment include limited norms for pragmatic development, the effect individual styles of communication have on performance, and the way pragmatic functions vary with context and audience. There are four categories of pragmatic assessments: tests; checklists; coding systems of naturalistic behaviors; and assessment of comprehension of pragmatic behaviors. Checklists are more comprehensive and popular with practitioners. The CCC, in particular has norms and is well-validated. It was the only pragmatics checklist reviewed with satisfactory estimates of internal consistency and inter-rater reliability.

Relevance to the current work: Adams highlights many of the challenges of pragmatic assessment, where some tools can be used, and where tools fall short. The CCC is considered with some suggestions for its use.

Adams, C. (2005). Social communication intervention for school-age children: Rationale and description. *Seminars in Speech and Language*, 26, 181–188.

Purpose: Adams describes a framework for social communication and a method for intervention for children who struggle with social communication.

Summary: Problems in social communication include limitations in the social, cognitive, and language skills necessary for interpersonal communication in varying contexts. Social communication is made up of a set of domains, and therefore should be used as a descriptive term for a set of communicative behaviors rather than as a single diagnosis. The four domains that make up social communication are: social interaction, social cognition, pragmatics, and language processing. Social interaction includes the recognition of other people as social beings who act with intention. The social cognitive domain involves managing information about people and the environment and understanding nonliteral and inferential language. Pragmatics is the way context influences the use of language forms, both verbal and nonverbal. Language processing involves understanding and producing grammatical, semantic, and phonological structures. Social communication intervention is centered on the specific language profile of the child and includes adaptation, flexibility, metapragmatic therapy and language processing therapies.

Relevance to current work: This paper outlines the social communication framework, which extends beyond pragmatics to social interaction, social cognition, and language processing.

Baron-Cohen, S. (1988). Social and pragmatic deficits in autism: Cognitive or affective? *Journal of Autism and Developmental Disorders*, 18, 379–402. doi:10.1515.9783110854190

Purpose: Baron-Cohen reviews the literature on social and pragmatic deficits in autism and examines the affective and cognitive theories of autism.

Summary: Children with autism have a number of social communication deficits, varying from child to child. These social deficits change with development, but the deficits, nevertheless, persist. Children with autism differ from typically developing peers in eye gaze, facial recognition, emotion recognition, theory of mind tasks, adherence to conversational rules, range or speech acts, and perseveration. Baron-Cohen posits that autism affects specific—but not all—social skills, and almost all pragmatic skills. The affective theory of autism states that individuals with autism are unable to emotionally interact with others. The cognitive theory rests on the inability of an individual with autism to understand others' mental states, which is difficult because mental states cannot be observed. Rather, they have to be inferred, which requires complex cognitive structures that are impaired in the individual with autism.

Relevance to the current work: Social communication deficits among those with autism include joint attention, lack of communicative gestures, using language non-communicatively, lack of eye contact, treating people as inanimate objects, behavior that is inconsistent with cultural norms, and lack of theory of mind.

Bignell, S. J., & Cain, K. (2007). Pragmatic aspects of communication and language comprehension in groups of children differentiated by teacher ratings of inattention and hyperactivity. *British Journal of Developmental Psychology*, 25, 499–512. doi:10.1348/026151006X171343

Purpose: Bignell and Cain analyze how hyperactivity/impulsivity and poor attention are related, separately, to social communication skills. Study 1 investigated the relation between attention or hyperactivity and the interpretation of figurative language. Study 2 looked at pragmatic aspects of communication.

Method: Children from five mainstream suburban schools participated in study 1. Three experimental groups were formed: poor attention, high hyperactivity, and poor attention and high hyperactivity. Each experimental group had a corresponding control group matched for age, vocabulary, non-verbal reasoning and sex. All children completed an assessment of comprehension of figurative speech. In study 2, the parents of the children who participated in study 1 and an additional cohort of children completed the CCC-2, and the composite scores were calculated.

Results: In comparison to the control groups in study 1, all experimental groups were significantly less likely to choose figurative interpretations. Performance among the experimental groups did not differ. The experimental group also scored lower than controls on

knowledge of multiple meanings of words out of context. In study 2, the high hyperactivity group did not differ from controls on any of the composite scores. However, the poor attention group obtained significantly lower composite scores, and the poor attention and high hyperactivity group scored lower, but not at significant levels.

Conclusion: All experiment groups scored lower than control groups on figurative language skills, and the children with poor attention profiles showed significantly lower pragmatic skills.

Relevance to the current work: Children with ADHD represent a large population with a high incidence of pragmatic difficulties.

Bishop, D. V. M. (1989). Autism, Asperger's syndrome and semantic-pragmatic disorder: Where are the boundaries? *International Journal of Language & Communication Disorders*, 24, 107–121.

Purpose: Bishop examines the diagnostic labels surrounding autism and pragmatic impairment, and where they overlap.

Summary: With many available diagnostic labels that include social communication deficits, some delineation is needed. Asperger's, autism and semantic-pragmatic disorder all include social communication problems. Asperger's and autism appear to be diagnoses on a continuum. Semantic-pragmatic disorder, however, has been proposed as both an element of autism and Asperger's, or, as Bishop proposes, a diagnosis for social communication deficits in the absence of autism.

Relevance to the current work: This paper outlines some of the pragmatic difficulties of children with autism, a large population of children with pragmatic challenges.

Bishop, D. V. M. (1998). Development of the Children's Communication Checklist (CCC): A method for assessing qualitative aspects of communicative impairment in children. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 39, 879–891. doi:10.1017/S0021963098002832

Purpose: In this study Bishop develops and evaluates a rating checklist to assess pragmatic behavior and determine whether checklist data validates a distinct semantic-pragmatic disorder among the population with language impairment.

Method: Teachers of 59 children receiving services for specific language impairment (SLI) provided diagnostic information and completed a 3-point rating scale covering nine subscales: speech, syntax, inappropriate initiation, coherence, stereotyped conversation, use of context, rapport, social relationships, and interests. The children were divided into three groups based on diagnostic information: semantic-pragmatics pure (SP pure), semantic-pragmatic plus (SP plus) and SLI. Internal consistency and inter-rater reliability were calculated for each subscale, and unsatisfactory subscales were eliminated, with the items reassigned.

Results: The only scale on which the three groups of children did not differ was syntax. On the speech scale children with SLI were significantly impaired relative to the SP pure group. On all other scales the SP plus group received the lowest scores, the SP pure group received intermediate scores, and the SLI group received the highest scores. A composite score that represented pragmatic aspects of speech was calculated by summing the scores from the following subscales: inappropriate initiation, coherence, stereotyped conversation, use of context and rapport. The diagnostic cutoff was established at 132.

Conclusion: Social communication behaviors can reliably be rated by teachers and speech language pathologists, which can help identify the children with language impairment who struggle in the pragmatic domain.

Relevance to the current work: This study provides background and initial testing data on the development of the CCC and its ability to identify social communication difficulties. This version of the CCC used school personnel as the rater.

Bishop, D. V. M., & Baird, G. (2001). Parent and teacher report of pragmatic aspects of communication: Use of the Children's Communication Checklist in a clinical setting. *Developmental Medicine and Child Neurology*, 43, 809–818.

Purpose: Bishop and Baird examine whether the CCC remains valid if completed by parents rather than school personnel. This study also broadens the ages and diagnoses over the original Bishop study (Bishop, 1998).

Method: This study involved 151 children between the ages of 6 and 16, subdivided into 7 diagnostic groups as well as a control group of 31 typically developing children. Parents and teachers of all children completed the CCC. Descriptive statistics, internal consistency and interrater reliability were calculated.

Results: Interrater reliability between parents and teachers was significant, but not as significant as previously calculated interrater reliability between two school professionals. The overall pattern of ratings did not differ between parents and professionals, with parent ratings more closely linked to the child's diagnosis.

Conclusion: It is feasible to gather both parental and professional ratings. Combining parent and teacher scores may be the best way forward. Internal consistency was reasonable and interrater reliability between parent and teacher was significant, though not particularly high.

Relevance to the current work: This study is the first to introduce parent raters and provide some comparison as a means to determine if the CCC can reliably be used with a parent rater.

Bishop, D. V. M., Chan, J., Adams, C., Hartley, J., & Weir, F. (2000). Conversational responsiveness in specific language impairment: Evidence of disproportionate pragmatic difficulties in a subset of children. *Development and Psychopathology*, 12, 177–199.

Purpose: The authors present a method for quantifying pragmatic skills in conversation and use this method to look at the extent to which pragmatic difficulties in children with specific language impairment (SLI) can be accounted for by structural language deficits. In looking at pragmatics difficulties, the authors specifically looked at responsiveness, the use of nonverbal responses, and the quality of the child's responses.

Method: The experimental group consisted of 18 children with SLI, nine of which were rated by a teacher to have pragmatic difficulties, the other nine presented with typical SLI. This group was compared to two control groups: nine children matched on age and nonverbal ability, and nine younger children matched on language level. All children participated in conversational sampling, in which their responses to adult solicitations were coded and compared.

Results: Children in the pragmatic difficulties group were more likely than control children to not respond to the solicitations and to make little use of nonverbal responses. Children who used no nonverbal responses had higher levels of pragmatically inappropriate responses.

Conclusion: There is a subset of the population with SLI whose problems go beyond traditional areas of morphosyntax and semantics. These children show significant difficulties in pragmatic domains.

Relevance to the current work: The population with SLI is another group of children who may have pragmatic difficulties. Not all children with SLI struggle pragmatically, however, and adequate assessment is necessary to identify those that do.

Calderon, R., & Greenberg, M. (2003). Social and emotional development of deaf children. In M. Marschark & P. E. Spencer (Eds.), *Oxford handbook of deaf studies, language, and education* (pp. 177–189). New York, NY: Oxford University Press.

Purpose: The purpose of this chapter is to outline the social and emotional challenges specific to deaf children and present guidelines for addressing social and emotional learning in the deaf population.

Summary: Deaf children are often language delayed, have greater impulsivity than non-deaf peers, and have a weak vocabulary for emotions. Cultural knowledge and norms—key to pragmatic skills—are typically learned through incidental learning. However, for deaf children, particularly when not raised within the deaf community, opportunities for incidental learning are limited. Curriculum-based social competence interventions have shown promise in teaching deaf children social communication skills. Family support services have also been shown to be effective in carrying social and emotional learning interventions into the home setting.

Relevance to the current work: Deaf children may struggle with the social communication skills that the CCC-2 helps identify.

Comblain, A., & Elbouz, M. (2002). The fragile-X syndrome: What about the deficit in the pragmatic component of language? *Journal of Cognitive Education and Psychology*, 2, 244–265. doi:10.1891/194589502787383227

Purpose: Comblain and Elbouz describe and evaluate the abilities of children with fragile X syndrome (FXS) to use and understand referential communication with three different communication partners.

Method: Four boys with FXS were matched with four children with an intellectual disability of similar chronological and lexical age, and four typically developing children with similar lexical age. Each child with FXS participated in four situations: (a) the child with FXS attempts to describe objects or pictures to a child with an intellectual disability; (b) the child with FXS attempts to identify objects and pictures described by a typically developing peer; (c) the child with FXS is the listener and an adult is giving a complete and accurate description; (d) the child with FXS is the listener, and an adult is giving an incomplete message.

Results: Group differences were sizeable, but did not reach significance, likely because of the small number of subjects. As speakers the experimental group provided far fewer spontaneous sufficient messages, and far more insufficient, non-informative, or incorrect messages than typically developing peers. As listeners, the children with FXS were able to decode the complete adult message 80% of the time, while typically developing peers succeeded in all tasks. When adults gave incomplete messages, the FXS group failed at nearly all the tasks, while their typically developing peers succeeded 85-100% of the time. When typically developing peers gave the description, the FXS group succeeded, on average, 50% of the time.

Conclusion: Children with FXS have difficulty with referential communication tasks in comparison to typically developing peers.

Relevance to the current work: Children with FXS are another population with pragmatic difficulties.

Craig, H., & Evans, J. L. (1993). Pragmatics and SLI: Within group variations in discourse behavior. *Journal of Speech and Hearing Research*, 36, 777–789.
doi:10.1044/jshr.3604.777

Purpose: Craig and Evans investigate verbal and nonverbal turn exchange among children with expressive and expressive-receptive specific language impairment (SLI).

Method: Participants consisted of 10 children with SLI and 10 typically developing children. The group with SLI was further divided into five children with expressive problems but intact receptive language, and five children with expressive and receptive problems. Adult-child language samples were collected from all children, then coded for turn-taking and cohesive behaviors.

Results: There was no group differences for utterance frequencies, or non-simultaneous turns. The expressive and receptive group with SLI produced significantly fewer simultaneous turns. There were not significant differences among cohesive tokens.

Conclusion: Though differences did not reach statistical significance, findings were consistent with previous research observations, primarily that children with poor receptive skills performed

differently than typically developing peers and peers with SLI in access activities and in interrupting turns.

Relevance to the current work: Access and interruptions are two pragmatic areas where it appears that children with receptive language impairments have difficulties, emphasizing the importance of providing distinctions about pragmatic abilities for the SLI population.

Fujiki, M., & Brinton, B. (2017). Pragmatics and social communication in child language disorders. In R. G. Schwartz (Ed.), *Handbook of child language disorders* (2nd ed., pp. 441–460). New York, NY: Psychology Press.

Purpose: Fujiki and Brinton explore the types of problems children with pragmatic language impairments experience within the broader framework of social communication as well as assessment and treatment of pragmatic difficulties in children with language impairment.

Summary: Social communication includes social interaction, social cognition, pragmatics and language processing. Social interaction are early developmental skills that involve intersubjectivity and theory of mind, which in turn leads to intentional communication. Language processing involves the production and comprehension of the form and content of language, which is a vital backbone to any social communication. Social cognition includes the skills that allow for understanding and processing of cues and planning of appropriate responses. Pragmatics, in the social communication framework, is the ability to manipulate language forms to communicate appropriately in different contexts, and takes into account turn-taking, topic manipulation, and nonverbal communication. One key social cognition skill is theory of mind. Each of these four areas are intermixed and depend upon each other. Fujiki and Brinton review the social communication profiles of children with ASD, DLD, and SPCD, all of which include varying deficits in social communication skills.

Relevance to the current work: This article outlines a framework that takes into account not only traditional pragmatic skills, but other cognitive and processing abilities that provide a foundation for adequate pragmatic abilities. It also outlines social communication problems within specific clinical populations.

Geurts, H. M., Verte, S., Oosterlann, J., Roeyers, H., Hartman, C. A., Mulder, . . Sargeant, J. A. (2004). Can the Children’s Communication Checklist differentiate between children with autism, children with ADHD, and normal controls? *Journal of Child Psychology and Psychiatry*, 45, 1437–53. doi:10.1111/j.1469-7610.2004.00326.x

Purpose: This study seeks to determine if children with high-functioning autism (HFA), children with ADHD, and normal controls can be reliably differentiated using the CCC, and the role of age in pragmatic use among populations with HFA and ADHD.

Method: Two separate studies looked at three groups of children: typically developing children, children with high functioning autism, and children with ADHD. Parents and teachers of each child completed a CCC, and researchers analyzed the results to find the nature of group effects,

as well as the discriminative value of the CCC separately and with additive parent-teacher scores.

Results: Researchers saw more difficulties with speech output and syntax in the HFA group compared to the ADHD or control groups. The control group scored higher than clinical groups in inappropriate initiations, but the clinical groups could not be differentiated. The pragmatic subgroups of the CCC followed the expected pattern with the control group scoring highest, followed by the ADHD group and then the HFA group. ANOVA analysis showed a significant group effect with average lowest score for the HFA group, highest score for the control group, and the ADHD in between. The parent and teacher ratings both differentiated between groups, but combining the parent and teacher reports slightly increased percentage of correctly classified children.

Conclusion: The CCC can reasonably distinguish between children without impairments, children with ADHD, and children with HFA. This differentiation could be made with the teacher or parent questionnaire alone, but accuracy was slightly higher when the scores were combined.

Relevance to the current work: This study serves to validate the diagnostic power of the CCC for the ADHD and HFA population. It also probes some benefits of combining a parent and teacher CCC score.

Goberis, D., Beams, D., Dalpes, M., Abrisch, A., Baca, R., & Yoshinaga-Itano, C. (2012). The missing link in language development of deaf and hard of hearing children: Pragmatic language development. *Seminars in Speech and Language, 33*, 297–309.
doi:<http://dx.doi.org/10.1055/s-0032-1326916>

Purpose: This study compares pragmatic skills for children who are deaf or hard of hearing (DHH) with typically developing peers.

Method: There were two groups of children: typically developing children, and children who are DHH. Children in both groups were ages 2–7 years and had cognitive ages equivalent to chronological ages. Parents completed the Pragmatics Checklist in its entirety. Data were analyzed according to age group.

Results: Typically developing children mastered 100% of all items using complex language by 6 years of age. In contrast, children who are DHH mastered 6.6% of the items with complex language by age 6 and had mastered 69% by age 78. The more severe the hearing loss, the greater the lag behind typically developing peers

Conclusion: Children who are DHH acquire pragmatic skills at a slower rate than typically developing children, which can lead to difficulties with reading, written communication, abstract conversational skills.

Relevance to the current work: The DHH community is another population at risk for pragmatic deficits.

Hartman, C. A., Luteijn, E., Serra, M., & Minderaa, R. (2006). Refinement of the Children's Social Behavior Questionnaire (CSBQ): An instrument that describes the diverse problems seen in milder forms of PDD. *Journal of Autism and Developmental Disorders*, 36, 325–424. doi:10.1007/s10803-005-0072-z

Purpose: The authors previously developed the Children's Social Behavior Questionnaire (CSBQ). In this study, the same authors refine the CSBQ to reduce its length while maintaining psychometric properties.

Method: The sample included three subgroups of children: typically developing children; children with emotional, behavioral and developmental problems, including many with Pervasive Developmental Disorder (PDD) Not Otherwise Specified (NOS); and children with intellectual disabilities, with or without PDD. A parent of each child completed the CSBQ and the Child Behavior Checklist. Psychiatrists diagnosed each child according to DSM-IV classifications after an extensive battery of formal and informal measures. The resulting diagnostic groups were: high functioning autism, PDDNOS, ADHD, combined ADHD and PDDNOS, internalizing disorders, and other psychiatric problems.

Results: CSBQ items were culled to include only those items most characteristic of PDD. Factor analysis was conducted, and items were again selected that enhanced the replicability of the test. Internal, inter-rater, and test-retest reliability were studied with internal consistency at .94, inter-rater reliability at .86, and test-retest at .90. Comparison of the groups and CSBQ scores was conducted with no significant differences found.

Conclusion: A streamlined and refined CSBQ was found to maintain good psychometric properties.

Relevance to the current work: The CSBQ is a parent-completed behavior rating scale, with good psychometric properties, bolstering the use of behavior rating scales for diagnostic purposes.

Helland, W. A., Biringer, E., Helland, T., & Heimann, M. (2009). The usability of a Norwegian adaptation of the Children's Communication Checklist Second Edition (CCC-2) in differentiating between language impaired and non-language impaired 6- to 12-year-olds. *Scandinavian Journal of Psychology*, 50, 287–292. doi:10.1111/j.1467-9450.2009.00718.x

Purpose: This study investigates whether a Norwegian version of the CCC-2 differentiates between children with language impairment and those without.

Method: Parents of two groups of school-aged children, one with a diagnosis of language impairment, and one composed of typically developing peers completed a Norwegian adaptation of the CCC-2. Group differences were examined, as was concurrent validity, and internal consistency.

Results: Results indicated a significant difference between the groups with language-impairment and typically developing language. Sensitivity and specificity at or below 54 on the GCC (the recommended cutoff for the UK norms) was 70% and 98%, respectively. Raising the cutoff to

64 increased sensitivity to 80%, with specificity at 91%. Internal consistency was also very good.

Conclusion: With a strong ability to differentiate between children with language impairment and their and non-impaired peers, the Norwegian version of the CCC-2 shows to be a good screening and assessment tool.

Relevance to current study: This study recommends the CCC-2 as a screening tool and demonstrates the measures reliability and validity.

Holck, P., Nettelbladt, U., & Sandberg, A. D. (2009). Children with cerebral palsy, spina bifida and pragmatic language impairment: Differences and similarities in pragmatic ability. *Research in Developmental Disabilities, 30*, 942–951. doi:10.1016/j.ridd.2009.01.008

Purpose: The purpose of this study was to compare pragmatic abilities between three groups of children: children with cerebral palsy, children with spina bifida and hydrocephalus, and children with pragmatic language impairment.

Method: Participants included three clinical groups of children: those with cerebral palsy, those with spina bifida and hydrocephalus, and those with pragmatic language impairment. Children completed pragmatic assessments in inferential and literal comprehension, and story recall. Their parents and teachers complete CCCs. In addition, language comprehension, language production, and cognitive abilities were tested.

Results: Children with pragmatic language impairment performed worse than the other two clinical groups on the pragmatic-specific testing. There were significant group differences in short-term memory and inferencing ability. The researchers found different patterns of variance in the groups for pragmatic abilities.

Conclusion: The differences in pattern variance indicate that differences in underlying abilities affect pragmatic skills in different ways. Children with cerebral palsy and children with spina bifida and hydrocephalus had pragmatically similar profiles.

Relevance to the current work: Pragmatic abilities in these three populations are affected, making spina bifida and cerebral palsy additional populations with potential pragmatic impairments.

Johnson, A. R., Johnston, E. B., & Weinrich, B. D. (1984). Assessing pragmatic skills in children's language. *Language, Speech, and Hearing Services in Schools, 15*, 2–9. doi:10.1044/0161-1461.1501.02

Purpose: There are few pragmatic assessment tools, and pragmatic skills are difficult to capture through standardized tests. The authors advocate for the use of a language sample to assess the pragmatic skills of children.

Summary: Analysis of numerous language samples over the authors' careers has shown that the most common pragmatic problems for children include problems with topicalization, problems with conversation, problems with register, and problems with syntactic form as it relates to pragmatics (such as the use of redundant information, or inability to form questions or use pronouns cohesively). A language sample can capture this type of information if appropriately planned and structured. Key factors to consider when gathering a language sample for use in pragmatic analysis include: ensuring that the sample is a dialogue, is of a size that is representative of the child's linguistic skills, uses a variety of settings, and includes different speakers with which the child interacts. Analysis of the language sample should include pragmatic, semantic, and syntactic analysis and comments.

Relevance to the current work: Because pragmatic skills involve real life interaction which are hard to replicate in a formal assessment, other methods of gathering information that reflects a wide range of speakers and contexts need to be used.

Kaczmarek, L. (2002). Assessment of social-communicative competence: An interdisciplinary model. In H. Goldstein, L. Kaczmarek, & K. English, (Eds.). *Promoting social communication: Children with developmental disabilities from birth to adolescence* (pp. 55–115). Baltimore, MD: Brookes.

Purpose: The purpose of this chapter is to outline a framework for assessing social and communicative competence with accompanying procedures and considerations for collecting and analyzing the data.

Summary: Kaczmarek's assessment framework involves looking at three social communication competencies—social appropriateness, communicative appropriateness, and social-communicative effectiveness—at three different levels: skill level, which consists of isolated static behaviors that represent communicative functions, such as a speech act; task level, which integrate and sequence the skills; and overall performance, which looks at global measures, such as peer acceptance and friendship. The best assessment of social communication behaviors is natural observation in the important contexts of the child's life at home, at school, and in the community. This is difficult to achieve because of the many factors that affect the observation, such as the presence of observers or cameras, a contrived situation, age and developmental level, and the fact that peer interactions occur increasingly in private after preschool age. Analogue situations and role play are also ways to observe social communication behavior, though behaviors in those situations may not necessarily reflect actual behavior in real situations. In coding appropriateness of behavior, consider the characteristics of partner, the physical environment, and the culture, which all affect whether the behavior is appropriate or not.

Relevance to the current work: The proposed framework is complex yet comprehensive in considering all aspects of social communication. The author mentions the use of rating scales by both teachers and parents to get at some of the behaviors that are difficult to observe in a natural setting.

Klusek, J., Martin, G. E., & Losh, M. (2014). A comparison of pragmatic language in boys with autism and fragile X syndrome. *Journal of Speech, Language and Hearing Research, 57*, 1692–1707. doi:10.1044/2014_JSLHR-L-13-0064

Purpose: Klusek, Martin and Losh compare the pragmatic language profiles of children with ASD and children with fragile X syndrome (FXS).

Method: This study compared four clinical groups and one typically developing control group. The four clinical groups were: boys with ASD, boys with FXS and ASD, boys with FXS, and boys with Down syndrome. The test battery consisted of standardized and informal measures and included an autism diagnostic test, a cognitive exam, a receptive and expressive language test, a standardized assessment of pragmatic language, and a less formal pragmatic assessment, consisting of a rating scale completed after a semi-structured interaction. Group comparisons were then conducted on the data.

Results: Both groups of boys with ASD showed similar severity of pragmatic impairment. Comorbid ASD increased the severity of pragmatic deficits for boys with FXS.

Conclusion: While children with FXS experience pragmatic deficits, comorbid ASD significantly impacts the pragmatic abilities of children with FXS, and the severity of the ASD appears to be correlated with the severity of pragmatic deficits.

Relevance to the current work: Pragmatic difficulties are seen in children with fragile X syndrome, especially when combined with ASD, which is a common comorbid condition.

Korrel, H., Mueller, K. L., Silk, T., Anderson, V., & Sciberras, E. (2017). Research review: Language problems in children with attention-deficit hyperactivity disorder—a systematic meta-analytic review. *Journal of Child Psychology and Psychiatry, 58*, 640–654. doi:10.1111/jcpp.12688

Purpose: This study reviews published literature to determine what type of language problems children with ADHD experience, in comparison to typically developing peers.

Method: Published literature that (a) compared child participants with a confirmed ADHD status to non-ADHD controls and (b) used validated language measures were included in this meta-analysis. A variety of statistical measures were computed to compare language characteristics for the two groups.

Results: There were significant differences between children with ADHD and typically developing peers, with significant deficits in the group with ADHD for expressive language, receptive language, and pragmatic language.

Conclusion: Numerous published studies show that children with ADHD lag behind their typically developing peers in expressive, receptive and pragmatic language skills. As a result, language screening should be a part of the assessment process for children the ADHD.

Relevance to the current work: The ADHD population has been shown to have trouble with pragmatic impairment.

Laws, G., & Bishop, D. V. M. (2004). Pragmatic language impairment and social deficits in Williams syndrome: A comparison with Down's syndrome and specific language impairment. *International Journal of Language & Communication Disorders, 39*, 45-64. doi:10.1080/13682820310001615797

Purpose: This study compares the pragmatic language abilities, social relationships, and unusual interests of children and adults with Williams syndrome, children and adults with Down syndrome, children with specific language impairment (SLI), and typically developing children. The authors specifically wanted to look at the social communication profiles of individuals with Williams syndrome.

Method: Four groups were compared: children and adults with Williams syndrome, adults and children with Down syndrome, children with SLI, and typically developing children. A parent or teacher of each of the children completed a CCC, and ratings were compared.

Results: All three clinical groups scored significantly lower than the control group on the pragmatic elements of the CCC, with the children with Williams syndrome having the lower mean score on the pragmatic subscales. Children with Williams syndrome also scored lowest on the social relationship subscale. These children also showed differences from controls in the interests subscale. Specifically, they knew a lot of facts, had one or more dominant interest(s), made more use of unusual words, and were less interested in TV than typically developing peers.

Conclusion: Children with Williams syndrome exhibit marked deficits in pragmatic abilities and social relationships, compared to other clinical groups and typically developing peers, and showed a different pattern of interests compared to typically developing peers.

Relevance to the current work: Children with Williams syndrome have a unique language profile, which includes deficits in pragmatics and social relationships.

Levy, Y., Tennebaum, A., & Orney, A. (2000). Spontaneous language in children with specific neurological syndromes. *Journal of Speech Language and Hearing Research, 43*, 351–365.

Purpose: Levy, Tennebaum, and Orney examine whether language development in children with neurological syndromes follows the same developmental sequence as typically developing children, analyzing 13 language variables.

Method: Eight children with various neurological syndromes and eight typically developing children, matched for sex, socioeconomic status, and language measures, participated in this study. Over the course of the study an experimenter met with each child in their home 2–3 times with no more than a two-week interval between sessions. During each session the investigator interacted with the child, focusing on activities that would engage the child in joint attention and encourage conversation. Language samples were recorded, transcribed and coded. Coding reflected correct usage and errors in morphology, syntax, semantics, and pragmatics. Errors were coded as syntactic, morphologic, or meaning-based. The meaning-based errors were further divided into lexical, semantic, or pragmatic.

Results: There were no differences between the clinical group and the control group on 10 grammatical errors. The groups differed in pragmatic errors, word choice errors, and gender marking of animate nouns.

Conclusion: At a basic level, children with neurological syndromes seem to follow the same developmental sequence as typically developing children. Indeed, there were few significant grammatical differences between those with syndromes and language matched, typically developing children. However, in terms of pragmatic development, children with neurological syndromes appear to fall behind normally developing children.

Relevance to the current work: While children with neurological syndromes have relatively normal syntactic development, they have pragmatic impairments in comparison to typically developing children.

Massa, J., Gomes, H., Tartter, V., Wolfson, V., & Halperin, J. M. (2008). Concordance rates between parent and teacher clinical evaluation of language fundamentals observational rating scale. *International Journal of Language & Communication Disorders, 43*, 99-110. doi:10.1080/13682820701261827

Purpose: This study looks at the correlation rates between parent and teacher scores on the ORS section of the CELF-4, and the degree to which the parent and teacher scores relate to the relevant subsections of the CELF-3, CELF-4, and a standardized reading test.

Method: This study included 73 children total, made up of typically developing children and children with language and/or behavioral issues. Half the children completed the CELF-3, the other half completed the CELF-4. In addition, children completed a non-verbal IQ test and the Wechsler Individual Achievement Test. Parents completed the CELF ORS parent form, while the teachers completed the CELF ORS teacher form.

Results: Teachers reported slightly higher levels of language and communication difficulties on the ORS than parents, though not at significant levels. Internal consistency scores were excellent for overall parent and teacher ratings. There were significant positive correlations between parents and teachers for the speaking, reading, and writing sections of the ORS, though not for the listening section. ORS scores were significantly correlated with corresponding test scores.

Conclusion: The differences seen between parent and teacher scores is likely due to seeing children in different contexts, different value on observed behaviors. Parents and teachers can provide useful and distinct information.

Relevance to the current work: Parents and teachers see different things. There is value in looking at both parent and teacher scores.

Merrell, K. W. (1999). *Behavior, social, and emotional assessments of children and adolescents*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Purpose: This chapter discusses the theory, technical aspect, advantages, disadvantages and best practices of behavior rating scales.

Summary:

Rating scales provide a standardized format for summary judgments about a child's specific behavioral characteristics. They provide indirect behavioral judgements because they rely on impressions rather than direct observations, but provide more detail than checklists because they report both the presence and degree of the behavior. Rating scales are less expensive and time consuming than direct observation, can capture important low-frequency behaviors, and capitalize on observations over a period of time in a natural environment. However, they do not provide actual observational data, and can be subject to halo effects, leniency and severity effects, central tendency effects, and error variance.

Relevance to the current work: This chapter reports on the nature of rating scales, along with their advantages and disadvantages.

Norbury, C. F., Nash, M., Baird, G., & Bishop, D. V. M. (2004). Using a parental checklist to identify diagnostic groups in children with communication impairment: A validation of the Children's Communication Checklist-2. *International Journal of Language and Communication Disorders*, 39, 345–364. doi:10.1080/13682820410001654883

Purpose: This purpose of these two studies was to validate the diagnostic validity of the CCC-2 within a diverse population of children in both educational and clinical settings.

Method: The first study used the CCC-2 standardization sample as the control group and 86 children with communication impairments as the clinical group. Children in the clinical sample were further divided into specific language impairment (SLI), pragmatic language impairment (PLI), and autism spectrum disorder (ASD) groups. The group with PLI was subdivided into children with and without autism features; and the group with ASD was subdivided into high-functioning autism (HFA) and Asperger disorder (ASP). Children were tested on nonverbal and language ability, and teachers and parents completed a CCC-2. In study two children receiving speech and language services with diagnoses of SLI, pervasive developmental disorder not otherwise specified (PDDNOS), HFA, and ASP served as the participants. Parents of these participants completed a CCC-2.

Results: The General Communication Composite (GCC) score clearly distinguished between children with language impairment, and those without. A pragmatic composite did not differentiate between children with primary SLI and those with pragmatic problems. Almost all children with SLI, PDDNOS, and HFA scored low on the GCC, while less than 50% of the children with ASP scored below 10%.

Conclusion: The CCC-2 is a valid tool for differentiating between children with and without communication impairments. The pragmatic composite did not reliably differentiate between children with pragmatic language problems and those without.

Relevance to the current work: This study establishes the validity of the CCC-2 and gives some evidence on which the discontinuance of the pragmatic composite was based.

O'Neill, D. (2007). The Language Use Inventory for Young Children: A parent-report measure of pragmatic language development for 18- to 46-month old children. *Journal of Speech, Language, and Hearing Research*, 50, 214–228.

Purpose: O'Neill developed the Language Use Inventory (LUI), a parent-report measure for pragmatic language development. In this study the author seeks to establish internal reliability and the ability of the measure to appropriately discriminate between pragmatically impaired and typically developing young children.

Method: Parents of 175 children completed the LUI, and then completed it again within four weeks to obtain test-retest reliability. For discriminative ability, a clinical group and control group were used. The clinical group consisted of 49 parents who had requested language assessment for their children. The control group contained 49 parents of age- and sex-matched typically developing children. All parents completed the LUI.

Results: Alpha values indicated strong internal consistency and reliability. Test-retest reliability was significant, though there was significant improvement in children's scores within the four-week retest window. The LUI showed discriminative ability, with sensitivity at 95.9% and specificity at 87.8%.

Conclusion: The LUI is able to effectively discriminate between typically developing children and those with a language delay, with good reliability and validity.

Relevance to the current work: The LUI is a parent-report of pragmatic abilities that has been shown to have strong reliability, validity and, discriminative value.

O'Neill, D. K. (2014). Assessing pragmatic language functioning in young children. In D. Matthews (Ed.), *Pragmatic development in first language acquisition* (pp. 363–386). Amsterdam, Netherlands: John Benjamins.

Purpose: The purpose of the chapter is to emphasize the need for pragmatic assessment because of the prevalence of pragmatic difficulties among certain populations, as well as the negative outcomes of pragmatic impairment. O'Neill also outlines the challenges unique to pragmatic assessment.

Summary: Research has demonstrated pragmatic difficulties among varied clinical groups and negative long-term outcomes of pragmatic language impairment. Emphasis in the field of pragmatics has moved away from a rule-based approach to usage-based approaches, with an increased focus on TOM, which changes the assessment dynamics. Within the school environment, school readiness and social-emotional competence is stressed, and the WHO International Classification on Functioning, Disability and Health highlights the social aspect of impairment, both of which underscore the need to identify those with pragmatic impairments reliably and early. However, there are myriad challenges to pragmatic assessment, included

differing definitions of pragmatics, what domains it covers, and approaches to pragmatics. There is also limited ecological validity to structured tests of pragmatics, because structure provides a limited picture of what the child does in real settings. On the other hand, naturalistic observations aren't normed. Parent reports are answers to concerns about ecological validity. Research has demonstrated that they are accurate, valid, and reliable. Parents see their child in a wide variety of settings, which is difficult to reproduce in structured clinical setting. Another difficulty with assessment is the use of "appropriate" as an outcome measure, because of the subjective nature of the judgment.

Relevance to the current work: This chapter explores many of the areas of pragmatic assessment challenges.

Roth, F. P., & Spekman, N. J. (1984a) Assessing the pragmatic abilities of children: Part 1. Organizational framework and assessment parameters. *Journal of Speech and Hearing Disorders*, 49, 2–11. doi:10.1044/jshd.4901.02

Purpose: Roth and Spekman describe an organizational framework with which to analyze pragmatic skills, specifically the effectiveness of the child as a communicator. They recommend appropriate interventions.

Summary: The framework includes three assessment parameters: communicative intention, presupposition, and organization of discourse. An analysis of communicative intentions requires looking at both the range of intentions that the child understands and expresses, as well as the form of the intentions, including gestures, paralinguistic, and linguistic forms. Assessing presupposition requires an analysis of the child's ability to take the point of view of their communicative partner, specifically looking at how informative the child's message is and the ability to make appropriate changes depending on variables in the social context. The analysis of social organization of discourse involves looking at the child's ability to function in and contribute to an ongoing conversation.

Relevance to the current work: This article illustrates the various areas that need to be explored to assess pragmatic abilities.

Roth, F. P., & Spekman, N. J. (1984b) Assessing the pragmatic abilities of children: Part 2. Guidelines, considerations, and specific evaluation procedures. *Journal of Speech and Hearing Disorders*, 49, 12–17. doi:10.1044/jshd.4901.12

Purpose: Roth and Spekman focus on general guidelines and considerations in the assessment of pragmatic abilities, including problem areas of assessment.

Summary: Planning for context, sampling, preservation of data, and data coding are important to ensure a representative assessment. Pragmatic abilities require competence in multiple settings and with multiple communication partners. Topics and group size should also be varied. The goal of data collection is to get a sample that is representative of the child's abilities. In naturalistic sample collection, however, the sample is limited to what the child produces. Thus, failure to produce a behavior doesn't necessarily mean that the behavior is not in the child's

repertoire. Some more structured tasks may be necessary to determine the child's skills. Because so many different complex behaviors need to be analyzed in this form of data collection, it is best to videotape the sample, though that can be expensive and time consuming to analyze. One of the biggest problems in data coding is interpretation of intent.

Relevance to the current work: This article presents ways to elicit and measure responses, the complexity and difficulties in analyzing and assessing pragmatic behaviors, as well as pitfalls that are frequently run into along the way.

Russell, R. L., & Grizzle, K. L. (2008). Assessing child and adolescent pragmatic language competencies: Toward evidence-based assessments. *Clinical Child and Family Psychology Review, 1–2*, 59–73. doi:10.1007/s10567-008-0032-1

Purpose: The purpose of this study is to analyze tests, subtests, and questionnaire/checklists that assess pragmatic language competencies (PLCs), to determine, (a) if PLC domains targeted by these assessments can be reliably identified, (b) what core PLC domains are most commonly assessed by checklists and questionnaires, (c) the relationship between the salience of PLC domains in tests/tasks versus questionnaires and checklists, and (d) the content, structural diagnostic and ecological validity of the PLC assessments.

Method: The authors identified 24 assessment protocols that targeted PLCs. Combining all assessment instruments, there were a total of 1,082 items. PLC domains for coding were pulled from theoretical and research literature, with 17 domains identified and defined. Domain salience was determined by two indices: how many of the assessments contained at least one item for each of the 17 domains, and how many items were directed at each PLC domain. Domains were then ranked based on how many tests and items related to that domain

Results: Raters agreement on primary, secondary, or tertiary classification was at 91%. Cohen's kappa was also used to adjust for chance agreement, and was determined to be .84, indicating substantial strength of agreement. Core domain salience differed between domains assessed on questionnaires and checklists and domains covered by tests. There was weak correspondence between the salience of features on tests versus questionnaires. The questionnaires covered more domains, but the tests probed fewer domains at a deeper level. Questionnaires showed greater verisimilitude than tests, indicating that they represented what the child actually did rather than the child's meta-pragmatic awareness. The CCC-2 was one of two assessment tools that probed 15 of the 17 domains.

Conclusion: Instruments vary on what aspects of pragmatics are tested, and there is no consensus on the number of items and scope of items within each pragmatic domain to determine if there is a deficit. For screening of PLC functioning, the authors recommend two questionnaires that showed the best content validity and have norms: the CCC-2, and the Pragmatic Profile.

Relevance to the current work: The authors address another difficulty with pragmatic assessment: limited developmental norms for pragmatic skills, which makes the interpretation of any assessment challenging. Analysis of the covered domains and the salience of each domain differs among tests and among formats. The CCC emerged as one of two screening measures recommended by the authors.

Tager-Flusberg, H. (1999). A psychological approach to understanding the social and language impairments in autism. *International Review of Psychiatry, 11*, 325–334. doi:10.1080/09540269974203

Purpose: Tager-Flusberg reviews the literature that studies the relationship between social behavior, communication and theory of mind in children with autism.

Summary: Tager-Flusberg adopts a psychological approach to autism, which means that the social and communication deficits in autism are a reflection of difficulties in understanding other people as mental beings. This approach is also called the theory of mind hypothesis. Children with autism struggle particularly with reciprocal relationships and conversational contexts, which can be accounted for, at least in part, by deficits in theory of mind.

Relevance to the current work: This paper details many of the social communication behaviors and deficits of children with autism, which is a major population with these types of impairments.

Thagard, E. K., Hilsmier, A. S., & Easterbrooks, S. R. (2011). Pragmatic language in deaf and hard of hearing students: Correlation with success in general education. *American Annals of the Deaf, 155*, 526–534. doi:10.1353/aad.2011.0008

Purpose: This study examines the relationship between social communication competence and degree of hearing loss, communication mode and general education success.

Method: Participants consisted of 81 students in kindergarten through eighth grade. Researchers computed correlation data using five variables: pragmatic language skills, criterion-referenced test scores, number of segments in general education academics, degree of hearing loss (moderate, severe, or profound), and mode of communication (sign language, or oral). Pragmatic skills were measured using teacher ratings on the Socio-Pragmatic Skills Checklist for Deaf and Hard of Hearing Students. The Criterion-Referenced Competency Test was used to determine whether the knowledge most critical for each grade level was acquired. Segments in general education refers to the amount of time a child spends in general education, as opposed to a special education classroom.

Results: The relationship between pragmatic language skills and academic achievement was significant, as judged by the criterion-referenced tests. The relationship between pragmatic competence and general education segments was also significant and moderately strong, indicating that as pragmatic skills grew, the child spent more time in general education. Pragmatic skill for children that use sign language was slightly lower than the overall mean, while children who use oral language had mean scores slightly higher than the overall mean, with t-scores showing no significant difference.

Conclusion: Some children with hearing loss struggle with pragmatic skills, while others do not. Pragmatic skills directly correlate to academic success and amount of time spent in a general education classroom but do not directly correlate to mode of communication or degree of hearing loss.

Relevance to the current work: Children with hearing loss are another population which may struggle with pragmatic skills.

Timler, G. (2014). Use of the Children's Communication Checklist-2 for classification of language impairment risk in young school-age children with attention-deficit/hyperactivity disorder. *American Journal of Speech-Language Pathology, 23*, 73–83. doi:10.1044/1058-0360(2013/12-0164)

Purpose: Timler examines whether the CCC-2 can be used as a screening tool to determine which children with ADHD are at risk for language impairment.

Method: Participants included parents of 32 children with ADHD and 12 typically developing peers. The children completed the CELF-4, the Test of Narrative Language (TNL), and a language sample to diagnose LI. Parents completed a CCC-2 and a case history form. Group differences were analyzed.

Results: Group differences on the CCC-2 GCC, the CCC-2 PC (an average of 6 pragmatic subscales of the CCC-2), the CELF-4 Recalling Sentences and Formulated Sentences subtests, and the TNL were significant. The CCC-2 correctly identified those children with ADHD plus LI, as determined by the CELF-4 and TNL.

Conclusion: The CCC-2 demonstrated accuracy in identifying those children with ADHD who also had language impairment, showing its utility as a screening tool for this population.

Relevance to the current work: Children with ADHD are at increased risk for language impairment, and this study shows the CCC-2 to be reliable at differentiating these children from those with ADHD without language impairment.

Tripp, G., Schaughency, E. A., & Clarke, B. (2006). Parent and teacher rating scales in the evaluation of attention-deficit hyperactivity disorder: Contribution of diagnosis and differential diagnosis in clinically referred children. *Journal of Developmental and Behavioral Pediatrics, 27*, 209–218.

Purpose: The authors evaluate the ability of parent and teacher ratings to predict a clinical diagnosis of ADHD.

Method: This study included 108 children between the ages of 5 and 12 years who had been diagnosed with ADHD, and 76 children in the same age range who did not have ADHD. Parents and teachers of all children completed four reports of child's behavior and a semi-structured clinical interview.

Results: Parent ratings of children diagnosed with and without ADHD were similar, with the exception of rating for impulsivity-hyperactivity. On that scale there was a significant group difference, with a higher mean for the group with ADHD. Teachers rated the group with ADHD as showing higher levels of behavioral difficulties. A discriminant function analysis showed

good sensitivity for parent-completed measures, but overall better performance with the teacher-completed measures.

Conclusion: Parent and teacher rating scales contributed differently to a differential diagnosis. Teachers reported elevated behavioral difficulties for the group with ADHD, while parents reported more internalizing symptoms for the same group.

Relevance to the current work: Parent and teacher input can be valuable because they see and prioritize different behaviors in different contexts.

Yuan, H., & Dollaghan, C. (2018). Measuring the diagnostic features of social (pragmatic) communication disorder: An exploratory study. *American Journal of Speech-Language Pathology, 27*, 647–656. doi:10.1044/2018_AJSLP-16-0219.

Purpose: According to the DSM-5, social (pragmatic) communication disorder (SPCD) includes deficits in four specific areas: (a) communicating for social purposes, (b) adjusting communication to the context, (c) following rules of conversation, and (d) understanding that which is not explicitly stated. The purpose of this study is to identify measurement tools that have previously been used to assess pragmatic language impairment and to identify those test items that can reliably be assigned to any of the four SPCD categories.

Method: Authors identified nine assessment tools that contained a total of 594 individual assessment items. Of the 594 items, both raters placed 244 items into the “none” category, 14 to the “more than one” category, 59 items to SPCD feature 1 (using communication for social purposes), 15 to SPCD feature 2 (changing communication to match context), 113 to SPCD feature 3 (following rules for conversation and storytelling), and 19 to SPCD feature 4 (inferences and nonliteral meanings). Reliability between raters ranged from 76% to 82%.

Conclusion: The items that raters reliably mapped to a SPCD characteristic may provide a foundation for the development of future screening and assessment measures for SPCD.

Relevance to the current work: This study shows some of the limitations of current assessments as well as some of the assessment items that could reliably be mapped onto inclusion criteria for SPCD, including many of the 24 items from the CCC-2.

APPENDIX B

Cohen's Kappa Grids

Parent Rating

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0			1														
1	1				1												
2					1												
3					1												
4	1	1															
5																	
6																	
7				1					1								
8						1				1							
9																	
10				1													
11																	
12																	
13																	
14																	
15																	
16																	

Teacher Rating

Figure 1. Parent-teacher agreement on the speech subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

		Parent Rating																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Teacher Rating	0	1		1														
	1			1														
	2																	
	3																	
	4		1															
	5										1							
	6		1															
	7						1	2										
	8	1																
	9						1			1								
	10																	
	11																	
	12																	
	13																	
	14																	
	15																	
	16																	

Figure 2. Parent-teacher agreement on the syntax subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

		Parent Rating																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Teacher Rating	0																	
	1					1												
	2																	
	3			2		1												
	4				1				1									
	5					1	1		1									
	6																	
	7							1			1							
	8																	
	9																	
	10																	
	11																	
	12																	
	13																	
	14																	
	15																	
	16				1													

Figure 3. Parent-teacher agreement on the semantics subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

		Parent Rating																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Teacher Rating	0																	
	1																	
	2			1		1												
	3			1	1	1				1								
	4				1													
	5																	
	6																	
	7			1														
	8																	
	9				1													
	10																	
	11																	
	12																	
	13																	
	14					1												
	15																	
	16																	

Figure 4. Parent-teacher agreement on the coherence subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

		Parent Rating																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Teacher Rating	0																	
	1																	
	2																	
	3						1											
	4			1						1								
	5								1									
	6			1														
	7					1				1		1						
	8																	
	9						1											
	10									1								
	11								1									
	12							1										
	13																	
	14																	
	15																	
	16																	

Figure 5. Parent-teacher agreement on the initiation subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

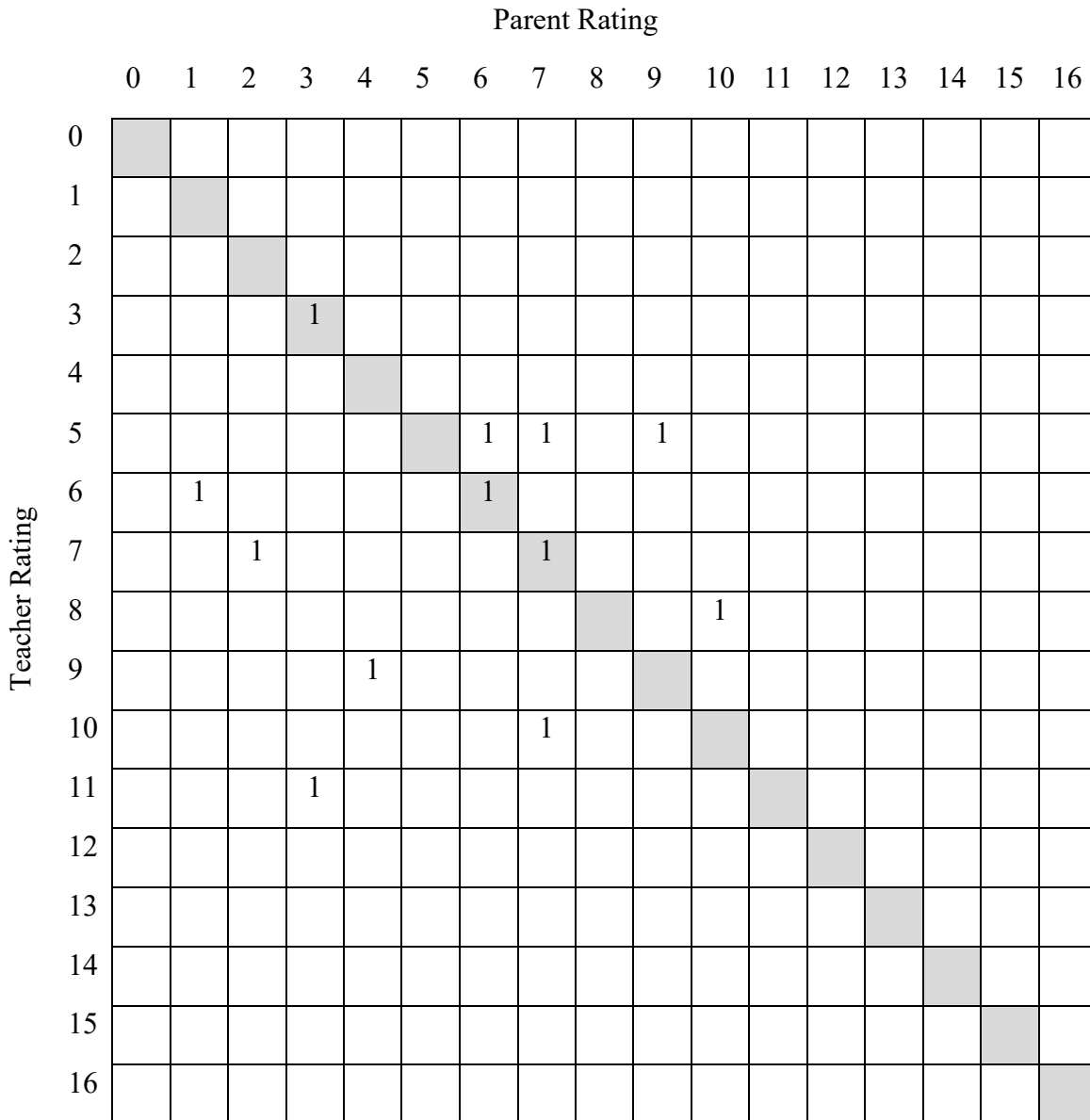


Figure 6. Parent-teacher agreement on the scripted language subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

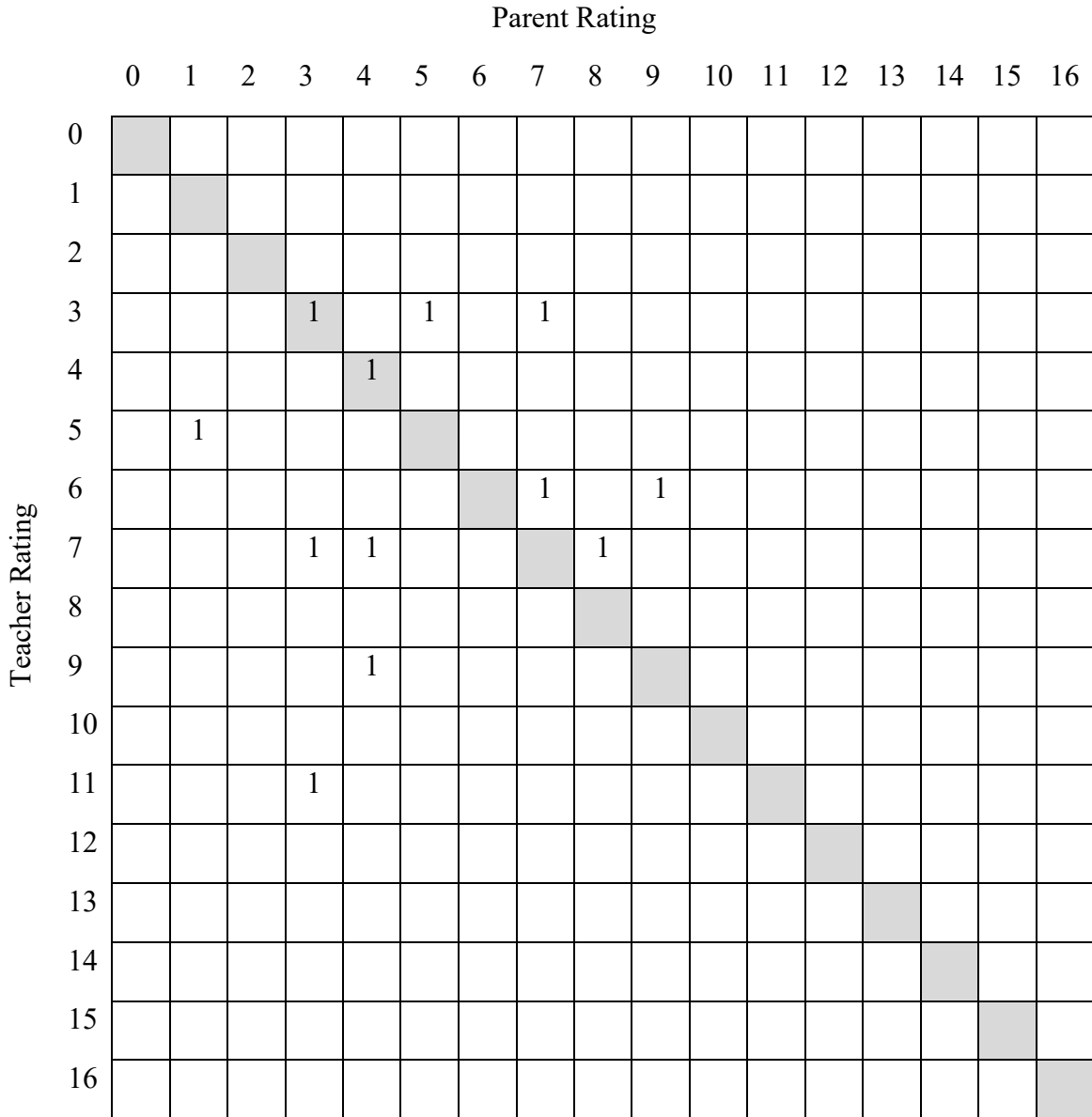


Figure 7. Parent-teacher agreement on the context subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

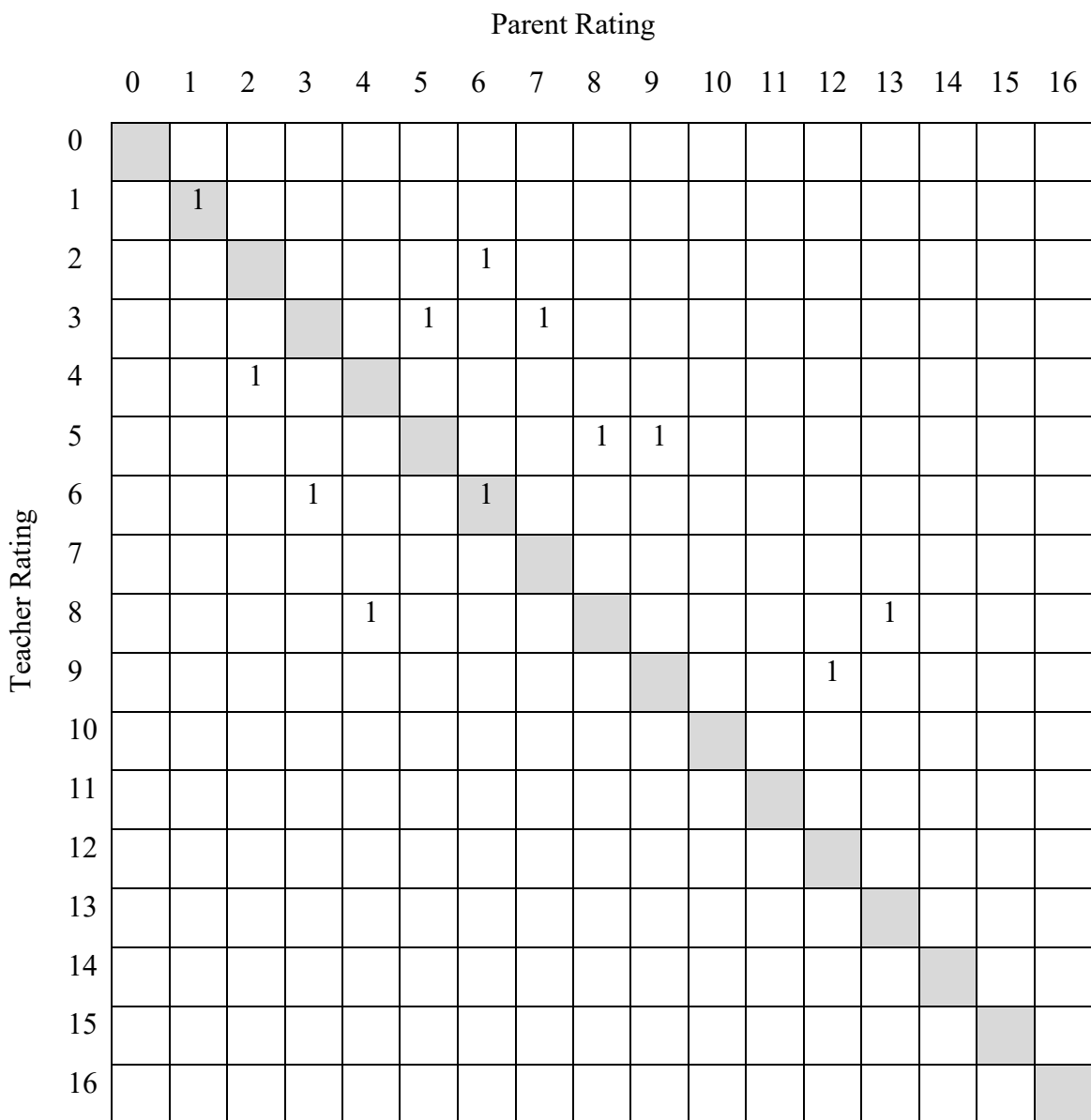


Figure 8. Parent-teacher agreement on the nonverbal communication subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

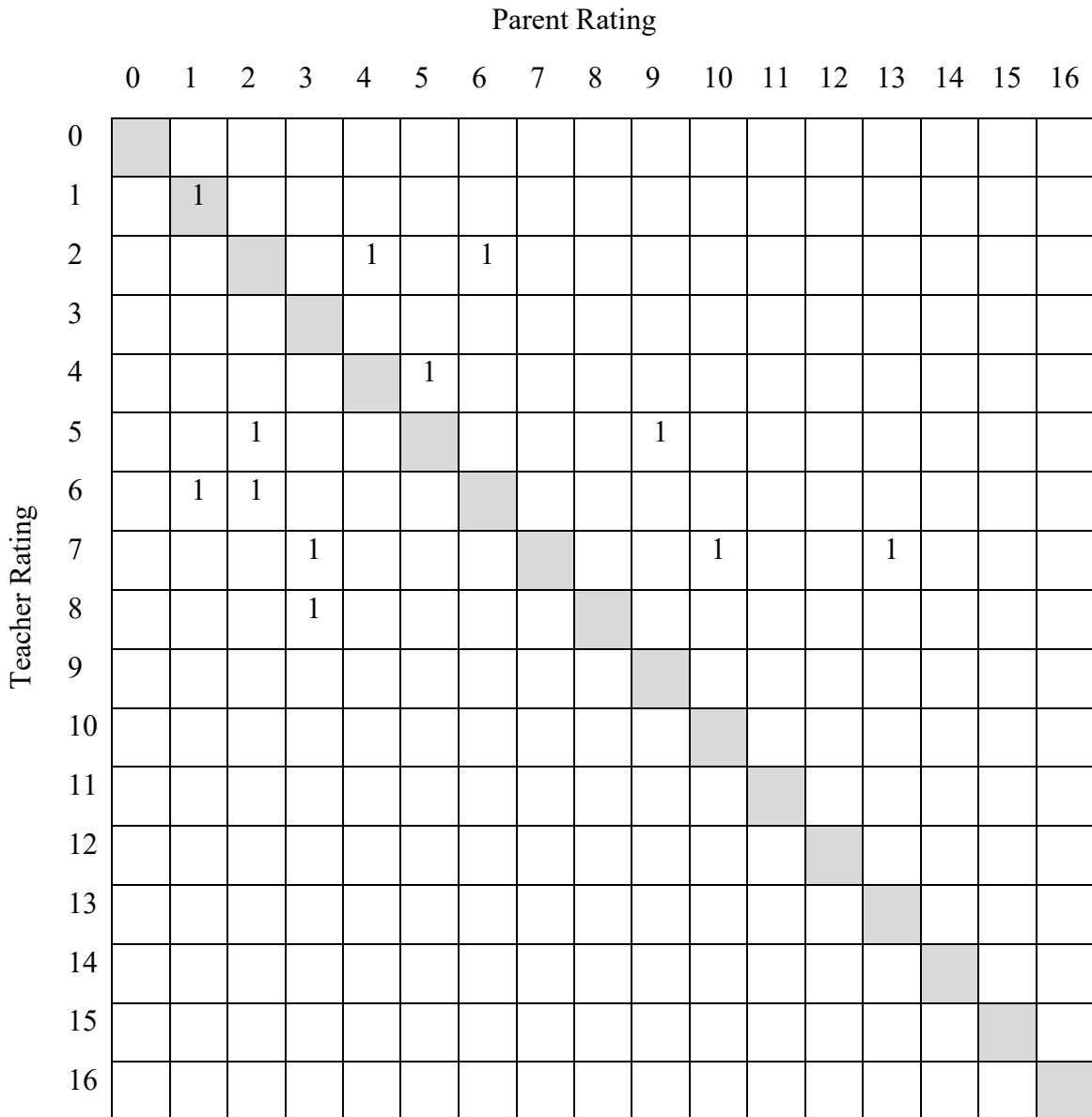


Figure 9. Parent-teacher agreement on the social relations subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

		Parent Rating																
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Teacher Rating	0																	
	1																	
	2																	
	3																	
	4																	
	5			1														
	6						1		1		1							
	7						1											
	8										1		1					
	9							1					1					
	10										1							
	11																	
	12							1	1									
	13																	
	14																	
	15																	
	16																	

Figure 10. Parent-teacher agreement on the interests subscale of the CCC-2. Each number in the grid represents a parent-teacher pair of CCC-2 ratings. The shaded diagonal indicates perfect agreement between parent and teacher ratings.

APPENDIX C

Parent Consent Form

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

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

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. Your 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 this study.

Confidentiality: Your child's participation will be confidential. All materials will be stored in locked cabinets in a locked lab at BYU. Names will be removed from research materials and

neither your name nor your child's name will ever be used in connection with any presentation of this research. Video images will be stored on a secure hard drive in a locked lab at BYU. These images will be used to document how well your child responds to the intervention. These images will be stored for six years to allow analysis and then destroyed.

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

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

Questions about your rights as a research participant: If you have questions regarding your rights as a research participant, you may contact the BYU IRB Administrator, A-285, 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 this study.

Signature _____ Date _____

Printed Name _____

Video Release Form

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

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

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

Signature _____ Date _____

Printed Name _____