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About the Author

Adriana Lavi, PhD, CCC-SLP is a licensed speech-language pathologist and a pioneer in the development of speech and language video-based assessment tools. She is the creator and author of the Clinical Assessment of Pragmatics (CAPs), as well as Video Assessment Tools, an online assessment platform that features the Articulation and Phonology Video Assessment Tool, the IMPACT Social Communication Rating Scale, the IMPACT Articulation and Phonology Rating Scale, etc. Additionally, Dr. Lavi is the creator of the Video Learning Squad, an online therapy platform that features the Social Squad and Stutter Squad.

For over a decade, Dr. Lavi owned Go2Consult where she supervised 35+ speech-language pathologists and clinical fellows across Southern California. Dr. Lavi has also served as an Assistant Professor at the Department of Communicative Disorders at Loma Linda University, and is the founder of the Lavi Institute for Research and Professional Development. She earned a master's degree in speech-language pathology from California State University at Sacramento and a PhD degree in Rehabilitation Sciences with an emphasis in speech-language pathology from Loma Linda University. Dr. Lavi was one of three students selected by the Bureau of Educational and Cultural Affairs of the US Department of State from the country of Moldova to study in the US in 2000. She has lived through and understands the culture of poverty. Her professional career has always focused on service delivery for students from low-income backgrounds. Dr. Lavi is the proud mother of four young, highly energetic boys.

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Most recently, she has been working on a video series for neurodivergent friendships and is looking forward to running more sustainable groups to help teens and young adults thrive.

Acknowledgements

Sincere appreciation is extended to the families and children who generously offered their time and effort. Additional thanks goes to the expert panel and speech-language pathologists who field-tested the children.

Chapter

1

Overview of the Rating Scale

IMPACT Social Communication Rating Scale Description

The IMPACT Social Communication Rating Scale is a norm-referenced pragmatic language rating scale for children and young adults ages 3 through 21 years old. It is composed of 35-40 test items, and has three separate forms to be completed by clinician, parent(s), and teacher(s). It is an accurate and reliable assessment that yields valid results on informal observations of pragmatic language such as intent to socialize, nonverbal language, theory of mind, social reasoning and cognitive flexibility. Normative data of this test is based on a nationally representative sample of 1249 (typically developing) children and young adults in the United States.

IMPACT Social Communication Rating Scale Areas

The test is composed of nine areas: social context, intent to socialize, nonverbal language, social interactions, theory of mind, ability to accept change, social language and conversational adaptation, social reasoning, and cognitive flexibility.

Testing Format

The IMPACT Social Communication Rating Scale is composed of 35-40 test items. The test uses a series of items that asks the rater to score on a 4-point scale ("not typically," "sometimes," "often," and "typically"). The rating scale yields an overall percentile and standard score. While completing this checklist, examinees are able to watch accompanying videos that will provide specific examples of what each question is asking. The videos are there to help examiners along if they have any questions regarding the skill that they are assessing.

Administration Time

Administration time for the rating scale takes approximately 15-20 minutes.

IMPACT Social Communication Rating Scale Uses and Purpose

Parents and teachers provide us with invaluable information regarding a student's social communication in both the classroom and in the home environment, however, this information is not always easy to

obtain, explain, or understand. Additionally, the questionnaires, checklists, or surveys that we have used in the past may have overlooked or missed the specific areas of social communication (i.e., nonverbal language) we are currently hoping to address. The results of the *IMPACT Social Communication Rating Scale* test provide comprehensive information on pragmatic language skills and social language development of children and young adults. The scale provides natural and authentic observations by familiar observers across multiple settings and situations. *The IMPACT Social Communication Rating Scale* can be a beneficial tool to support a referral, compliment other pragmatic language assessments, compare clinician's, parent's, and teacher's ratings, help plan interventions, and monitor progress of interventions. By utilizing *The Social Communication Rating Scale*, we are able to develop a better understanding as to how a student's pragmatic language skills may impact their academic performance and progress in school.

Code of Federal Regulations – Title 34: Education

34 C.F.R. §300.7 Child with a disability. (c) Definitions of disability terms. (11) Speech or language impairment means a communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, that adversely affects a child's educational performance.

The Individual's with Disabilities Act (IDEA, 2004) states that when assessing a student for a speech or language impairment, we need to determine whether or not the impairment will negatively impact the child's educational performance. In order to determine whether a pragmatic language impairment exists, we can collect parent, teacher, and clinician observations of the student in his/her home and educational environment, and analyze the impact of the impairment on academic success.

Importance of Observations and Rationale for a Rating Scale

Systematic observation and contextualized analysis is a form of informal language assessment that includes multiple observations across various environments and situations (Westby et al., 2003). According to IDEA (2004), such types of informal assessment must be used in conjunction with standardized assessments. Section. 300.532(b), 300.533 (a) (1) (I, ii, iii); 300.535(a)(1) of IDEA states that, "assessors must use a variety of different tools and strategies to gather relevant functional and developmental information about a child, including information provided by the parent, teacher, and information obtained from classroom-based assessments and observation." Utilizing both formal and informal assessments is crucial in order to develop a whole picture of a child's pragmatic language abilities. By observing a child's pragmatic language skills via informal observation, examinees can observe key features of social language such as conversations, nonverbal language, and social reasoning. When we consider a clinician's observations, we do not necessarily observe pragmatic language in everyday situations. Parent and/or teacher input may be beneficial during pragmatic language evaluation because it allows for the assessment to take place in an authentic setting and it is completed by someone who knows the child well and thus, is more likely to be a true representation of the child's social communication skills (Volden & Phillips, 2010). *The IMPACT Social Communication Rating Scale* provides us with both parent and teacher observation and perspectives of a child's pragmatic language ability. When observing a child in their natural habitat, the observer gains a clear understanding of their child's abilities across all domains of communication: form, content, and use. Additionally, many of the "abnormal communicative behaviors" that children with pragmatic impairments may demonstrate may be rare in occurrence (Bishop & Baird, 2001). When given the guidelines of what to look for, parents - who know their children the best - will more than likely be able to think of, and provide numerous examples of pragmatic language impairments. These pragmatic

difficulties may not be so easily observed during clinical assessment and observation. Furthermore, it can be important to obtain information on how a child engages with their family, friends, and peers during familiar tasks in order to gain ecologically and culturally valid information on how a child functions and communicates on a day-to-day basis (Jackson, Pretti- Frontczak, Harjusola-Webb, Grisham-Brown, & Romani, 2009; Westby, Stevens, Dominguez, & Oetter, 1996).

During assessment and intervention planning, it is important to consider how social communication may adversely affect educational performance. Previous research has revealed that pragmatic language difficulties can be expected to negatively impact a child's social and emotional well-being (Schalock, 1996). For example, individuals with social communication impairment may participate in fewer peer interactions and are considered to be less preferred communication partners. Students with pragmatic language impairments may engage in less social behaviors such as sharing, cooperation, offering empathy, which are characteristics that have been linked to the development of peer relationships (Brinton & Fujiki, 2005; Hart, Robinson, McNeilly, Nelson, & Olsen, 1995). As a result, children and adolescents with pragmatic difficulties may have a difficult time creating and maintaining friendships. Those with pragmatic language difficulties may have trouble with the understanding, interpretation, and use of social language cues (both verbal and nonverbal) (Weiner, 2004). Additionally, students with social communication difficulties may have difficulty with externalizing and internalizing behaviors which have been associated with poor academic performance, high rates of absenteeism, and low achievement (DeSocio & Hootman, 2004; Smith, Katsiyannis, & Ryan, 2011). Moreover, challenging behavior may be observed in children with severe communication impairments (Eisenhower, Baker, & Blacher, 2005; Kodituwakku, 2007). According to IDEA (2004), when a child's behavior gets in the way of learning, the special education team must develop and recommend "positive behavioral interventions and supports" to be used in the school setting (IDEA, 2004: §300.324(a)(2)(i)).

Chapter

2

Theoretical Background of the IMPACT Social Communication Rating Scale

Pragmatic language, or social communication, refers to the ability to use both verbal and nonverbal language across various contexts and social situations. Pragmatics differs from the structural aspects of language that are considered to be independent of context, such as phonology, syntax, and semantics (Camarata & Gibson, 1999). Pragmatic language ties together all parts of language comprehension and oral expression and allows for effective communication to take place. When difficulties in social language occur, there may be significant disruptions in communication (Norbury, 2014). These disruptions may impact a child's ability to function at home, school, and with their peers (Russell, 2007; Russell & Grizzle, 2008). Simply put, pragmatics can be defined as an individual knowing when to say what to whom and how much (Hymes, 1971). Of course, this is a very broad, simplistic definition and pragmatics is composed of much more. Prutting and Kirchner (1987) describe pragmatic language skill as the ability to use language in various situations for a specific purpose.

When students present with social language difficulties, they may have difficulty with greetings, turn-taking skills, introduction of new topics, topic maintenance, the ability to respond to verbal cues from others, the ability to code-switch or change a message to the needs of a listen, or the ability to understand sarcasm, jokes, and metaphors (Bignell & Cain 2007; Camarata & Gibson, 1999; Perkins, 2010, Russell, 2007). In addition, students may have difficulty with non-verbal language such as maintaining adequate eye-contact and gaze, body language, micro expressions of the face, gestures, and intonation or prosody (Prutting & Kirchner, 1987). When pragmatic language impairments go undiagnosed and untreated, there can be a large, negative psychosocial impact for the child. Social language difficulties can impact a child's academic success as well as their mental health status, social integration, and future employment prospects and occupation success (Whitehouse, Watt, Line, & Bishop, 2009). There is a clear need for the identification of students with pragmatic language difficulties, because without appropriate intervention and treatment, quality communication cannot occur, which can result in long-term psychosocial problems.

Pragmatic language difficulties affect many of our students, many who present with high functioning autism and social communication disorder. By observing student's in their natural environment and assessing their social language skills, diagnoses can be made and interventions can be implemented. The identification of students who present with pragmatic language impairments cannot be understated. Pragmatics required specialized education and support.

Contextual Background for Rating Scale Areas

Difficulties in pragmatic language may include: turn-taking in conversation with a peer (e.g., asking questions, add-on comments), staying on topic, creating and maintaining friendships, introducing new/appropriate topics, understanding someone else's perspective (theory of mind), accepting change, speech prosody (e.g., rising and falling of voice pitch and inflection), and the understanding and use of verbal and nonverbal cues (e.g., facial expressions, gestures, etc.) (Krasny, Williams, Provencal, & Ozonoff, 2003; Shaked & Yirmiya, 2003; Tager-Flusberg, 2003). The current assessment tool is composed of nine areas that address these key social language difficulties. Table 1.1 provides an example test item taken from the assessment.

Awareness of Social Context evaluates a student's ability to adequately and appropriately utilize introductions, farewells, politeness, and make requests. These forms of communication are described as essential and considered to be the building blocks to more complex language processes. When students begin to act in socially appropriate ways with teachers and peers, they are more likely to maintain attention when engaged in academic tasks (Eisenberg, Vallente, & Eggum, 2006).

Intent to Socialize takes a look at a student's interest in interacting with peers, and seeking friendship or companionship. Peer relationships and friendships are critical to school and academic achievement for school-age children (Wentzel, Barry, & Caldwell, 2004; Newman Kingery, Erdley, & Marshall, 2011). Friendships are important in the development of social competences, as well as influencing children's performance on classroom-learning activities, specifically those that involve collaboration and cooperation (Faulkner & Meill, 1993).

Nonverbal language evaluates a student's ability to read micro-expressions and nonverbal language. Nonverbal cues, such as facial expressions, have a very important role in social interactions (de Gelder, 2006) and can be just as meaningful as spoken words. Often, nonverbal language can reveal how a person feels, although their verbal communication may be contradictory. An appropriate understanding of non-verbal language is critical in understanding another person, and in turn, it leads to an appropriate verbal response.

Social Interactions takes a look at a student's active interactions with their peers, friends, and family. Children with language impairments tend to engage less in active interactions than typically developing peers, exhibit poorer discourse skills, and are less likely to offer socially appropriate verbal and nonverbal responses in conversations (Brinton, Fujiki, & McKee, 1998; Landa, 2005). Durkin and Conti-Ramsden (2007) compared friendship quality in 120 adolescents aged 16-years-old with and without SLI. Adolescents with SLI were found to exhibit poorer quality friendships. This study suggests that language difficulties (including social language difficulties) may be predictive of poorer quality friendships, which in turn may impact academic success.

Theory of Mind evaluates a student's ability to understand that other people have different perspectives than their own (e.g., different desires, wishes, and beliefs). Theory of mind is critical for social interactions beginning in early childhood and expanding until adulthood (Gweon & Saxe, 2013). The development of theory of mind is a cognitive milestone as well as a socio-emotional milestone that is essential for social language development and the ability to socially interact and understand others (Miller, 2009). Being able to understand the mind is crucial to the understanding and navigation of one's social world.

Accepting Change assesses a student's ability to accept modifications or changes to a plan. Changes of plans occur every day and when changes do occur students should respond in an appropriate manner/not have an extreme reaction. When students need constant reassurance after a change occurs, or he/she has a disruptive reaction, academic performance may be impacted.

Social Language and Conversational Adaptation evaluates a student's ability to implement appropriate social communication skills during conversation. For example, a student should be able to stay on topic providing appropriate comments and questions. The student should be able to utilize appropriate eye contact, turn-taking, volume, and facial expressions. Additionally, the student should also be able to code-switch depending on who they are speaking with. For example, how a student talks to their peers will be different than how they speak to their teacher.

Social Reasoning assesses a student's ability to see the "whole picture" or main idea. Sometimes students may have difficulty grasping key points, drawing conclusions and making other inferences from conversation, text, TV programs, and movies (Vicker, 2009). When students focus on irrelevant details, their academic performance can be impacted.

Cognitive Flexibility evaluates a student's ability to come to terms with the amount of unfairness they observe in the world around them. For example, some students have a very hard time coming to terms with a situation if they view it as unfair or unjust. Students may become frustrated and appear persistent to make things "fair." In order for students to demonstrate cognitive flexibility they must demonstrate awareness and adaptability.

Table 1.1 – Examples of Social Communication Impact Rating Scale questions

Rating Scale Questions	*Examples*
Awareness of Social Context Greets peers and staff (teachers, aides, etc.), checks-in with peers and seems aware of what peers are doing during class, recess, and lunch time	*For example, when a student walks into class in the morning or after lunch, does he/she look around the room to see who is present, does he/she offer eye contact or smile when they see a friend, or a staff member.*
Intent to socialize Seeks companionship, friendship, attention, and daily interaction with peers; initiates interactions to gain attention; Engages in conversations and playful social exchanges; Able to initiate conversations and gain peers' attention	*For example, before class begins, does the student engage in conversation with his/her peers? Does he/she talk about their weekend? Maybe a TV show from last night? During group projects, does the student speak and converse with other students?*
Nonverbal Language Uses facial expressions, tone of voice, and gestures to show emotions.	*For example, to demonstrate support/comfort to a peer, the student may frown his/her eyebrows to indicate empathy or disappointment, or the student may smile to share excitement.*
Social Interactions Appears to enjoy interactions with others. For example, the student shows interest in interactions during recess, lunch, and group projects	*The student may be seen with a group of students and engaging in conversation. The student may be participating with verbal comments, questions, as well as non-verbal language, such as smiling, laughter, etc.*
Theory of Mind Engages in pretend play during class activities (e.g., role playing or imaginative play)	*Student is able to role-play different scenarios or put themselves in "someone else's shoes."*

Accepting Change Accepts changes in routine without excessive reassurance and without showing extreme reactions	*For example, the student's schedule may change, maybe there is an assembly or PE class has been cancelled. The student is able to accept the change and go on with their day without a noticeable negative reaction – it's okay to show some disappointment or confusion, but it's not an extreme reaction*
Social Language and Conversational Adaptation Able to stay on topic providing appropriate comments and questions without switching topic abruptly	*For example, the student can provide 2-3 comments and/or questions regarding a given topic*
Social Reasoning Demonstrates difficulty seeing the "whole picture" during lectures and shows difficulty grasping main idea or key points and excessively focuses on irrelevant details.	*For example, during class discussion, student may write down everything the teacher says or is unable to highlight the most relevant and meaningful key points.*
Cognitive Flexibility Excessively insists on fairness	*For example, every week students line up alphabetically to go to lunch. A student may insist that this is not fair and that they should rotate the order each week. The teacher explains to the student that she understands what he/she is saying but it's just too difficult to organize and change every week, the student will not let it go and insists on the line up being "fair"*

Chapter

3

Administration and Scoring Procedures

The following testing guidelines represent specific administration and scoring procedures for the *IMPACT Social Communication Rating Scale.* These procedures are considered best professional practices required in any type of rating scale as described in the Standards for Educational and Psychological Testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education [AERA, APA, and NCME], 2014).

Examiner Qualifications

Professionals who are formally trained in the ethical administration, scoring, and interpretation of assessment tools, who hold appropriate educational and professional credentials, may administer the *IMPACT Social Communication Rating Scale.* Qualified examiners include speech-language pathologists and school psychologists. It is a requirement to read and become familiar with the administration, recording, and scoring procedures before using this rating scale and asking parents and teachers to complete the rating scales.

Confidentiality Requirements

As described in Standard 6.7 of the Standards for Educational and Psychological Testing (AERA et al., 2014), it is the examiner's responsibility to protect the security of all testing material and ensure confidentiality of all testing results.

Eligibility for Testing

The *IMPACT Social Communication Rating Scale* is appropriate to use for individuals between the ages of 3-0 and 21-0 years of age. This rating scale is particularly helpful for individuals who are suspected of or who have been previously diagnosed with pragmatic language difficulties.

Testing Time

Administration of the clinician, teacher, and parent rating scale takes approximately 15-20 minutes respectively.

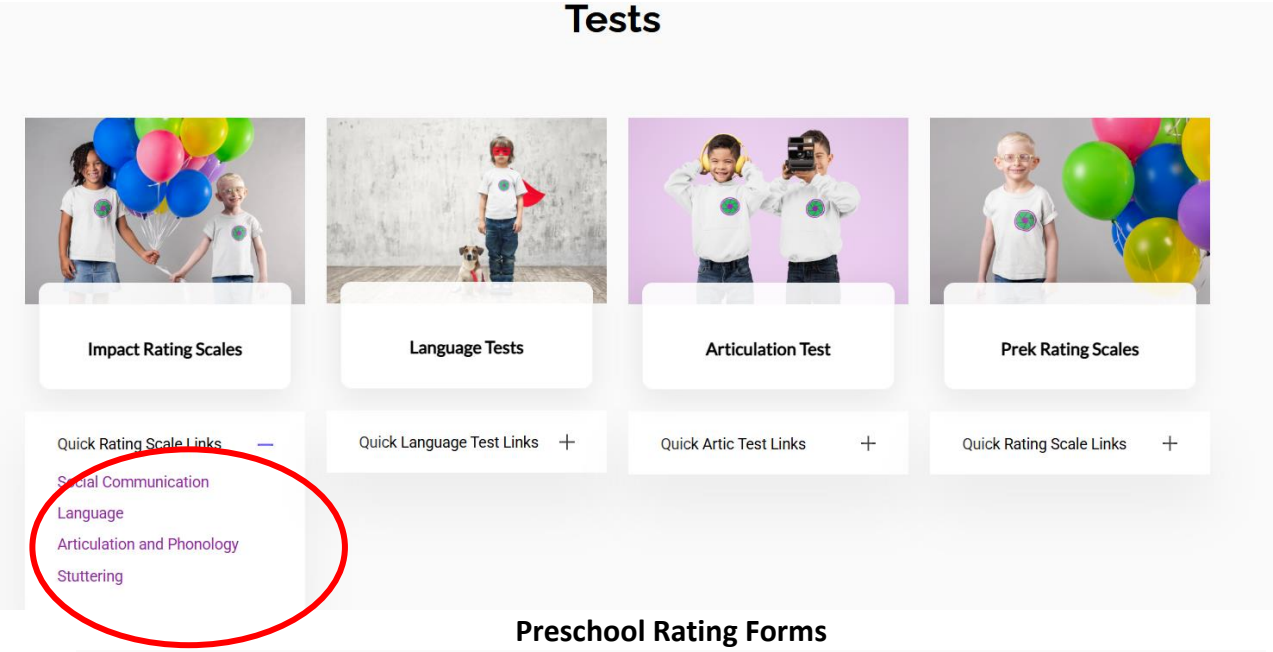
Test Materials

The *IMPACT Social Communication Rating Scale* consists of three observational checklists, one for clinician, one for parent, and one for the teacher. All rating scales and scale converting software is available on the *SLP Platform* website at: www.SLPplatform.com

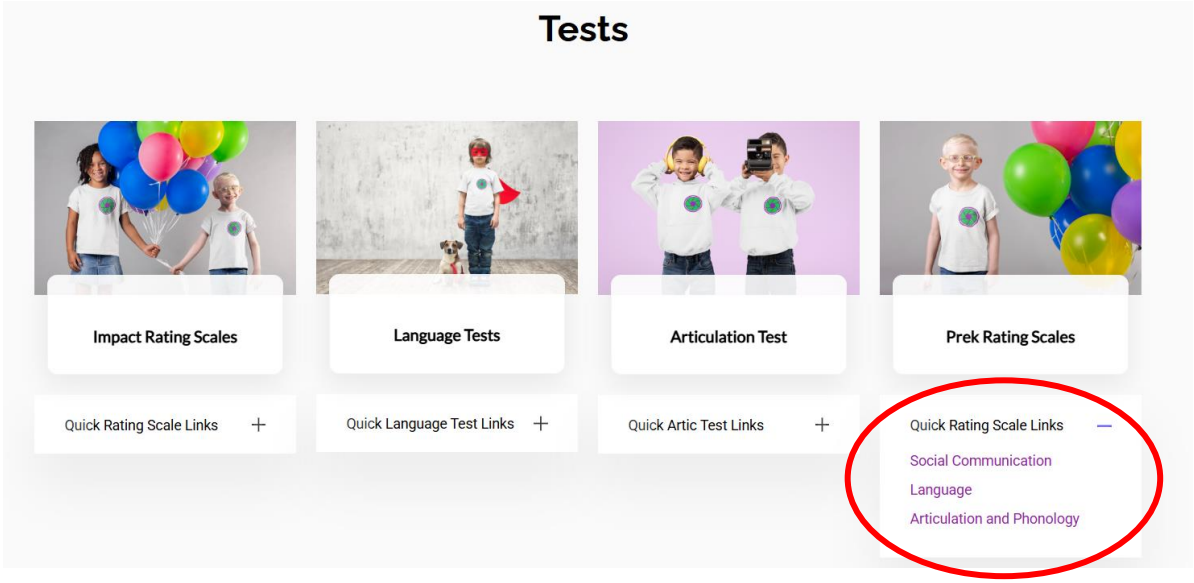
Accessing Clinician, Parent, and Teaching Rating Forms online

Begin by logging onto your account at www.slpplatform.com and select "Administer Tests". Select the *IMPACT Social Communication Rating Scale* as shown below,

School-Age Rating Forms

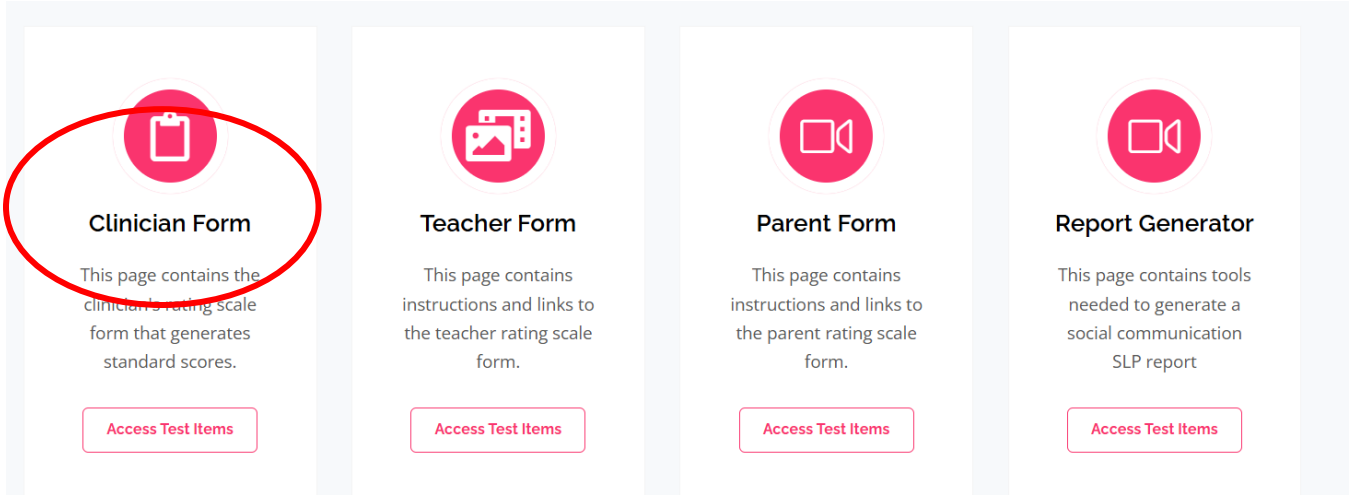


Preschool Rating Forms



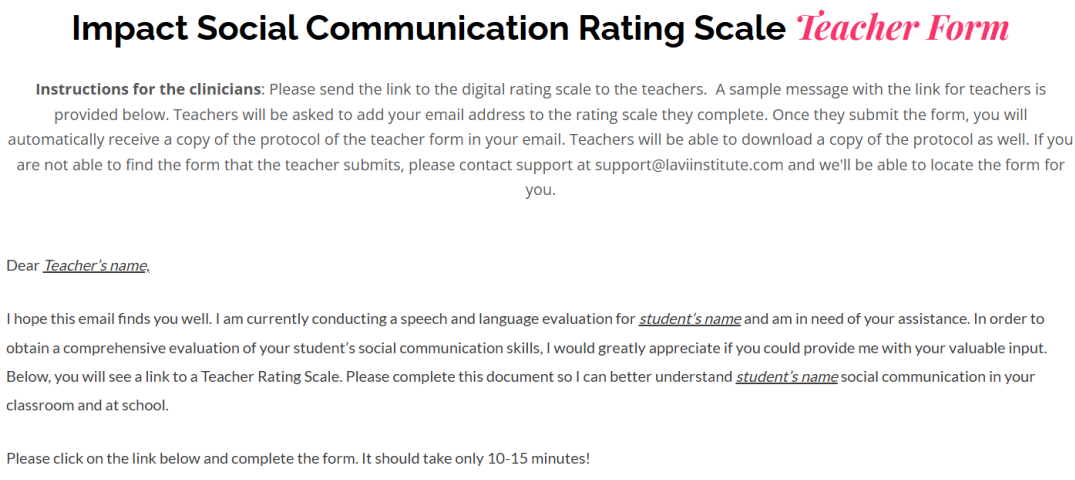
Administration Instructions

Step 1/Clinician Form: Complete the Clinician Rating Scale. Please be sure to review the videos on the page to improve your understanding of what each test item is asking.



When you are finished filling out the form, click on the "Submit" button. The system will generate a scored protocol that contains standard scores and percentile ranks. Enter your own (the examiner's) email address to receive a copy of the protocol and report by email.

Step 2/Teacher Form: Send an email/text message to the student's teacher with the link to the "Teacher Rating Scale" that can be completed online. Explain to the teacher (a template of the email with the explanation is provided in step 2) that there are accompanying videos that he/she can watch that will provide examples of what each question is asking. After completing the rating scale, ask the teacher to type in your email address in the provided box (at the bottom of the form). Once the teacher completes the form, the system will generate and email you a scored protocol that contains standard scores and percentile ranks.



Impact Social Communication Rating Scale *Teacher Form*

Instructions for the clinicians: Please send the link to the digital rating scale to the teachers. A sample message with the link for teachers is provided below. Teachers will be asked to add your email address to the rating scale they complete. Once they submit the form, you will automatically receive a copy of the protocol of the teacher form in your email. Teachers will be able to download a copy of the protocol as well. If you are not able to find the form that the teacher submits, please contact support at support@laviinstitute.com and we'll be able to locate the form for you.

Dear *Teacher's name*,

I hope this email finds you well. I am currently conducting a speech and language evaluation for *student's name* and am in need of your assistance. In order to obtain a comprehensive evaluation of your student's social communication skills, I would greatly appreciate if you could provide me with your valuable input. Below, you will see a link to a Teacher Rating Scale. Please complete this document so I can better understand *student's name* social communication in your classroom and at school.

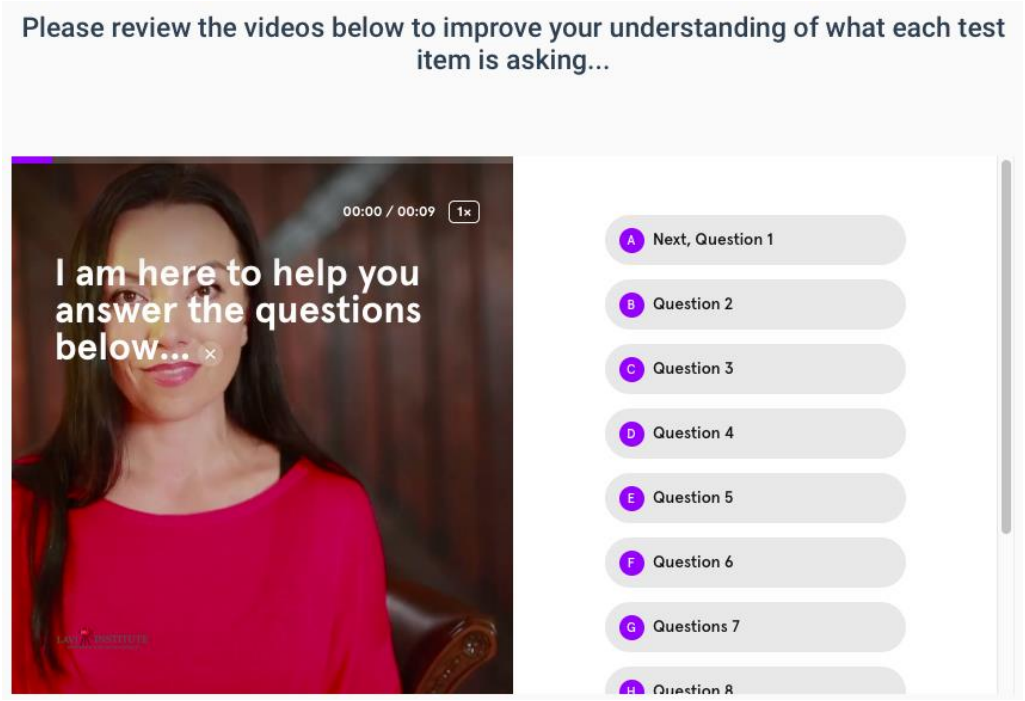
Please click on the link below and complete the form. It should take only 10-15 minutes!

Step 3 (NOW available in Spanish): Send an email/text message to the student's parent(s) with the link to the "Parent Rating Scale" that can also be completed online. Explain to the parent (a template of the email with the explanation is provided in step 3) that there are accompanying videos that he/she can watch that will provide examples of what each question is asking. After completing the rating scale, ask the parent to type in your email address in the provided box (at the bottom of the form.
Once the parent completes the form, the system will generate and email you a scored protocol that contains standard scores and percentile ranks.

Step 4: Use the optional report generator to assist you in writing the pragmatic language write-up portion of your evaluation.

Rating Scale Item Clarification

The clinician, parent, and teaching rating scale forms are accompanied with videos to clarify test items if there is uncertainty over what each test item is evaluating. Clinicians are asked to remind parents and teachers to review the videos on the website if they need clarification or examples of what each test item is addressing.



Chapter

4

Development, Standardization and Normative Information

This section describes the procedures followed in developing test items, implementing the pilot and normative study, and selecting the items for the final version of the test. This section also details the normative samples obtained to standardize and validate the IMPACT Social Communication Rating Scale. All test development and standardization project procedures were reviewed and approved by IntegReview IRB (now known as Advarra), a fully AAHRPP-accredited independent review board that provides ethical review for all phases of industry-sponsored and federally funded research in the U.S. Additionally, all test development and standardization methodology was based on best practices in research, and conducted in compliance with complex regulatory requirements, frameworks, and guidelines set forth by the Standards for Educational and Psychological Testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education [AERA, APA, and NCME], 2014).

Test Item Development

Selection of the test items began with an extensive review of research and theory related to the development of social communication skills, defining characteristics of successful social communication, specific social communication abilities and patterns required in the educational setting as well as an analysis of which social communication behaviors are most predictive of impairment for specific age groups. The literature reviewed consisted of research articles, textbooks, diagnostic tests and the diagnostic criteria for social communication disorder from IDEA (2015) and the diagnostic criteria for autism from the DSM-5 (APA, 2013). This analysis resulted in identification of 85 specific behaviors presumed to impact educational progress and to be indicative of social communication deficits/differences. Next, the test items were reviewed and edited for clarity and face validity for use by clinicians, teachers and parents. The systematic review of the test items was completed by a panel of 12 experts in the area of speech pathology (specifically, social communication). The panel also included 9 teachers and 12 parents of children diagnosed with autism and/or social communication disorder. After receiving their feedback, some items were rewritten, dropped or rephrased.

The test was developed in three phases: pilot study, normative study, and national standardization. The procedures for each phase are detailed below.

Pilot Study

The pilot study was conducted to determine the appropriateness of questions and to review all test instructions. The pilot study included 86 children from the ages of 5:0 to 12:11. The sample was 20% Hispanic, 11% African American, 52% White, 4% Asian and 13% other ethnicities (60% males and 40% females). The pilot study included 75% typically developing children and 25% children with identified social communication disorder.

The rating scale responses were coded. These data were factor analyzed. From the results of this analysis, a scale of seven factors containing 40 items was produced. Cronbach's coefficient alphas were computed and results indicated the alphas were sufficiently large to provide support for the test reliability. The results of the pilot study were found to be effective for test item selection.

Normative Study

Following the pilot study, a normative study was conducted to establish norms for IMPACT Social Communication Rating Scale by testing typically developing children representative of the general U.S. population. A clinical group was included for validation purposes. Additional goals of the normative study included investigation of optimal weighted scoring system/criteria as well as optimal test administration time. The study reviewed administrative and scoring procedures preliminary to national standardization. The test content was evaluated both qualitatively and quantitatively for bias.

The normative study included 146 children from the ages of 5:0 to 15:11. The sample was 11% Hispanic, 9% African American, 57% White, 7% Asian and 16% other ethnicities (60% males and 40% females). The pilot study included 88% typically developing children and 12% children with identified social communication disorder (clinical group). The mean for the outcome variables were compared between the clinical and the typically developing groups of examinees using Kruskal Wallis analysis of variance (ANOVA). Further comparisons in mean scores between the groups were examined using Mann- Whitney U test. The level of significance was set at $p \leq 0.05$. Further comparisons using Mann-Whitney U test showed that there was a significant difference among all the study groups ($p < 0.001$).

Based on the feedback of all examinees, some test items were modified, while others were removed altogether. The test directions and scoring procedures were fine-tuned. Suggestions of the field test examiners were thoroughly reviewed prior to the national standardization.

National Standardization

One of the ways we can tell if an assessment is a strong test, is if it includes adequate norms. Norm-referenced testing is a method of evaluation where an individual's scores on a specific test are compared to scores of a group of test-takers (e.g., age norms) (AERA, APA, and NCME, 2014). Previous research has suggested that utilizing a normative sample can be beneficial in the identification of a disability. Additionally, research has suggested that the inclusion of children with disabilities in the normative sample may negatively impact the test's ability to differentiate between children with disorders and children who are typically developing (Peña, Spaulding, & Plante, 2006). When reviewing a test's

normative sample, it is important to consider size, gender, race and ethnicity, age, geographic location, and whether individuals with disabilities were included in the normative sample.

The national standardization consisted of 2 phases. The first phase of the normative data collection for the IMPACT Social Communication Rating Scale was based on the performance of 1249 examinees across 11 age groups (shown in Table 4.1) from 17 states across the United States of America (Arizona, California, Colorado, Nevada, Idaho, Illinois, Iowa, Kansas, Ohio, Minnesota, Florida, New York, Pennsylvania, Florida, South Carolina, Texas, Washington).

Table 4.1
Representation of the Sample, by Age Group

Age Group	Age	*N*	%
1	5-0 to 5-11	102	8.2
2	6-0 to 6-11	106	8.5
3	7-0 to 7-11	111	8.9
4	8-0 to 8-11	108	8.6
5	9-0 to 9-11	102	8.2
6	10-0 to 10-11	113	9.0
7	11-0 to 11-11	104	8.3
8	12-0 to 12-11	106	8.5
9	13-0 to 13-11	101	8.1
10	14-0 to 14-11	102	8.2
11	15-0 to 21-0	194	15.5
Total Sample		1249	100%

The second phase of the normative data collection for the IMPACT Social Communication Rating Scale was based on the test performance of additional 102 examinees ages 3:0 through 4:11 years old (shown in Table 4.3) in 5 states (California, Ohio, Illinois, New York, Florida).

The data was collected throughout the 2016-2020 school years by 34 state licensed speech-language pathologists (SLPs). The SLPs were recruited through Go2Consult Speech and Language Services, a speech-language pathology services and nonpublic agency certified by the CA Department of Education in conjunction with the Lavi Institute, an ASHA approved CE provider. All standardization project procedures were reviewed and approved by IntegReview IRB (now known as Advarra), a fully AAHRPP-accredited independent review board that provides ethical review for all phases of industry-sponsored and federally funded research in the U.S. To ensure representation of the national population, the *IMPACT Social Communication Rating Scale* standardization sample was selected to match the US Census data reported in the ProQuest Statistical Abstract of the United States (ProQuest, 2017). The sample was stratified within each age group by the following criteria: gender, race or ethnic group, and geographic region. The demographic table below (Table 4.2) specifies the distributions of these characteristics and shows that the normative sample is nationally representative.

Table 4.2

Demographics of the Normative Sample vs. US Population

Normative Sample Size = 1249

Demographic	*N* Normative Sample	% Normative Sample	% US Population
Gender			
Male	743	59.5%	49%
Female	506	40.5%	51%
Total	1249	100%	100%
Race			
White	762	61%	77%
Black	187	15%	13%
Asian	51	4%	4%
Other	62	5%	6%
Total	1249	100%	100%
Hispanic	187	15%	12%
Clinical Groups			
	none	none	none
US Regions			
Northeast	212	17%	16%
Midwest	262	21%	22%
South	425	34%	38%
West	350	28%	24%
Total	1249	100%	100%
Parents' Educational Level			
Four years of college or more	350	28	31%
Some college	312	25	27%
High school graduate	387	31	30%
Less than high school graduate	200	16	12%
Total	1249	100%	100%

Table 4.3: Demographics of the Normative Sample (age group 3:0-4:11) vs. US Population

Normative Sample Size = 94

Demographic	N Normative Sample	% Normative Sample	% US Population
Gender			
Male	59	60%	49%
Female	43	40%	51%
Total	102	100%	100%
Race			
White	64	65%	77%
Black	10	10%	13%
Asian	6	5%	4%
Other	9	8%	6%
Hispanic	13	12%	12%
Total	102	100%	100%
Clinical Groups			
	none	none	none
US Regions			
Northeast	11	11%	16%
Midwest	24	23%	22%
South	36	36%	38%
West	31	30%	24%
Total	102	100%	100%
Parents' Educational Level			
Four years of college or more	31	30%	31%
Some college	31	30%	27%
High school graduate	30	29%	30%
Less than high school graduate	10	11%	12%
Total	102	100%	100%

Criteria for inclusion in the normative sample

A good assessment is one that yields results that will benefit the individual being tested or society as a whole (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education [AERA, APA, and NCME], 2014). One way we can tell if an assessment is a good test, is if it includes adequate norms. Previous research has suggested that utilizing a normative sample can be beneficial in the identification of a disability and that the inclusion of children with disabilities may negatively impact the test's ability to differentiate between children with disorders and children who are typically developing (Peña, Spaulding, & Plante, 2006). Since the purpose of the *IMPACT Social Communication Rating Scale* is to help to identify students who present with social communication difficulties, it was critical to exclude students from the normative sample

who have diagnoses that are known to influence social communication (Peña, Spaulding, & Plante, 2006). Students who had previously been diagnosed with a specific language impairment or learning disability were not included in the normative sample. Further, students were excluded from the normative sample if they were diagnosed with autism spectrum disorder, intellectual disability, hearing loss, neurological disorders, or genetically syndromes. Students who present with articulation disorders or attention-deficit/hyperactivity disorders were allowed to be included in the normative sample, as long as there was no co-occurring pragmatic language disorder. To sum up, in order for students to be included in the present normative sample, students must have met criteria of having normal language development, and show no evidence of a social language communication disorder. Students used in the present normative sample had no other diagnosed disabilities and were not receiving speech and language support or any other services. Thus, the normative sample for the *IMPACT Social Communication Rating Scale* provides an appropriate comparison group (i.e., a group without any known disorders that might affect social communication) against which to compare students with suspected disorders.

*Note: The *IMPACT Social Communication Rating Scale* is designed for students who are native speakers of English and/or are English language learners (ELL) who have demonstrated a proficiency in English based on state testing scores and school district language evaluations. Additionally, students who were native English speakers and also spoke a second language were included in this sample.

Norm-referenced testing is a method of evaluation where an individual's scores on a specific test are compared to scores of a group of test-takers (e.g., age norms) (AERA, APA, and NCME, 2014). Clinicians can compare clinician, teacher, and parent ratings on the *IMPACT Social Communication Rating Scale* to this normative sample to determine whether a student is scoring within normal limits or, if their scores are indicative of a social communication disorder. Administration, scoring, and interpretation of the *IMPACT Social Communication Rating Scale* must be followed in order to make comparisons to normative data. This manual provides instructions to guide examiners in the administration, scoring, and interpretation of the rating scale.

Chapter

5

Validity and Reliability

This section of IMPACT Social Communication Rating Scale manual provides information on the psychometric characteristics of validity and reliability. Validity helps establish how well a test measures what it is supposed to measure and reliability represents the consistency with which an assessment tool measures certain ability or skill. The first half of this chapter will evaluate content, construct, criterion, and clinical validity of the *IMPACT Social Communication Rating Scale*. The latter half of the chapter will review the consistency and stability of IMPACT Social Communication Rating Scale scores, in addition to test retest and inter-rater reliability.

Validity

When considering the strength of a test, one of the most important aspects to consider is validity. Content validity refers to whether the test provides the clinician with accurate information on the ability being tested. Specifically, content validity measures whether or not the test actually assesses what it says it is supposed to. According to McCauley and Strand (2008), there should be a justification of the methods used to choose content, expert evaluation of the test's content, and an item analysis.

Content-oriented evidence of validation addresses the relationship between a student's learning standards and the test content. Specifically, content-sampling issues take a look at whether cognitive demands of a test are reflective of the student's learning standard level. Additionally, content sampling may address whether the test avoids inclusion of features irrelevant to what the test item is intended to target.

Single-cut Scores

It is often common practice to use single cut scores (e.g., -1.5 standard deviations) to identify disorders, however, this is not evidence-based and there is actually evidence that advises against using this practice (Spaulding, Plante, & Farinella, 2006). When using single cut scores (e.g., -1.5 SD, -2.5 SD, etc.), we may under identify students with impairments on tests for which the best-cut score is higher and over identify students' impairments on tests for which the best-cut score is lower. Additionally, using single cut scores may go against IDEA's (2004) mandate, which states assessments must be valid for the purpose for which they are used.

Inclusion/Exclusion Criteria for the Discriminant Analysis and the Group Differences Study

Typically developing participants were selected based on the following criteria: 1) exhibited hearing sensitivity within normal limits; 2) presented with age-appropriate speech and language skills; 3) successfully completed each school year with no academic failures; and 4) attended public school and placed in general education classrooms. Typically developing participants were excluded if they presented with conditions as defined by the *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* (DSM-V; American Psychiatric Association, 2013) as having a diagnosis of mental health problems such as clinical disorders, personality disorders, and general medical conditions.

Inclusion criteria for the autism spectrum disorder (ASD) group was: 1) having a current diagnosis within the autism spectrum disorder as defined by the DSM- V (2013) (based on medical records and school-based special education eligibility criteria); and 2) currently attending a local public school, and enrolled in the general education classroom for at least 3 hours per day. Participants were excluded if they presented with comorbid conditions as defined by a DSM- V (2013) diagnosis of mental health problems such as clinical disorders, personality disorders, and general medical conditions.

Lastly, the inclusion criteria for the social communication disorder (SCD) group was: 1) having a current diagnosis within the social communication disorder as defined by the DSM- V (2013) (based on medical records, school-based special education eligibility criteria, obtaining a score of 76 or below on the Clinical Assessment of Pragmatics test, and displaying inappropriate or inadequate usage of pragmatic language as documented by medical or special educational records); 2) being enrolled in the general education classroom for at least 4 hours per day. Students from the SCD group were excluded from the study if the following were identified: 1) intellectual disability, learning disability, emotional disturbance; 2) comorbid conditions where the student had a DSM- V (2013) diagnosis of mental health problems including clinical disorders, personality disorders, and general medical conditions.

Sensitivity and Specificity

Table 5.1 shows the cut scores needed to identify social communication disorders within each age range. Additionally, this table demonstrates the sensitivity and specificity information that indicates the accuracy of identification at these cut scores. Sensitivity and specificity are diagnostic validity statistics that explain how well a test performs. Vance and Plante (1994) set forth the standard that for a language assessment to be considered clinically beneficial, it should reach at least 80% sensitivity and specificity.

Thus, strong sensitivity and specificity (i.e., 80% or stronger) is needed to support the use of a test in its identification of the presence of a disorder or impairment. Sensitivity measures how well the assessment will accurately identify those who truly have a social language disorder (Dollaghan, 2007). If sensitivity is high, this indicates that the test is highly likely to identify the pragmatic language disorder, or, there is a low chance of "false positives." Specificity measures the degree to which the assessment will accurately identify those who do not have a pragmatic language disorder, or how well the test will identify those who are "typically developing" (Dollaghan, 2007).

Table 5.1 IMPACT Social Communication Rating Scale sensitivity, specificity and likelihood ratios

Clinician Rating Scale

Age group	Cut score	Sensitivity	Specificity	Positive likelihood ratio	Negative likelihood ratio
3:0-3:11	77	.93	.88	6.54	.09
4:0-4:11	78	.87	.90	6.12	.13
5:0-5:11	77	.86	.85	4.38	.18
6:0-6:11	77	.84	.85	4.86	.08
7:0-7:11	78	.86	.84	4.29	12
8:0-8:11	78	.91	.88	6.64	.19
9:0-9:11	77	.88	.86	4.32	.15
10:0-10:11	77	.93	.88	6.54	.09
11:0-11:11	78	.87	.90	6.12	.13
12:0-12:11	77	.92	.88	6.07	.18
13:0-13:11	77	.89	.94	6.16	.17
14:0-14:11	78	.88	.89	4.29	.09
15:0-15:11	78	.92	.89	6.48	.12
16:0-21:0	78	.94	.96	7.27	.16

Teacher Rating Scale

Age group	Cut score	Sensitivity	Specificity	Positive likelihood ratio	Negative likelihood ratio
3:0-3:11	77	.86	.91	4.81	.11
4:0-4:11	77	.85	.89	4.74	.12
5:0-5:11	77	.83	.86	4.12	.14
6:0-6:11	77	.89	.89	4.74	.11
7:0-7:11	77	.91	.88	4.08	.08
8:0-8:11	78	.94	.84	6.07	.12
9:0-9:11	77	.86	.91	4.81	.11
10:0-10:11	77	.88	.84	4.78	.06
11:0-11:11	78	.83	.83	4.54	.09
12:0-12:11	77	.82	.94	6.11	.12
13:0-13:11	77	.85	.89	4.74	.12
14:0-14:11	78	.84	.91	4.52	.06
15:0-15:11	77	.83	.93	6.60	.11
16:0-21:0	77	.81	.92	6.56	.14

Note: Age groups 16:0-21:0 are reported together as there were no age-related changes detected after the age of 16. Total N=2440; typically developing group n=1249; clinical group=1191

Table 5.1 IMPACT Social Communication Rating Scale sensitivity, specificity and likelihood ratios

Parent Rating Scale

Age group	Cut score	Sensitivity	Specificity	Positive likelihood ratio	Negative likelihood ratio
3:0-3:11	78	.93	.87	6.12	.13
4:0-4:11	77	.89	.86	6.10	.11
5:0-5:11	77	.91	.89	4.42	.14
6:0-6:11	77	.85	.93	4.12	.12
7:0-7:11	77	.89	.87	4.25	.23
8:0-8:11	77	.87	.89	4.34	.16
9:0-9:11	78	.93	.87	6.12	.13
10:0-10:11	77	.86	.91	6.46	.08
11:0-11:11	78	.84	.88	6.11	.22
12:0-12:11	78	.91	.83	4.05	.19
13:0-13:11	77	.94	.84	4.11	.12
14:0-14:11	77	.86	.93	4.56	.06
15:0-15:11	78	.94	.89	6.11	.23
16:0-21:0	78	.89	.86	6.15	.43

Note: Age groups 16:0-21:0 are reported together as there were no age-related changes detected after the age of 16. Total N=2440; typically developing group n=1249; clinical group=1191

Content Validity

The validity of a test determines how well the test measures what it purports to measure. Validity can take various forms, both theoretical and empirical. This can often compare the instrument with other measures or criteria, which are known to be valid (Zumbo, 2014). For the content validity of the test, expert opinion was solicited. Twenty-nine speech language pathologists (SLPs) reviewed the *IMPACT Social Communication Rating Scale*. All SLPs were licensed in the state of California, held the Clinical Certificate of Competence from the American Speech-Language-Hearing Association, and had at least 5 years of experience in assessment of children with autism and social communication difficulties. Each of these experts was presented with a comprehensive overview of the rating scale descriptions, as well as rules for standardized administration and scoring. They all reviewed 6 full-length administrations. Following this, they were asked 30 questions related to the content of the rating scale and whether they believed the assessment tool to be an adequate measure of social communication skills. For instance, their opinion was solicited regarding whether the questions and the raters' responses properly evaluated the impact of social communication skills on educational performance and social interaction. The reviewers rated each rating scale on a decimal scale. All reviewers agreed that the *IMPACT Social Communication Rating Scale* is a valid informal observational measure to evaluate social communication skills and to determine the impact on educational performance and social interaction, in students who are between the ages of 5 and 21 years old. The mean ratings for the Clinician, Teacher, and Parent rating scales were 28.7±0.9, 27.3±0.8, 27.9±1.0, respectively.

Construct Validity

Developmental Progression of Scores
Pragmatic language is developmental in nature and a skill that changes overtime and with age. Mean scores for examinees should increase with chronological age, demonstrating age differentiation. Mean scores and standard deviations for the *IMPACT Social Communication Rating Scale* are divided into eleven age intervals displayed in Table 5.2.

Table 5.2 Normative Sample's mean scores and standard deviations on the *IMPACT Social Communication Rating Scale*

	Rating Scales		
Age Group	Clinician	Teacher	Parent
3:0-3:11	30 (3.2)	29 (3.1)	33 (3.4)
4:0-4:11	31 (3.0)	30 (3.3)	34 (3.2)
5:0-5:11	36 (4.2)	30 (3.1)	26 (4.1)
6:0-6:11	37 (2.1)	30 (2.8)	27 (2.8)
7:0-7:11	37 (2.4)	31 (1.4)	27 (2.6)
8:0-8:11	37 (2.2)	32 (1.6)	27 (1.9)
9:0-9:11	37 (2.8)	32 (1.1)	27 (2.7)
10:0-10:11	37 (2.3)	32 (1.9)	28 (1.8)
11:0-11:11	37 (2.1)	33 (2.0)	28 (1.5)
12:0-12:11	38 (1.7)	33 (1.8)	28 (1.1)
13:0-13:11	38 (2.1)	33 (2.0)	28 (1.8)
14:0-14:11	38 (2.2)	33 (1.2)	29 (0.6)
15:0-15:11	38 (1.4)	33 (1.4)	29 (0.9)
16:0-21:0	38 (2.3)	33 (2.0)	29 (0.4)

Criterion Validity

In assessing criterion validity, the *IMPACT Social Communication Rating Scale* was correlated to other measures of social communication such as the *Clinical Assessment of Pragmatics* (CAPs; Lavi, 2019), the *Social Responsiveness Scale -2* (SRS-2; Constantino & Gruber, 2012), and the *Pragmatic Language Skills Inventory* (PLSI; Gilliam & Miller, 2006). Time between test administrations ranged from the same day to five days.

The concurrent validity was assessed using Pearson's correlation among all measures. Correlation coefficients of ≥ 0.7 are recommended for same-construct instruments, while moderate correlations of ≥ 0.4 to ≤ 0.70 are acceptable. The level of significance was set at $p \leq 0.05$. When assessing validity, the *IMPACT Social Communication Rating Scale* was substantially correlated with the *CAPs* (2019) and the *SRS-2 (2012)*: 0.93, and 0.82 respectively, $p < 0.001$. The correlations are the lowest with the *PLSI* (2006) (Table 5.3). While there is an apparent relationship between performance on all three measures, the *IMPACT Social Communication Rating Scale* evaluates social language from a conceptually different framework.

Table 5.3: Pearson's Correlations between four measures of social communication (N-87)

IMPACT Rating Scales	CAPs	SRS-2	PLSI
Clinician†	.94	.82	.70
Teacher†	.86	.81	.64
Parent†	.88	.84	.67

Abbreviations: CAPs, Clinical Assessment of Pragmatics (2019); SRS-2, Social Responsiveness Scale-2 (2012); PLSI, Pragmatic Language Skills Inventory (2006).
† significant at an alpha of 0.001 level of significance.

Group Differences

Since a social communication assessment tool is designed to identify those examinees with social language difficulties, it would be expected that individuals identified as likely to exhibit pragmatic language difficulties would score lower than those who are typically developing. The mean for the outcome variables (Clinician, Teacher, and Parent ratings) were compared among the two clinical groups and the typically developing group of examinees using Kruskal Wallis analysis of variance (ANOVA). The level of significance was set at $p \leq 0.05$. Table 5.4 reviews the ANOVA, which reveals a significant difference between all three groups.

Table 5.4: Clinician, Teacher, and Parent Rating Scale Comparison across Clinical and Typically-Developing groups (N= 369)

	ASD (n=112)	SCD (n=135)	TD group (n=122)	p-value*
Clinician [a,b,c]	102(3.4)	105(2.8)	142(3.2)	<.001
Teacher [a,b,c]	83(2.6)	86(3.1)	114(2.7)	<.001
Parent [a,b,c]	74(3.5)	77(3.8)	106(3.4)	<.001

Abbreviations: ASD, autism spectrum disorder; SCD, social communication disorder; TD, typically developing
**Kruskal-Wallis Analysis of Variance test*
[a] significant difference between ASD and TD groups
[b] significant difference between SCD and TD groups
[c] significant difference between SCD and ASD groups

Standards for fairness

Standards of fairness are crucial to the validity and comparability of the interpretation of test scores (AERA, APA, and NCME, 2014). The identification and removal of construct-irrelevant barriers maximizes each test- taker's performance, allowing for skills to be compared to the normative sample for a valid interpretation. Test constructs and individuals or subgroups of those who the test is intended for must be clearly defined. In doing so, the test will be free of construct-irrelevant barriers as much as possible for the individuals and/or subgroups the test is intended for. It is also important that simple and clear instructions are provided.

Response Bias

A bias is defined as a tendency, inclination, or prejudice toward or against something or someone. For example, if you are interviewing for a new employer and asked to complete a personality questionnaire, you may answer the questions in a way that you think will impress the employer. These responses will of course impact the validity of the questionnaire.

Responses to questionnaires, tests, scales, and inventories may also be biased for a variety of reasons. Response bias may occur consciously or unconsciously, it may be malicious or cooperative, self-enhancing or self-effacing (Furr, 2011). When response bias does occur, the reliability and validity of our measures will be compromised. Diminished reliability and validity will in turn impact decisions we make regarding our students (Furr, 2011). Thus, psychometric damage may occur because of response bias.

Types of Response Biases

Acquiescence Bias ("Yea-Saying and Nay-Saying") refers to when an individual consistently agrees or disagrees with a statement without taking into account what the statement means (Danner & Rammstedt, 2016).

Extremity Bias refers to when an individual consistently over or underuses "extreme" response options, regardless of how the individual feels towards the statement (Wetzel, Lüdtke, Zettler, & Bohnke, 2015).

Social desirability Bias refers to when an individual responds to a statement in a way that exaggerates his or her own positive qualities (Paulhus, 2002).

Malingering refers to when an individual attempts to exaggerate problems, or shortcomings (Rogers, 2008). *Random/careless responding* refers to when an individual responds to items with very little attention or care to the content of the items (Crede, 2010).

Guessing refers to when the individual is unaware of or unable to gage the correct answer regarding their own or someone else's ability, knowledge, skill, etc. (Foley, 2016).

In order to protect against biases, balanced scales are utilized. A balanced scale is a test or questionnaire that includes some items that are positively keyed and some items that are negatively keys. For example, the *IMPACT Social Communication Rating Scale* items are rated on a 4-point scale ("not typically," "sometimes," "often," and "typically"). Now, imagine if we ask a teacher to answer the following two items regarding one of their students:

1. The student appears confident and comfortable when socializing with peers.
2. The student does not appear overly anxious and fidgety around group of peers.

Both of these items are positively keyed because a positive response indicates a stronger level of social language skills. To minimize the potential effects of acquiescence bias, the researcher may revise one of these items to be negatively keyed. For example:

1. The student appears confident and comfortable when socializing with peers.
2. The student appears overly anxious and fidgety around group of peers.

Now, the first item is keyed positively and the second item is keyed negatively. The revised scale, which represents a balanced scale, helps control acquiescence bias by including one item that is positively keyed and one that is negatively keyed. If the teacher responded highly on both items, the teacher may be viewed as an acquiescent responder (i.e., the teacher is simply agreeing to items without regard for the content). If the teacher responds high on the first item, and responds low on the second item, we know that the teacher is reading each test item carefully and responding appropriately.

For a balanced scale to be useful, it must be scored appropriately, meaning the key must accommodate the fact that there are both positively and negatively keyed items. To achieve this, the rating scale must keep track of the negatively keyed items and "reverse the score." Scores are only reversed for negatively keyed items. For example, on the negatively keyed item above, if the teacher scored a *1* (“not typically”) the score should be converted to a *4* (“typically”) and if the teacher scored a *2* (“sometimes”) the score should be converted to a *3* (“often”). Similarly, the researcher recodes responses of *4* (“typically”) to *1* (“not typically”) and *3* (“often”) to *2* (“sometimes”). Balanced scales help researchers differentiate between acquiescent responders and valid responders. Therefore, test users can be confident that the individual reporting is a reliable and valid source.

Inter-rater Reliability

Inter-rater reliability measures the extent to which consistency is demonstrated between different raters with regard to their scoring of examinees on the same instrument (Osborne, 2008). For the *IMPACT Social Communication Rating Scale,* inter-rater reliability was evaluated by examining the consistency with which the raters are able to follow the test scoring procedures. Two clinicians, two teachers, and two caregivers simultaneously rated students. The results of the scorings were correlated. The coefficients were averaged using the z-transformation method. The resulting correlations for the subtests are listed in Table 5.5.

Table 5.5 Inter-rater Reliability Coefficients, IMPACT Social Communication Rating Scale

Rating Scale	*Reliability*
Clinician (N=22)	*.93*
Teacher (N=22)	*.91*

Test-Retest Reliability

This is a factor determined by the variation between scores or different evaluative measurements of the same subject taking the same test during a given period of time. If the test is a strong instrument, this variation would be expected to be low (Osborne, 2008). The *IMPACT Social Communication Rating Scale* was completed with 62 randomly selected examinees, ages 5-0 through 21-0 over two rating

periods. The interval between the two periods ranged from 16 to 20 days. To reduce recall bias, the examiners did not inform the raters at the time of the first rating session that they would be rating again. All subsequent ratings were completed by the same examiners who administered the test the first time. The results are listed in Table 5.6. The test-retest coefficients for the three rating scales were all greater than .80 indicating strong test-retest reliability for the *IMPACT Social Communication Rating Scale.*

Table 5.6						
Test - Retest Reliability						
		1st Test		2nd Test		Correlation Coefficient
Age Groups	N	Mean	SD	Mean	SD	
1,2, & 3	21					
Clinician		30	2	31	1	0.90
Teacher		31	2	32	1	0.96
Parent		27	2	27	2	0.91
4,5, & 6	20					
Clinician		38	2	39	1	0.84
Teacher		33	2	34	1	0.88
Parent		28	2	30	2	0.90
7, 8, 9, 10 & 11	21					
Clinician		38	2	38	1	0.86
Teacher		34	1	33	1	0.82
Parent		29	2	29	2	0.84

Internal Consistency

Internal consistency ensures that all items within the scale are measuring the same construct (i.e., social communication behavior as it relates to educational performance), and that they are related to each other and consistently contribute to the overall score, thereby providing a reliable and accurate representation of the attribute being measured. Table 5.7 shows the results for each of the samples.

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Table 5.7						
Internal Consistency						
	Clinician		Teacher		Parent	
Age Groups	n	Alpha	n	Alpha	n	Alpha
3:0-4:11	64	.89	54	.88	78	.91
5:0-6:11	87	.92	67	.96	76	.94
7:0-8:11	84	.95	63	.95	64	.96
9:0-10:11	89	.95	67	.96	81	.97
11:0-11:11	79	.93	59	.94	79	.93
12:0-15:11	85	.94	66	.97	78	.95
16:0-21:0	88	.96	73	.93	88	.92

Chapter

6

Highlights of the IMPACT Social Communication Rating Scale

The results of the *IMPACT Social Communication Rating Scale* provide information on a student's awareness of social context, intent to socialize, nonverbal language, social interactions, theory of mind, ability to accept change, social language and conversational adaptation, social reasoning, and cognitive flexibility. Data obtained from the *IMPACT Social Communication Rating Scale* is useful in determining eligibility criteria for a student with a social communication impairment.

Strong Psychometric Properties

The *IMPACT Social Communication Rating Scale* was normed on a nationwide standardization sample of 1006 examinees. The sample was stratified to match the most recent U.S. Census data on gender, race/ethnicity, and region. Please refer to Chapter 4 for more information of the standardization process.

The *IMPACT Social Communication Rating Scale* areas have strong sensitivity and specificity (above 80%), high internal consistency, and test-retest reliabilities. Criterion-related validity studies were conducted during standardization, please refer to Chapter 5 for more information on the summary results of the reliability and validity studies.

The contextual background and theoretical background sections described in Chapters 1 and 2 provide construct validity of the *IMPACT Social Communication Rating Scale*. Additionally, please refer to chapter 1 for descriptions of the social communication characteristics evaluated and literature reviews to support these measurements included in the rating scale.

Ease and Efficiency of Administration and Scoring

The *IMPACT Social Communication Rating Scale* consists of three observational rating scales, one for clinician, one for parent, and one for the teacher. All *IMPACT* rating scales and scale converting software is available on the *SLP Platform* website. Rating scale item clarification videos are also provided on this website. Additionally, an instructional email with a link to the website and rating form is prepared for your convenience to send to teacher and parents. Please review Chapter 3 for more information on the easy and effective administration process.

Chapter

7

Case Studies

This section will provide an example of how clinicians and intervention teams can use the results from *The IMPACT Social Communication Rating Scale* to develop treatment plans for each individual student. We will review two case studies; the first case study will go over a case where the student's primary diagnosis was a social communication disorder. Next, we will review a case study of a student who has a specific learning disability diagnosis and a social communication disorder. For the first case study, the rating scale will aid in the student's eligibility for special education and for the second case study, the rating scale will act to provide information on the child's social skills and whether he will receive speech and language intervention as a related service. In order to protect the identities of our participants, all names used in the manual are pseudonyms, and minor details have been changed. All data for the *IMPACT Social Communication Rating Scale* was gathered under a research protocol reviewed and approved by IntegReview IRB, an accredited and certified independent institutional review board. Parent permission and student consent was provided to share these case studies.

Case Study One: Third grade student with an articulation impairment

"Angelo" is a 12-year-old boy in the sixth grade. Angelo's teacher referred him for a comprehensive speech and language evaluation in order to determine what support, accommodations, and/or services would be the most effective to assist Angelo and his social communication development. Angelo's teacher, Mrs. Connolly, had concerns with his ability to work with peers during classroom activities. Specifically, his teacher worried Angelo was unable to take turns and stay on topic during group work. Angelo quickly shifts to unrelated topics and has been observed interrupting his classmates. The teacher also noted he rarely makes eye contact and his body language appears "closed-off."

As part of the comprehensive speech and language evaluation, the SLP included the *IMPACT Social Communication Rating Scale* to evaluate the potential effects that Angelo's social communication difficulties may have on his academics and overall social interactions. Specifically, the rating scale focuses on the following areas: (a) awareness of social context, (b) intent to socialize, (c) nonverbal language, (d) social interactions, (e) theory of mind, (f) ability to accept change, (g) social language and conversational adaptation, (h) social reasoning, and (i) cognitive flexibility. The speech-language pathologist, Angelo's teacher (Mrs. Connolly), and Angelo's mother completed *The IMPACT Social Communication Rating Scale*.

Clinician Observations while completing the rating scale

The clinician observed Angelo on three separate occasions - in his classroom, at lunch, and at recess time. During the classroom observation, the clinician observed Angelo and his classmates working on a science project. Angelo was in a group of four and the group was working on building a 3D cell. The students were chatting with each other, discussing colors, and shapes for different parts of the cell. Angelo responded by talking about his new toy car he got for his birthday. The students in the group responded and then shifted back to the project, but Angelo kept changing the subject and demonstrated

difficulty focusing on the task at hand. He was also observed starring at his desk (instead of looking at his peers) when he spoke.

Later on that day, the clinician observed Angelo during lunch time with his friends. Angelo was observed playing a card game. He rarely looked up at his friends and kept his eyes on the cards. When Angelo lost the game of cards, he threw his cards down and crossed him arms angrily.

The next day, the clinician observed Angelo during recess. Angelo was observed running from his classroom to the school yard. He was reminded to slow down and walk. Angelo began to speed walk looking behind him to ensure the clinician wasn't watching and began to run again. Angelo sat on a hill and pulled out his toy car. Angelo did not appear to interact with any friends during this observation.

Results of the IMPACT Articulation and Phonology Rating Scale

The SLP gathered the *IMPACT Social Communication Rating Scale* data from Mrs. Connolly and Angelo's father and inputted his own rating scale observations on the *Video Learning Squad* website. The IMPACT calculator indicated that there was a significant impact, meaning that Angelo's social communication skills are indicative of/significant enough to affect everyday communication, academic performance, and social interactions.

Intervention Planning

Angelo has qualified for speech and language services and his SLP is preparing potential goals to address in therapy. After reviewing the results of his formal assessments and the results from the *IMPACT Social Communication Rating Scale*, the SLP knows that there needs to be a focus on nonverbal language, conversational adaptation, intent to socialize, and social reasoning. With the help of the *IMPACT Social Communication Rating Scale*, the SLP is able to explain Angelo's strengths and weaknesses, as well as how his weaknesses may impact his academics and social interactions in the classroom.

The SLP plans to address body language and facial expressions by working with Angelo on how to "read" and interpret other people's expressions. Additionally, Angelo will practice using his own facial expressions to depict different emotions (e.g., surprised, disinterested, confused, happy, etc.). When Angelo demonstrates an understanding on the importance of facial expressions and body language, the clinician and SLP will work on conversational adaptation and social interactions with peers, friends, and teachers.

Case Study Two: Ninth grade student with a specific-learning disability and social communication impairment

"Paula" is a 14-year-old girl in the ninth grade. She is just starting out as a freshman at her new high school. Paula's parents are concerned about how she interacted with peers in junior high and have said she has a tough time making friends. Paula is currently under an IEP with specific-learning disability as her primary disorder and speech-language impairment as her secondary disorder. Paula has received speech and language services over the years and it has mostly focused on listening comprehension and expressive language. Her triennial assessment is coming up and parents would like Paula's social communication to be assessed again. Her parents report that Paula wants to make friends and tries to be social with her peers, but has a difficult time connecting and expressing her emotions and feelings.

As part of the comprehensive speech and language evaluation, the SLP included the *IMPACT Social Communication Rating Scale* to evaluate the potential effects that Paula's social communication difficulties may have on her academics and overall social interactions. Specifically, the rating scale focuses on the following areas: (a) awareness of social context, (b) intent to socialize, (c) nonverbal

language, (d) social interactions, (e) theory of mind, (f) ability to accept change, (g) social language and conversational adaptation, (h) social reasoning, and (i) cognitive flexibility. The speech-language pathologist, Paula's teacher (Mr. Blanch), and Paula's mother and father completed *The IMPACT Social Communication Rating Scale*.

Clinician Observations while completing the rating scale

The clinician observed Paula on three separate occasions – twice in her classroom, and at lunch time. During the first classroom observation, the clinician observed Paula and her classmates entering class before the start of period one. Paula was sitting with two other students who were discussing their weekends. Paula appeared to try and join the conversation but it seemed she could not figure out when to speak, respond, or look at her peers. One of the students was observed nodding her head while the other spoke to show she was paying attention and interested. Paula would look up and look around the classroom, and it appeared she didn't know how to show her peer she was listening. Paula was observed interrupting, to which one of the student's made a face to, but Paula did not appear to understand she had interrupted or the face her friend had made.

The next day, the clinician observed Paula during lunch time with her friends. Paula was able to stay on topic and engage in turn taking, but it appeared she was confused with when her friends made sarcastic comments (e.g., I can't wait to go to soccer practice tonight, it will be so nice to play in the rain). It appeared Paula was only listening to her friend's words and not interpreting tone of voice or facial expressions and body language.

Later that day, the clinician observed Paula in her fourth period English class. Paula was working with her peers on a reading comprehension activity. Once again, she was able to engage in turn taking and topic maintenance. Paula was able to answer factual details from the story but had difficulty comprehending details that required interpretation of emotions or figurative language.

Results of the IMPACT Articulation and Phonology Rating Scale

The SLP gathered the *IMPACT Social Communication Rating Scale* data from Mr. Blanch and Paula's mother and inputted her own rating scale observations on the *Video Learning Squad* website. The IMPACT calculator indicated that there was a significant impact, meaning that Paula's social communication skills are indicative of/significant enough to affect everyday communication, academic performance, and social interactions.

Intervention Planning

Paula has qualified for speech and language services and her SLP is preparing potential goals to address in therapy. After reviewing the results of her formal assessments and the results from the *IMPACT Social Communication Rating Scale,* the SLP knows that there needs to be a large focus on the understanding and use of nonverbal language. With the help of the *IMPACT Social Communication Rating Scale*, the SLP is able to explain Paula's strengths and weaknesses, as well as how her weaknesses impact her academics and social interactions in the classroom.

The SLP and Paula will work on identifying emotions and feelings based off facial expressions and body language. Once Paula is able to interpret and "read" other people's expressions, it is important she is able to provide appropriate reactions to her conversation partner's. For example, if a friend is telling a sad story it is important not only to offer sympathetic words but to also show we feel sorry they are going through this and we are listening.

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