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Video-Based Assessment Techniques of Pragmatics (Verbal and Nonverbal Language)

Adriana Lavi, PhD, CCC-SLP

Moderated by:
Amy Hansen, MA, CCC-SLP, Managing Editor, SpeechPathology.com

Need assistance or technical support?

- Call 800-242-5183
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- Must be logged in for full time requirement
- Log in to your account and go to Pending Courses
- Must pass 10-question multiple-choice exam with a score of 80% or higher
  - Within 7 days for live webinar; within 30 days of registration for recorded/text/podcast formats
- Two opportunities to pass the exam

Video-Based Assessment Techniques Across 6 New Pragmatic Language Constructs

Adriana Lavi, Ph.D, CCC SLP
Disclosures

Adriana Lavi, Ph.D CCC-SLP

Financial: Author of Clinical Assessment of Pragmatics (CAPs) and receives royalty payments.

Non financial: No relevant non financial relationship exists.

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Learner Outcomes

After this course, participants will be able to:

- List and define six new pragmatic language domains for the assessment of social communication judgment and performance.
- Explain how assessment of non-instrumental, higher-order pragmatic language skills along with paralinguistic decoding and use of paralinguistic codes is critical in differential diagnosis of various neurodevelopmental disorders.
- Create a comprehensive protocol for the informal assessment of social communication judgment and performance, based on interactive, self-made, video-based assessment tasks.
In other words: today, we’ll talk

1. Six newly proposed pragmatics constructs and their validation.
2. A video based method to test pragmatic language.
3. Research conducted to analyze and compare pragmatic language profiles of
   a. typically developing students
   b. students with high functioning autism
   c. students with social (pragmatic) communication disorder
4. Review the “Contextualized Assessment of Pragmatics Checklist”

“Knowing when to say what to whom and how much”

(Hymes, 1971)

What is Pragmatics?

“The range of communicative functions (reasons for talking), the frequency of communication, discourse skills (turn-taking, topic maintenance and change, requests for clarification), the flexibility to modify language for different listeners and social situations, and the ability to convey a coherent and informative narrative” (Paul, Norbury, & Gosse, 2017)
Final ingredient needed for appropriate and effective communication.

Commonly Assessed Pragmatic Skills

- Body language
- Eye-contact
- Conversation initiation, maintenance, ending
- Making the sequence of statements coherent and logical
- Taking turns with other speakers
- Maintaining a topic
Informal Methods of Assessing Pragmatic Language

1. Narrative sample
   - Story retelling task
   - Comprehension task

2. Theory of Mind (ToM) tasks
   - Consider perspective of another person

3. Emotional understanding task
   - Understanding of emotions based on facial expression

4. Social problem solving task
   - Reasonable solutions to presented social difficulties

5. Shared Attention
   - Guess your thinking based on what/where you are looking

6. Double Interview
   - You interview student/student interviews you

7. Maintaining a Topic
   - Appropriate responses to conversational starters
   - Maintain topic for several turns (not introduced by self)

8. Conversation with a peer
   - Conversational flow
   - Maintain topic introduced by another
Rarely Assessed
Paralinguistics
Detecting Sarcasm
Detecting Deceit
Repairing communication breakdowns

Problem
Plethora of treatment for social-pragmatic communication
Fewer tools available for assessment
Fewer standardized measures of social-pragmatic communication.
Pragmatics typically assessed as:

- Isolated units
- Do not target specific components/domains
- Assessment not a comprehensive profile

Intervention more effective if specific deficit components are identified.

Social pragmatic communication impairments

- Becoming academic and social reality for increasing numbers of children.
Six New Proposed Assessment Constructs

<table>
<thead>
<tr>
<th>Pragmatic Judgement</th>
<th>Pragmatic Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumental Intent</td>
<td>Instrumental Performance Appraisal</td>
</tr>
<tr>
<td>Affective Intent</td>
<td>Social Context Appraisal</td>
</tr>
<tr>
<td>Paralinguistic Cohesion</td>
<td>Paralinguistic Decoding</td>
</tr>
<tr>
<td></td>
<td>Affective Expression</td>
</tr>
<tr>
<td></td>
<td>Paralinguistic Signals</td>
</tr>
</tbody>
</table>

(Lavi, Mainess, and Daher 2016)

Domains: Pragmatic Judgement vs. Pragmatic Performance

<table>
<thead>
<tr>
<th>Pragmatic Judgement</th>
<th>Pragmatic Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumental Intent</td>
<td>Instrumental Performance</td>
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<td>Affective Expression</td>
</tr>
<tr>
<td>Paralinguistic Decoding</td>
<td>Paralinguistic Signals</td>
</tr>
</tbody>
</table>
Pragmatic Judgement Defined

- Ability to appropriately understand & use language
- Requires appropriate response at appropriate time in social context.

(Ryder et al, 2014; Simmons et al, 2014)

Receptive vs. Expressive Pragmatic Judgement

Receptively: identifying correct & incorrect responses in a social context
Expressively: verbally providing appropriate responses in given situation
Pragmatic Judgement

- Pragmatic judgement = receptive pragmatic skills
- Allows more detailed grasp of child's comprehension of social situations
- Distinguishes from broad definition of pragmatic language skills

Pragmatic Performance Definition

- Pragmatic performance = expressive pragmatics
- Measured via responses given in social situations.
- Responses vary, e.g.:
  - Answers to questions/statements
  - Responses to expressed emotions
Pragmatic Judgement vs Pragmatic Performance

- Assessment of both important
- HFA or SCD may have different profiles
- One may have stronger judgment skills vs. performance skills (or vice versa).
- Assessing both skills can
  - Provide more details to understanding pragmatic profiles
  - Results in more individualized plan
  - More effective plan

Domains: Instrumental vs. Affective Intent

<table>
<thead>
<tr>
<th>Instrumental Intent</th>
<th>Affective Intent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pragmatic Judgment</td>
<td>Pragmatic Performance</td>
</tr>
<tr>
<td>Instrumental Performance Appraisal</td>
<td>Instrumental Performance</td>
</tr>
<tr>
<td>Social Context Appraisal</td>
<td>Affective Expression</td>
</tr>
<tr>
<td>Paralinguistic Decoding</td>
<td>Paralinguistic Signals</td>
</tr>
</tbody>
</table>
**Instrumental Communication**

**Primary goal:**
- Effective relay of information
- Communication used as means to an end.
- Heavy focus on message
- Little focus on affective or emotional functions
- Often used in individuals with ASD

---

**Non-Instrumental Communication**

- “Affective communication” → higher level communication skills
  - Expressing emotions to another person.
  - Key component of nonverbal communication
  - Requires higher level thought processing.
  - Differs from instrumental communication
    - Not used as means to an end.
Domain: Paralinguistic Cohesion

Domains: Paralinguistic Cohesion

Represents integrative interaction between ability to:

- detect speaker's intent by recognizing meanings of nonverbal cues
- express various types of intent with help of nonverbal signals such as
  - facial expressions
  - tone of voice
  - inflections in prosody
  - Gestures
  - overall body language.
Video Based Assessment

- Use of produced video narrative for eliciting pragmatic language responses from individuals (of ages 3:0 years to adulthood)
- Purpose: To analyze & measure individual’s ability to:
  - Understand real-life social situations
  - Respond to real-life social situations
  - Presented in a video-based format.

- Combines the storytelling power of television
- Authenticity of real-life social situations
  - To obtain as naturalistic responses as possible.
  - Powerful and prolific testing tool
  - Both effective and time efficient
Video Based Assessment

A means for teaching persons with ASD or pragmatic communicaton disorders a “range of socially significant behaviors” (Rayner et al., 2009)

Provides efficient & effective means of imitation models for children with ASD and training normative behaviors. (Lindsay et al., 2013)

A need to explore use of video based techniques for pragmatic language assessment.

Before we discuss each of the six pragmatic language constructs and watch sample video based scenarios,

Let’s preview 3 of our study participants’ conversational exchanges/interviews/test responses
Which of the following participant study groups do the 3 participants represent:

a. Typically developing  
b. High functioning autism  
C. Social communicative disorder  

Participant 1?  
Participant 2?  
Participant 3?
The responses seen in the videos are based on tasks designed to elicit comprehension/expression of instrumental intent.

Let's analyze participants' responses based on tasks designed to elicit comprehension/expression of affective intent.
Instrumental Performance Appraisal (Awareness of Basic Social Routines)

- Instrumental Intent
- Affective Intent
- Paralinguistic Cohesion

Judgement
- Instrumental Performance Appraisal
- Social Context Appraisal
- Paralinguistic Decoding

Performance
- Instrumental Performance
- Affective Expression
- Paralinguistic Signals
Construct 1: Awareness of Basic Social Routines (IPA)

Ability to judge appropriateness of:
- Introductions
- Farewells
- Politeness
- Making requests
- Responding to gratitude
- Requesting help
- Answering phone calls
- Requesting info (e.g., directions)
- Asking permission

Ability to discern difference between:
- Appropriate and inappropriate language
  - When used in means-end or basic communication processes.
  - Includes (but is not limited) to:
    - Introductions, farewells, politeness, making requests, responding to gratitude, and requesting information.
These skills necessary to:

- Satisfy individual’s basic needs
- Behave appropriately in social situations
- Can be measured via ability to choose correct responses to basic/functional communication processes.

Awareness of Basic Social Routines (IPA) – sample video based social scenario and student responses
Social Construct Appraisal (Reading Context Cues)

- **Instrumental Intent**
  - Instrumental Performance Appraisal
- **Affective Intent**
  - Social Context Appraisal
  - Paralinguistic Decoding
- **Paralinguistic Cohesion**
  - Paralinguistic Signals

### Construct 2: Reading Context Cues (SCA)

- Ability to understand dynamic nature of social context
- Adequately process interactions between
  - contextual variables
  - physical setting & environment,
  - communication partners,
  - communicative intent,
  - conflict/solution, etc.
- Requires ability to demonstrate **perspective taking**
- Ability to understand intent of others
- Infer what others are thinking.
- Includes interpreting irony, sarcasm, idioms, humor

- Ability to understand social context:
  - Settings
  - Changes in settings
  - Disruptions of routines
  - Flexibility in disruption of routines.

READING CONTEXT CUES (SCA) – sample video based social scenario and student responses
**Construct 3: Using Social Routine Language (IP)**

**Ability to express:**
- Introductions
- Farewells
- Politeness
- Making requests
- Responding to gratitude
- Requesting help
- Answering phone calls
- Requesting info (e.g., directions)
- Asking permission

---

**Instrumental Performance (Using Social Routine Language)**

- **Instrumental Intent**
  - Instrumental Performance Appraisal
- **Affective Intent**
  - Social Context Appraisal
  - Affective Expression
- **Paralinguistic Cohesion**
  - Paralinguistic Decoding
  - Paralinguistic Signals

---

**Pragmatic**

- Instrumental Performance
- Social Context Appraisal
- Affective Expression
- Paralinguistic Signals

**Performance**

- Instrumental Performance
Using Social Routine Language (IP)

Defined in the same manner as instrumental performance appraisal;

But instead of comprehension, assesses ability to adequately & appropriately express or use verbal means-end processes.
Construct 4: Expressing Emotions (AE)

- Ability to appropriately express:
  - Polite refusal
  - Regret
  - Support peers
  - Express empathy
  - Gratitude
  - Make a compliment
  - Encourage a buddy
  - Use humor
Construct 4: Expressing Emotions (AE)

- Is a non-instrumental pragmatic performance form of communication
- Examines ability to appropriately express emotions or higher order language
  - Polite refusal
  - Regret
  - Support peers
  - Give compliments
  - Use humor
  - Express empathy
  - Gratitude
  - Encouragement

Expressing Emotions (AE)

- Requires higher level thinking as purpose not designed to fulfill basic needs.
- References to emotional states indicate deeper understanding of mind & emotion.
- Crucially affects
  - Flow of conversation,
  - Ability to understand others point of view,
  - Is essential in relationship building.
Can affect conversational techniques such as:

- Topic selection
- Maintenance
- Introduction
- Transition
- Closure
- Responsiveness to conversational partner

Expressed through verbal feedback or affective expression

- Selection of either or both (verbal feedback or affective expression) change pending the conversational partner’s message.
- Reflect positive and negative reactions that may result in change of topic, conversation contingency & repair.
Expressing Emotion (AE) - sample video based social scenario

Paralinguistic Decoding  *(Reading Nonverbal Cues)*

- Pragmatic Judgement
  - Instrumental Performance Appraisal
  - Social Context Appraisal
  - Paralinguistic Decoding

- Pragmatic Performance
  - Instrumental Performance
  - Affective Expression
  - Paralinguistic Signals
Construct 5: Reading Nonverbal Cues (PD)

- A form of pragmatic judgement.
- Measures ability to read micro-expressions & nonverbal language.
- Can suggest what a person is feeling & thinking without use of words.
Can reveal how person feels despite contradictory verbal message.
Appropriate reading of nonverbal language is critical in understanding another person,
 Leads to an appropriate verbal response.

<table>
<thead>
<tr>
<th>UTTERANCE</th>
<th>INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cindy got a new pair of sandals.</td>
<td>She usually buys running shoes.</td>
</tr>
<tr>
<td>Cindy got a new pair of sandals.</td>
<td>Affirmative statement.</td>
</tr>
<tr>
<td>Cindy got a new pair of sandals.</td>
<td>Question</td>
</tr>
</tbody>
</table>
STRESS

Oh no! My laptop broke down.
Oh no! My laptop broke down.
Oh no! My laptop broke down.
Oh no! My laptop broke down.

NONVERBAL COMMUNICATION
Reading Nonverbal Cues (PD) - sample video based social scenario

Paralinguistic Signals (Using Nonverbal Cues)
Construct 6: Using Nonverbal Cues (PS)

Ability to use facial expressions, nonverbal language, prosody and intonation appropriately.

A non-instrumental form of communication

- Assesses ability to appropriately use facial expressions
- Gestures
- Prosody

In contrast to paralinguistic decoding, this is the acting out of the facial expressions and gestures.
Impacts speaker’s:

- Choice of language
- Flow of the conversation

Often noted in:

- Facial expressions
- Body posture
- Tone of voice
- Eye contact

Using Nonverbal Cues (PS) - sample video based social scenario
Instructions to create a comprehensive video based informal assessment protocol that measures pragmatics

**PRAGMATIC JUDGEMENT (PJ)**

1. Create scripts of real life social situations based on 3 PJ constructs.
2. Add these questions at the end of each script:
   - A. Did anything go wrong in this video?
   - B. What went wrong? or
   - B. Why did it go well?
3. Include either correct or incorrect behaviors.
4. Film the scripts.

**PRAGMATIC PERFORMANCE (PP)**

1. Create scripts of real life social situations based on 3 PP constructs.
2. Add this question at the end of each script:
   - "Show me, what would you say and how would you say it?"
3. Include a situation/conversation that is unfinished.
4. Film the scripts.
And now presentation on the research study we conducted
We Conducted a Series of Studies

1. To validate six new constructs
2. To analyze pragmatic language profiles of 3 participant groups

METHODOLOGY

- Videos of numerous social situations created
  - Representing each of 6 proposed constructs
- A series of validity & reliability measures employed
  - To validate new constructs & tests
3 groups of participants watched video

Answered 2 types of questions

Participants’ responses analyzed & compared.

Pragmatic Judgement question:

“Did anything go wrong in this situation? If yes, what went wrong? If no, why do you think it went well?”

Pragmatic Performance question:

“ What and how would you respond in this situation? What and how would you say it?”

Group Profiles

1. High Functioning Autism
2. Social (Pragmatic) Communication Disorder
3. Typically developing – Control Group
METHODOLOGY

- Tests administered to 141 students
- Ages 7-16 years old

<table>
<thead>
<tr>
<th>Age Range</th>
<th>TD group (n)</th>
<th>HFA group (n)</th>
<th>SCD group (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:0 – 8:11</td>
<td>12</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>9:0 – 10:11</td>
<td>14</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>11:0 – 12:11</td>
<td>15</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>13:0 – 16:0</td>
<td>15</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>
Video-based test

- 3 pragmatic judgment subtests
- 3 pragmatic performance subtests
- 8 items per subtest
- Total of 48 items

**Inclusion Criteria: Control Group**

- Hearing sensitivity within normal limits
- Age-appropriate speech and language skills
- Successfully completed each school year with no academic failures
- Attending public school: general education classroom
Students with High Functioning Autism

Inclusion:

- Having a current diagnosis within the high functioning autism spectrum (based on special education eligibility criteria or medical records)
- Attend public school
- Gen ed classroom (min 4 hrs)

Exclusion:

- Comorbid conditions
  - E.g., mental health issues, personality disorders, general medical conditions

Students with Social Communication Disorder (SCD)

Inclusion:

- Having a current diagnosis within the social communication disorder (based on special education eligibility criteria or medical records)
- Attend public school
- Full-time general education classroom
Exclusion:

- Autism, intellectual disability, learning disability, emotional disturbance
- Comorbid conditions
  - E.g., mental health issues, personality disorders, general medical conditions

STUDY DESIGN

Students tested:
- Individually
- Quiet room (no distractions)
- At home

Tested by:
- CA licensed SLP
- Trained in standardized administration of protocol

Before testing:
- Each student presented with 2 practice videos
VALIDATION STUDY

To examine validity & reliability of tasks:

A. Interrater Reliability
B. Test-Retest Reliability
C. Content Validity

Participants

- 56 typically developing students
- 46 students with HFA
- 39 students with SCD
Reliability

**Inter-rater reliability:**
- Data examined by 2 California-licensed SLPs
- Independently evaluated 15 randomly selected test administrations

**Test-retest reliability:**
- All retesting performed by same examiner who initially administered test.

Content & Criterion Validity

- Content validity: Expert Opinion was solicited.
- Criterion validity:

<table>
<thead>
<tr>
<th>Instrumental Performance Appraisal (IPA)</th>
<th>Social Context Appraisal (SCA)</th>
<th>Paralinguistic Decoding (PD)</th>
<th>Instrumental Performance (IP)</th>
<th>Affective Expression (AE)</th>
<th>Paralinguistic Codes (PC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASL TOPL</td>
<td>Social Language Development Test</td>
<td>none</td>
<td>CASL TOPL</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>
Data Analysis

Statistical Package for the Social Sciences (SPSS) version 23.0

- Test retest reliability
- Inter-rater reliability
- Intra-class correlation coefficients (ICCs)
- 95% confidence intervals (CIs)

Variable normality:
- Kolmogorov-Smirnov
- Shapiro-Wilk tests

Concurrent validity (Pearson’s correlation)
- CASL
- TOPL
- Social Language Development

RESULTS

Test retest reliability of the study tests (n=52)

<table>
<thead>
<tr>
<th></th>
<th>ICC</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPA</td>
<td>0.86</td>
<td>0.82</td>
<td>0.89</td>
</tr>
<tr>
<td>SCA</td>
<td>0.83</td>
<td>0.78</td>
<td>0.87</td>
</tr>
<tr>
<td>PD</td>
<td>0.84</td>
<td>0.79</td>
<td>0.89</td>
</tr>
<tr>
<td>IP</td>
<td>0.87</td>
<td>0.83</td>
<td>0.90</td>
</tr>
<tr>
<td>AE</td>
<td>0.78</td>
<td>0.74</td>
<td>0.82</td>
</tr>
<tr>
<td>PC</td>
<td>0.74</td>
<td>0.70</td>
<td>0.78</td>
</tr>
</tbody>
</table>
Inter-rater reliability of the CAPs subtests (n=30)

<table>
<thead>
<tr>
<th></th>
<th>ICC</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPA</td>
<td>0.90</td>
<td>0.74</td>
<td>0.96</td>
</tr>
<tr>
<td>SCA</td>
<td>0.95</td>
<td>0.91</td>
<td>0.97</td>
</tr>
<tr>
<td>PD</td>
<td>0.92</td>
<td>0.85</td>
<td>0.97</td>
</tr>
<tr>
<td>IP</td>
<td>0.95</td>
<td>0.92</td>
<td>0.98</td>
</tr>
<tr>
<td>AE</td>
<td>0.84</td>
<td>0.71</td>
<td>0.93</td>
</tr>
<tr>
<td>PC</td>
<td>0.82</td>
<td>0.75</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Pearson's correlations between our tasks CASL, TOPL, & SLDT (n=46)

<table>
<thead>
<tr>
<th></th>
<th>CASL (PJ)</th>
<th>TOPL</th>
<th>SLDT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPA†</td>
<td>0.72</td>
<td>0.68</td>
<td>0.73</td>
</tr>
<tr>
<td>IP †</td>
<td>0.68</td>
<td>0.75</td>
<td>0.79</td>
</tr>
</tbody>
</table>

† \( \alpha = 0.001 \) (sig)
Content Validity

- 17 reviewers rated each subtest
- A decimal rating scale
  - 5 questions per subtest
  - Total possible score: 50

Mean rating of subtests

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Mean Rating</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPA</td>
<td>47.7 ± 0.9</td>
<td></td>
</tr>
<tr>
<td>SCA</td>
<td>47.1 ± 0.8</td>
<td></td>
</tr>
<tr>
<td>PD</td>
<td>47.0 ± 1.0</td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>48.4 ± 0.7</td>
<td></td>
</tr>
<tr>
<td>AE</td>
<td>47.2 ± 0.6</td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>47.9 ± 1.3</td>
<td></td>
</tr>
</tbody>
</table>
- Normality of quantitative variables:
  - Kolmogorov-Smirnov test
  - Shapiro-Wilk test
- Distribution of scores:
  - Box and Whisker plots
- Comparison of means across groups
  - Kruskal Wallis analysis of variance (ANOVA)
- Further comparison of means
  - Mann-Whitney U test
DISCUSSION

Significant differences observed between all groups

- Receptive pragmatic tasks
- Expressive pragmatics tasks
HFA and SCD groups performed adequately on instrumental tasks
  - However significant difficulties on higher order pragmatics
HFA group showed profound deficits in recognition and appropriate use of facial expressions
SCD group performed better on using paralinguistic signals

Clinical Implications

**Important findings:**
both HFA and SCD students able to comprehend and use instrumental pragmatic skills effectively.

**Therefore:** Therapeutic interventions must move beyond instrumental tasks and focus on higher-order pragmatic skills
For both groups:
Understanding and responding to subtle social cues...
(E.g., inferences, irony, sarcasm),
...forms an effective therapeutic starting point.

Therapy goals for students with HFA should focus on:
- Students’ ability to recognize meanings of various facial expressions
- Appropriate use of paralinguistic codes.

THE LAVI INSTITUTE

CONTEXTUALIZED ASSESSMENT OF PRAGMATICS CHECKLIST

• an informal and dynamic assessment protocol

TO ACCESS THE VIDEOS NEEDED FOR COMPLETION OF THIS PROTOCOL, PLEASE GO TO www.lavinistitute.com
References:


• Phelps-Terasaki & Phelps-Gunn (1992), *Test of Pragmatic Language (TOPL)*, Austin, TX: Pro-Ed Inc.

