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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](http://SpeechPathology.com)



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## 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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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.

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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"

7

"Knowing when to say what to  
whom and how much"

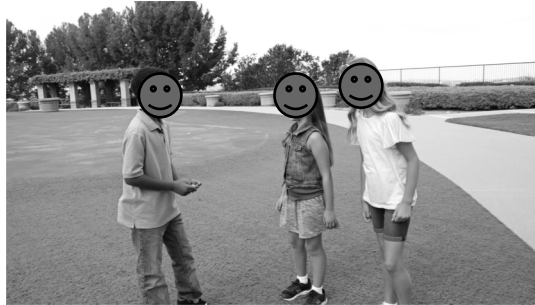
(Hymes, 1971)

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)

8

Final ingredient  
needed for  
appropriate and  
effective  
communication.



9

## 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

10

## 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

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### 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

12

## Rarely Assessed

Paralinguistics

Detecting Sarcasm

Detecting Deceit

Repairing communication breakdowns



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## Problem



Plethora of  
treatment for  
social-pragmatic  
communication

Fewer tools  
available for  
assessment

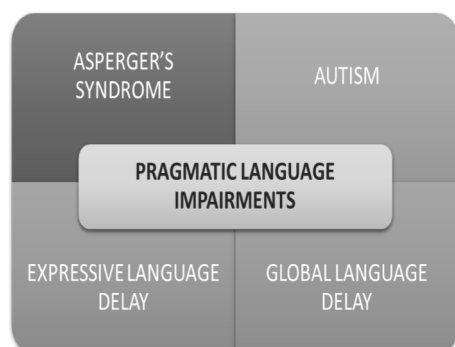
Fewer  
standardized  
measures of  
social-pragmatic  
communication.

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- 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.



15

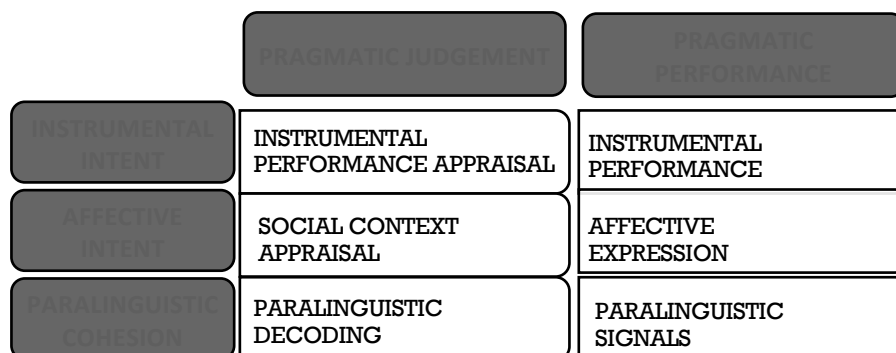


### Social pragmatic communication impairments

- Becoming academic and social reality for increasing numbers of children.

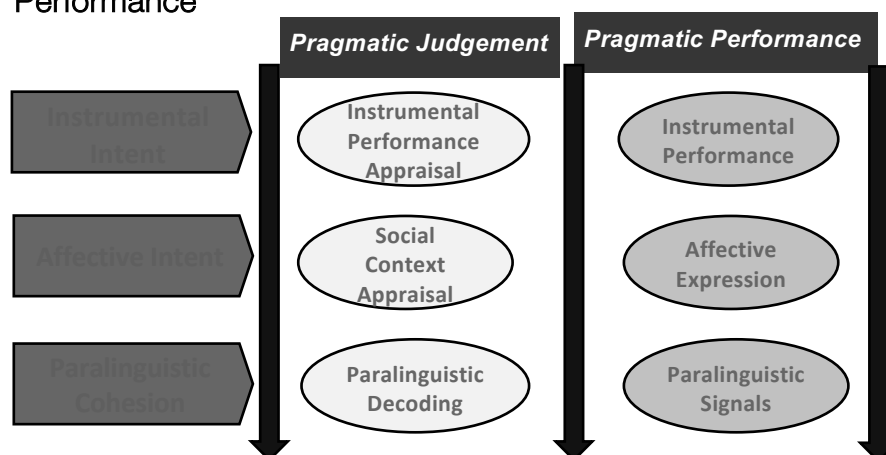
16

## Six New Proposed Assessment Constructs



(Lavi, Mainess, and Daher 2016)

## Domains: Pragmatic Judgement vs. Pragmatic Performance



## 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)

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## Receptive vs. Expressive Pragmatic Judgement

Receptively:  
identifying correct &  
incorrect responses  
in a social context

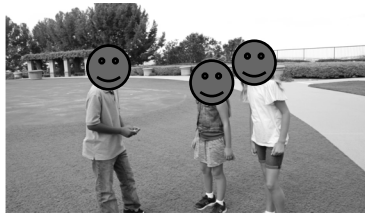
Expressively: verbally  
providing appropriate  
responses in given  
situation

20



## 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



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## 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

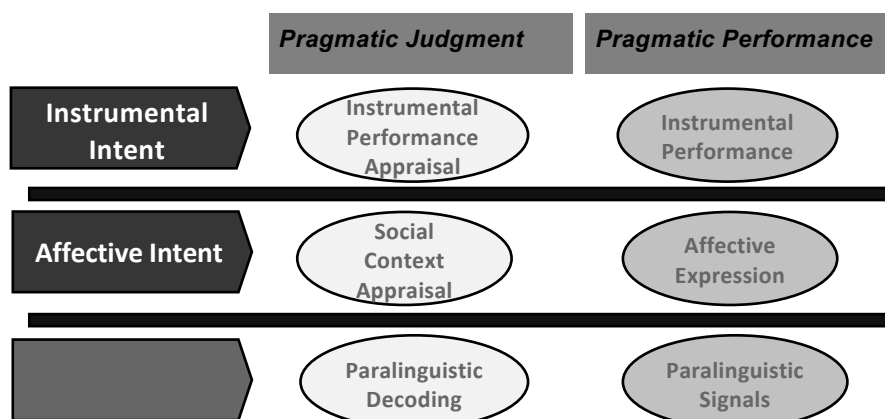
22

## 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

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## Domains: Instrumental vs. Affective Intent



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## 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

25

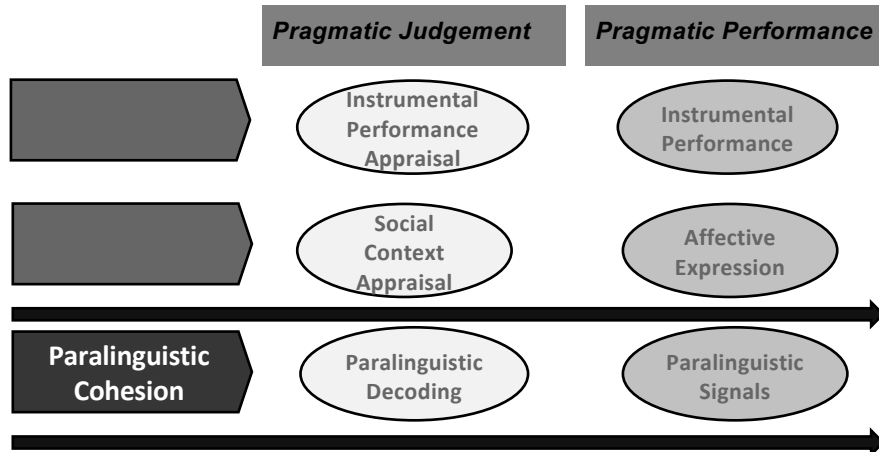
## Non-Instrumental Communication



- “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.

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## Domain: Paralinguistic Cohesion



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## 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.

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## 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.

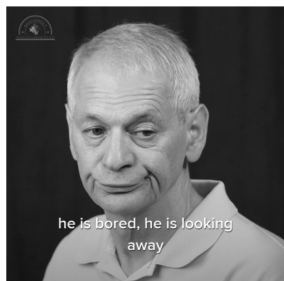
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- Combines the storytelling power of television
- Authenticity of real-life social situations
  - To obtain as naturalistic responses as possible.
  - Powerful and prolific testing tool
  - Both effective and time efficient



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## Video Based Assessment



A means for teaching persons with ASD or pragmatic communication disorders a “range of socially significant behaviors”

(Rayner et al., 2009)

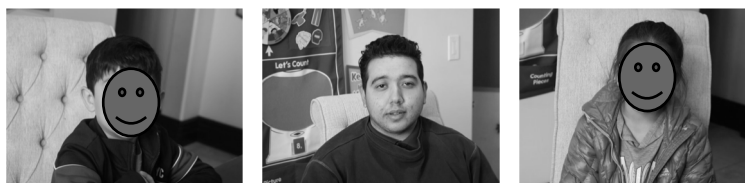
Provides efficient & effective means of imitation models for children with ASD. and training normative behaviors.

(Lindsay et al., 2013)

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

31

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

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CONTINUED

Which of the following participant study groups do the 3 participants represent:

- a. Typically developing
- b. High functioning autism
- c. Social communicative disorder

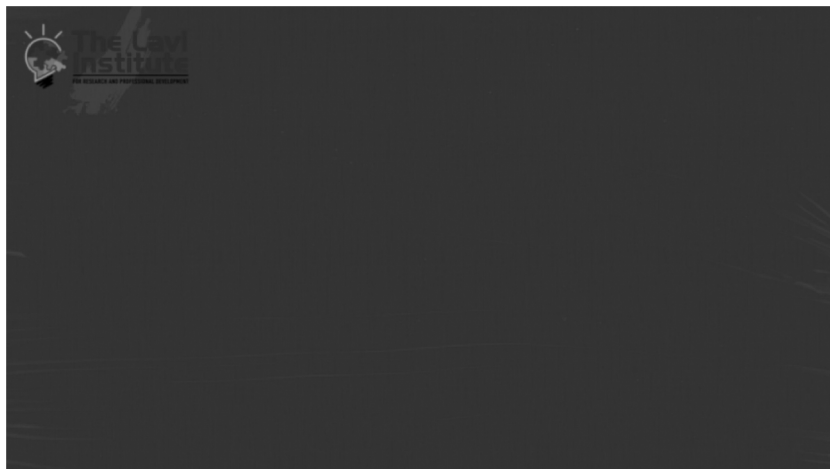
Participant 1?

Participant 2?

Participant 3?

33

CONTINUED



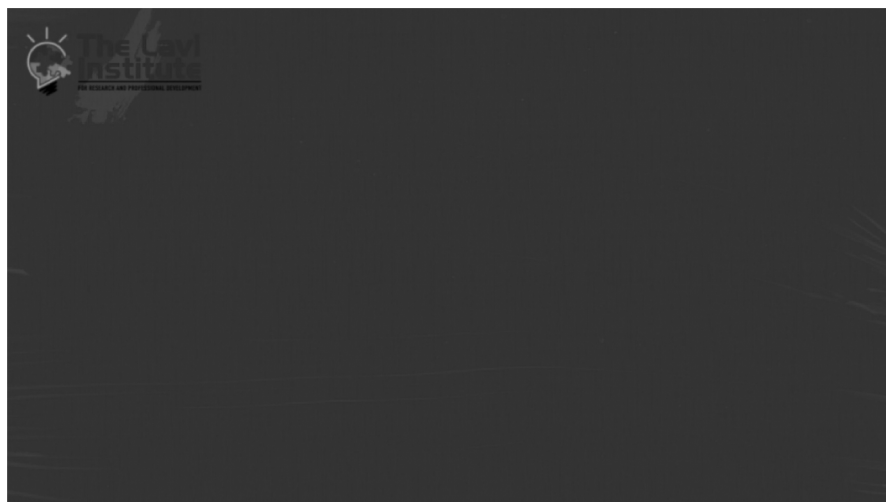
34

CONTINUED

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.

35



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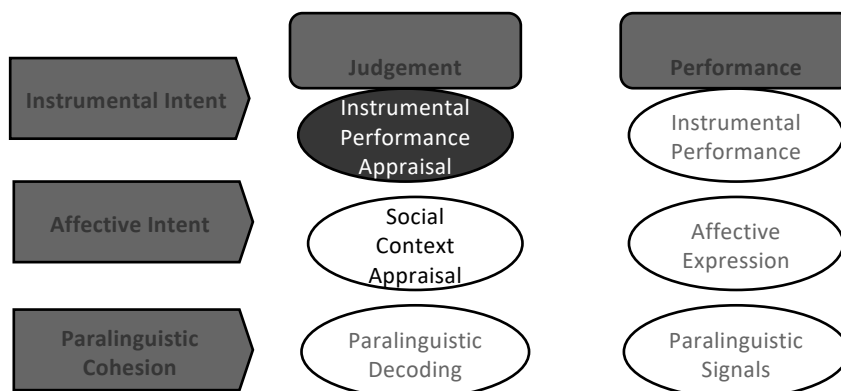
continued

## DISCUSSION

37

continued

### Instrumental Performance Appraisal (Awareness of Basic Social Routines)



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continued

## 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

Instrumental Intent

Judgement

Instrumental  
Performance  
Appraisal

3

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.



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continued

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.

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continued

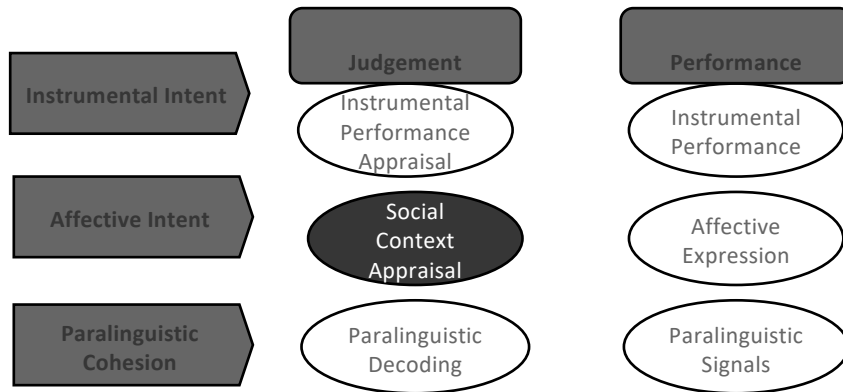
Awareness of Basic Social Routines (IPA) –  
sample video based social scenario and  
student responses



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continued

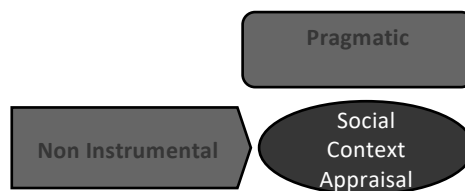
## Social Construct Appraisal (Reading Context Cues)



43

## 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**



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- 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.

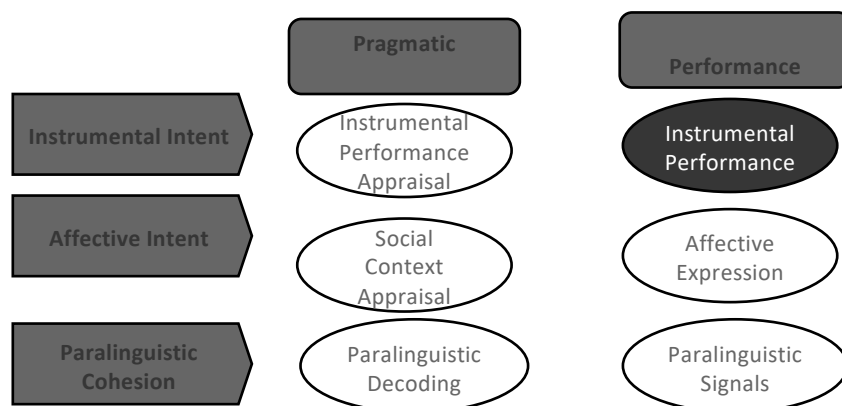
45

READING CONTEXT CUES (SCA) – sample video based social scenario and student responses



46

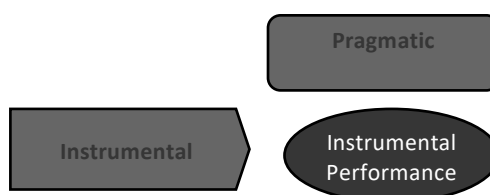
### Instrumental Performance *(Using Social Routine Language)*



### 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



## 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.

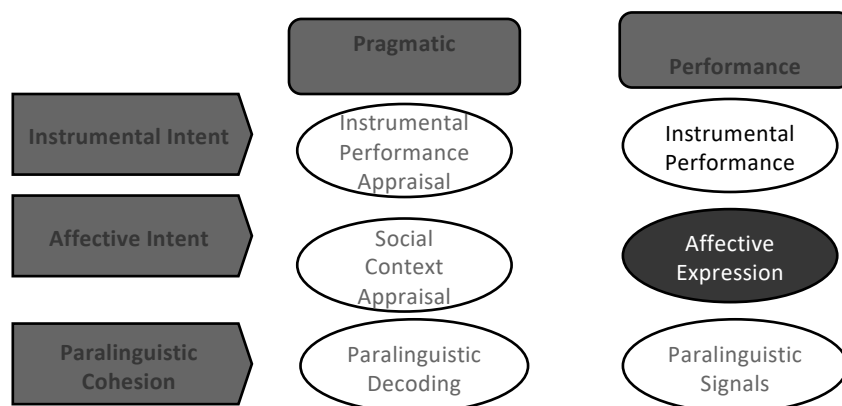
49

## Using Social Routine Language (IP) - sample video based social scenario



50

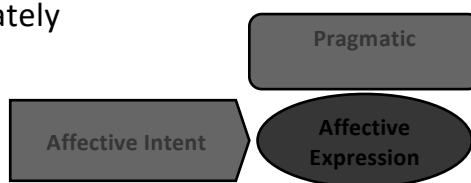
### Affective Expression (*Expressing Emotions*)



51

### Construct 4: Expressing Emotions (AE)

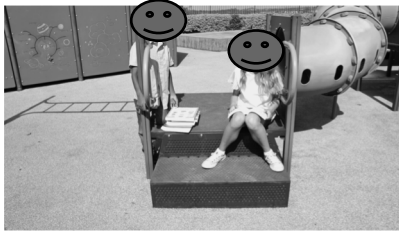
- Ability to appropriately express:
  - Polite refusal
  - Regret
  - Support peers
  - Express empathy
  - Gratitude
  - Make a compliment
  - Encourage a buddy
  - Use humor



52

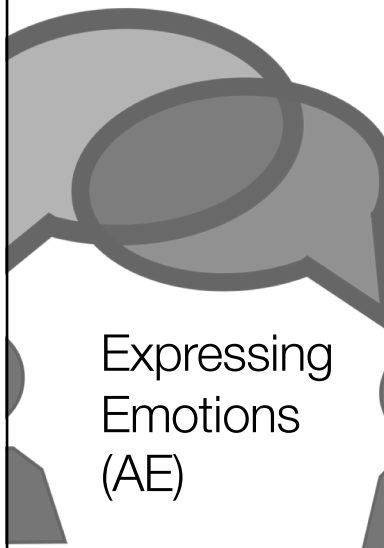


#### Construct 4: Expressing Emotions (AE)



- 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

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#### 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.

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Can affect conversational techniques such as:

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

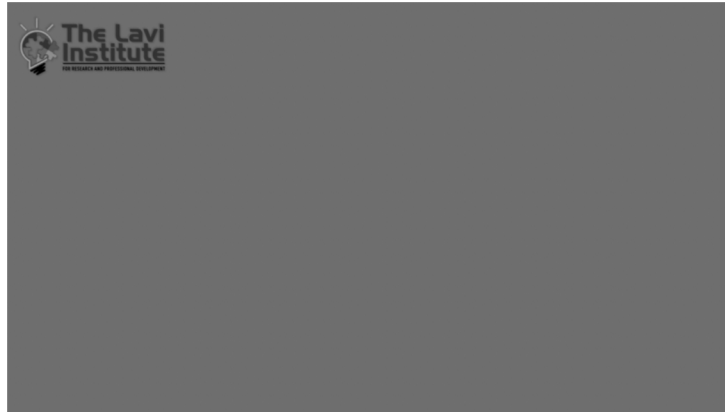
Expressed through verbal feedback or affective expression

55

- 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.

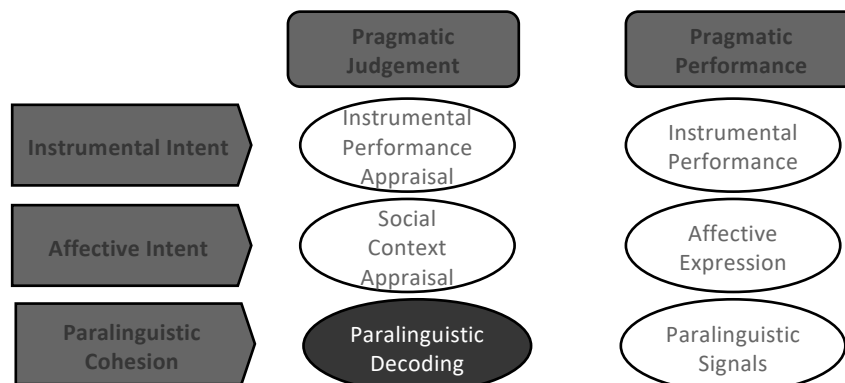
56

## Expressing Emotion (AE) - sample video based social scenario



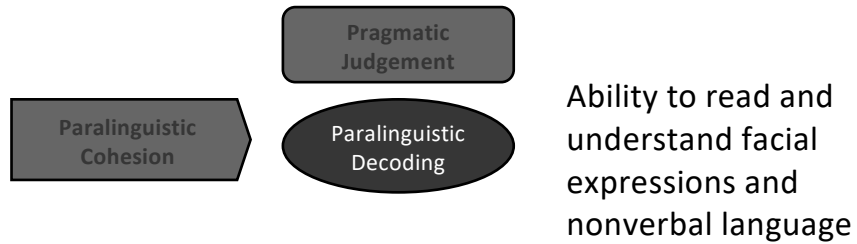
57

## Paralinguistic Decoding (*Reading Nonverbal Cues*)



58

## Construct 5: Reading Nonverbal Cues (PD)

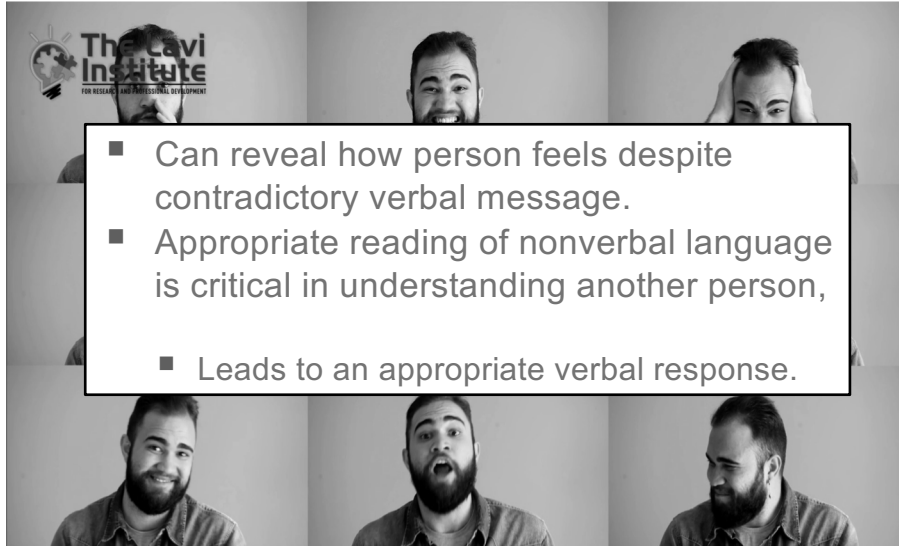


5

## 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.

60



- 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.

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## INTONATION

### UTTERANCE

### INTERPRETATION

Cindy got a new pair of sandals.



She usually buys running shoes.

Cindy got a new pair of sandals.



Affirmative statement.

Cindy got a new pair of sandals.



Question

62

continued

## 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.

63

continued

## NONVERBAL COMMUNICATION



64

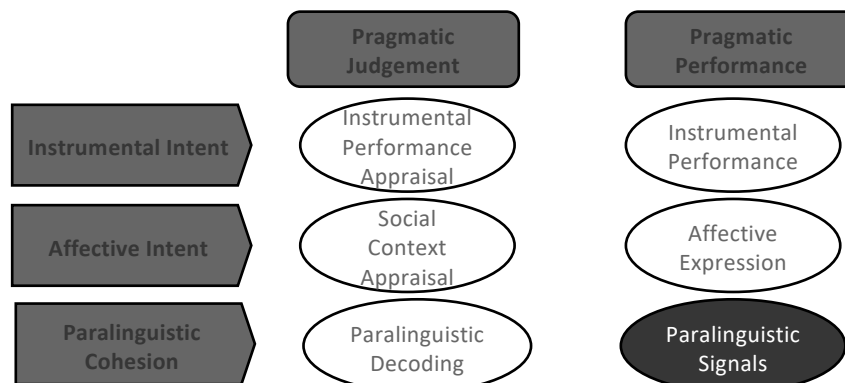
continued

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



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### Paralinguistic Signals (*Using Nonverbal Cues*)



66

## Construct 6: Using Nonverbal Cues (PS)

Paralinguistic  
Cohesion

Pragmatic  
Judgement

Paralinguistic  
Signals

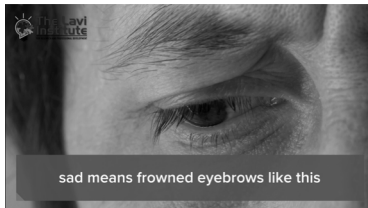
Ability to use facial expressions, nonverbal language, prosody and intonation appropriately.

6

## Construct 6: Using Nonverbal Cues (PS)

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

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Impacts speaker's:

- Choice of language
- Flow of the conversation

Often noted in:

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



69

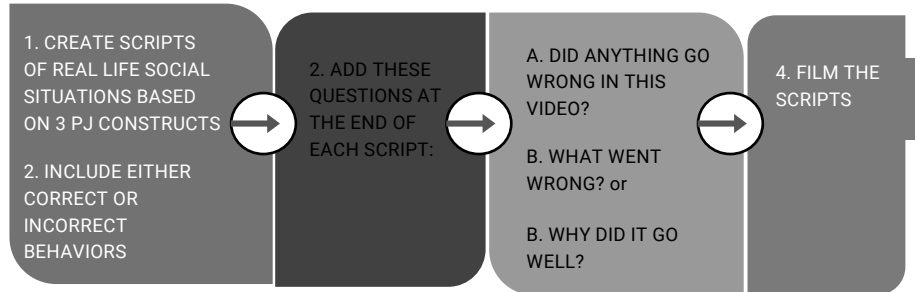
Using Nonverbal Cues (PS) - sample video based social scenario



70

Instructions to create a comprehensive video based informal assessment protocol that measures pragmatics

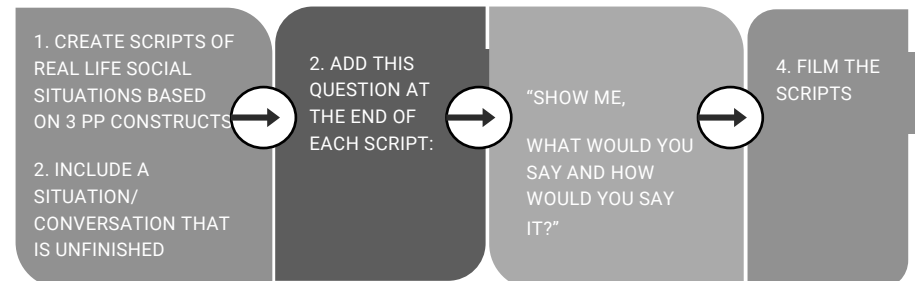
### PRAGMATIC JUDGEMENT (PJ)



71

Instructions to create a comprehensive video based informal assessment protocol that measures pragmatics

### PRAGMATIC PERFORMANCE (PP)



72

continued



A SAMPLE SELF  
MADE VIDEO

73

continued

And now  
presentation on  
the research  
study we  
conducted

74

continued

## We Conducted a Series of Studies

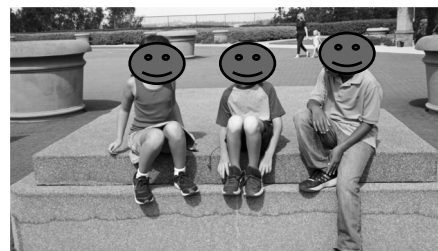
1. To validate six new constructs
2. To analyze pragmatic language profiles of 3 participant groups



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## 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



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- 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?"*

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## Group Profiles



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

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## Age Range



7 yrs. old

10 yrs. old

11 yrs.

16 yrs. old

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## METHODOLOGY

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

Age Range	TD group (n)	HFA group (n)	SCD group (n)
7:0 – 8:11	12	10	8
9:0 – 10:11	14	11	9
11:0 – 12:11	15	12	10
13:0 – 16:0	15	13	12

80



## Video-based test

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

81

### 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

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## CONTINUED<sup>®</sup> 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

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## CONTINUED<sup>®</sup>

### 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



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#### Exclusion:

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

85



#### 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

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## VALIDATION STUDY

To examine validity & reliability of tasks:

*A. Interrater Reliability*

*B. Test-Retest Reliability*

*C. Content Validity*

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## Participants



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

88

## 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.

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## Content & Criterion Validity

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

Instrumental Performance Appraisal (IPA)	Social Context Appraisal (SCA)	Paralinguistic Decoding (PD)	Instrumental Performance (IP)	Affective Expression (AE)	Paralinguistic Codes (PC)
CASL TOPL	Social Language Development Test	none	CASL TOPL	none	none

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## 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*

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## RESULTS

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

	ICC	Lower 95% CI	Upper 95% CI
IPA	0.86	0.82	0.89
SCA	0.83	0.78	0.87
PD	0.84	0.79	0.89
IP	0.87	0.83	0.90
AE	0.78	0.74	0.82
PC	0.74	0.70	0.78

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continued

Inter-rater reliability of the CAPs subtests  
(n=30)

	ICC	Lower 95% CI	Upper 95% CI
IPA	0.90	0.74	0.96
SCA	0.95	0.91	0.97
PD	0.92	0.85	0.97
IP	0.95	0.92	0.98
AE	0.84	0.71	0.93
PC	0.82	0.75	0.91

93

continued

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

	CASL (PJ)	TOPL	SLDT
IPA <sup>†</sup>	0.72	0.68	0.73
IP <sup>†</sup>	0.68	0.75	0.79

†  $\alpha = 0.001$  (sig)

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continued

## Content Validity

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

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## Mean rating of subtests

IPA:  $47.7 \pm 0.9$

SCA:  $47.1 \pm 0.8$

PD:  $47.0 \pm 1.0$

IP:  $48.4 \pm 0.7$

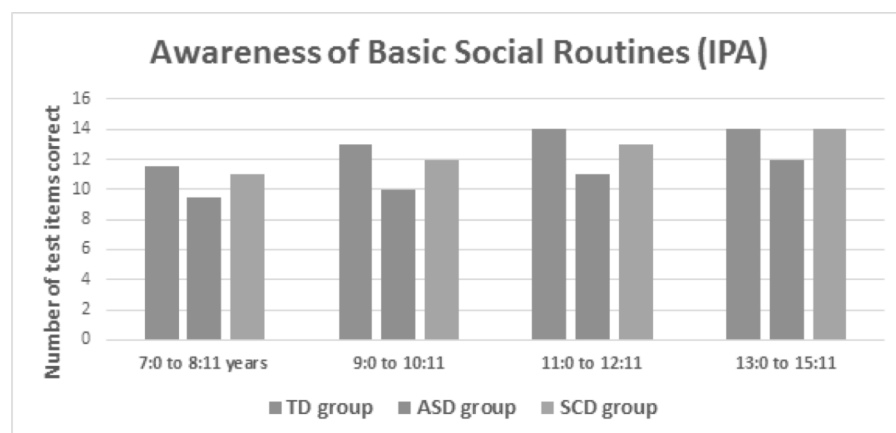
AE:  $47.2 \pm 0.6$

PC:  $47.9 \pm 1.3$

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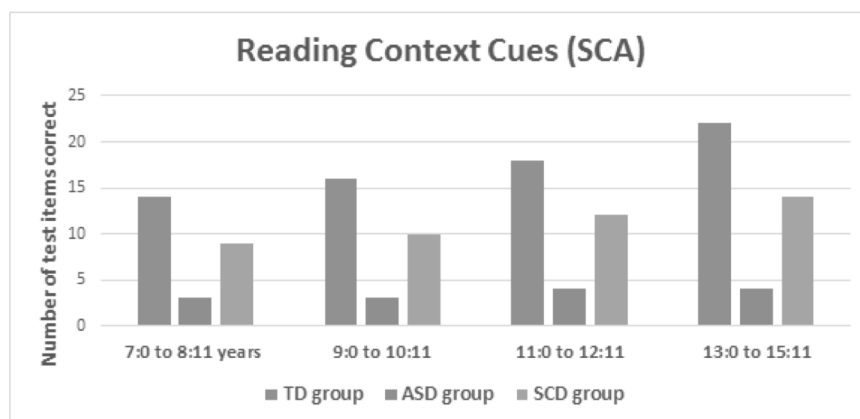
- Normality of quantitative variables:
  - Kolmogorov-Smirnov test
  - Shapiro-Wilk test
- Distribution of scores:
  - Box and Whisker plots
- Comparison of means across groups
  - Kruskal Wallis analysis of variance (ANOVA)
- Further comparison of means
  - Mann-Whitney U test

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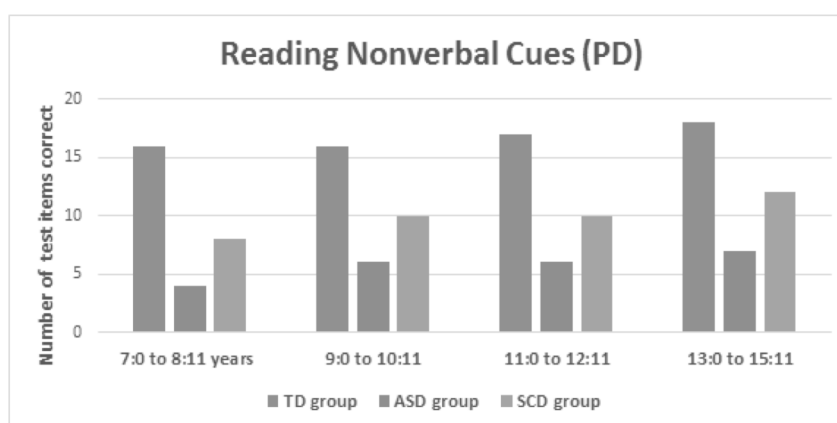
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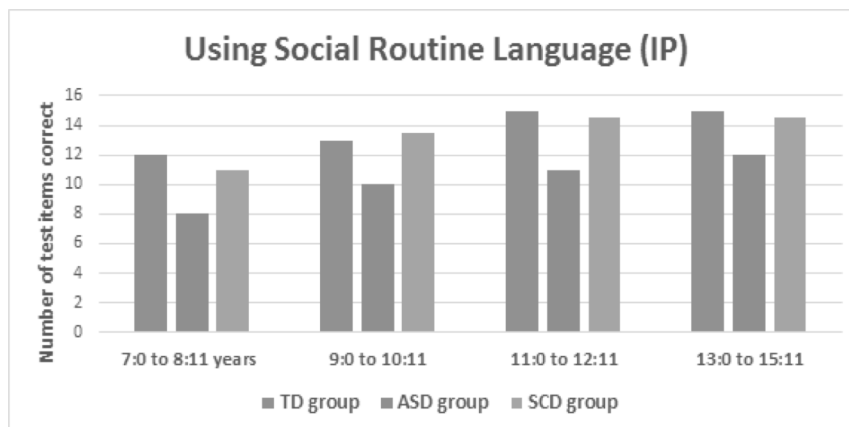


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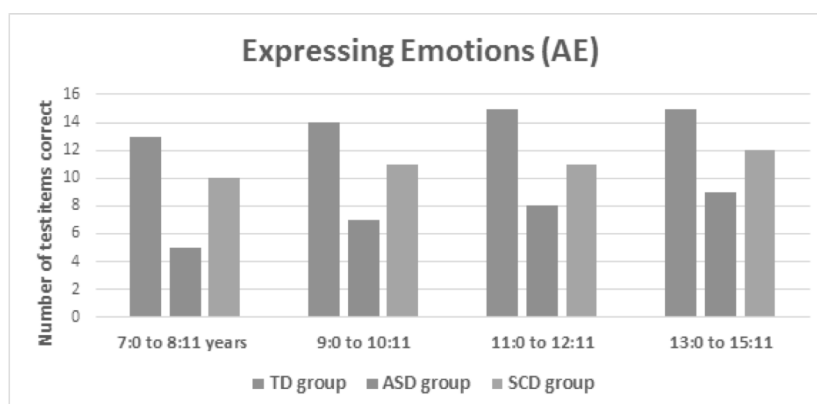


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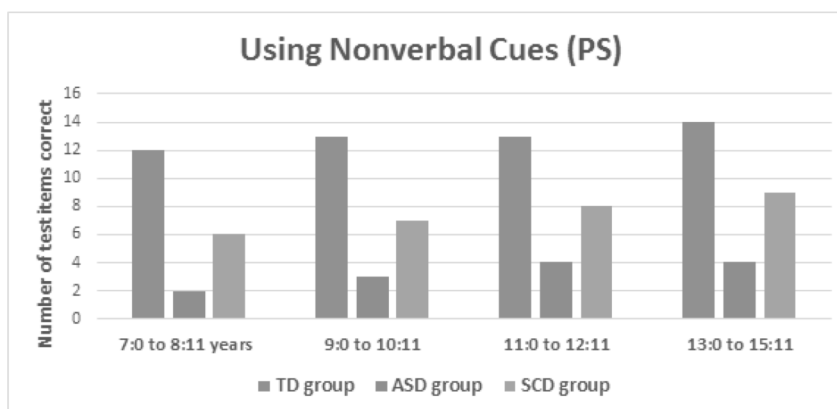
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## DISCUSSION

Significant differences observed between all groups

- Receptive pragmatic tasks
- Expressive pragmatics tasks

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- 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

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## 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

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**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.

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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.laviinstitute.com](http://www.laviinstitute.com)

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Questions?

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