Assessment of Story Comprehension (ASC) For Preschoolers

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Purpose Driving Development of ASC

▸ Measure treatment effects of a *Tier 2 Vocabulary and Comprehension* intervention for preschoolers.

  ▸ Symposium: Tiered Approach to Address Language and Literacy Skills

▸ May be useful outside our intervention research.

  ▸ Identify children who can benefit from intervention

  ▸ Monitory progress

Measurement Development Guidelines

‣ Curriculum Based Measurement (Deno, 2003)

   ‣ sample authentic child behaviors that reflect key outcomes

   ‣ have standardized administration and scoring procedures

   ‣ be time efficient, economical, and easy to use

   ‣ meet the requirements of technical adequacy

   ‣ be sensitive to growth due to intervention or change over time

Characteristics of the ASC

▶ Children listen to a brief story

  ▶ Stories have relatable content: crashing on a bike, dropping teddy bear in mud, spilling paint on a picture, playing a game, etc.

  ▶ Nine ASC stories with the same:

    ▶ Story grammar structure

    ▶ Language complexity

    ▶ Length (160 words)

▶ Examiner asks questions about the story

  ▶ Recall and inferential questions

  ▶ Same type of questions across forms

Why Story Comprehension?

‣ Stories are commonplace in the lives of young children.

‣ Between 3-5 years old, children are actively developing story comprehension.

‣ Strong story comprehension skills facilitate reading comprehension.

‣ Key facet of oral language that predicts school achievement.

	Questions	Description	Example
1	Inferential	Prediction based on title	Let's think about the title, *Jenny and the Mud Puddle.* What do you think will happen?
2	Recall	What or Where question	Where was Jenny playing in this story?
3	Inferential	Causal between problem and feeling	In this story, Jenny was sad. Why was Jenny sad?
4	Recall	Attempt	Jenny's teddy bear fell in the mud. What happened next?
5	Inferential	Explain character's motivation based on background knowledge	Why do you think Jim wanted to help Jenny?
6	Recall	Consequence/Resolution	What happened at the end of the story?
7	Inferential	Prediction about subsequent events	The next time Jenny plays outside, do you think she will take her teddy bear? Why / Why not?
8	Incidental	Definition of vocabulary	Tell me, what does *filthy* mean?
8a		Choice of 2 vocabulary	Does *filthy* mean very tall or very dirty?

Standardized Administration

Assessment of Story Comprehension

1   *Danny and the Big Hill*

Date _____

Child ID _____

Examiner ID _____

File # _____

You are going to listen to a story. It is called *Danny and the Big Hill*.

Hmm. I wonder what will happen in this story. Let's think about the title, *Danny and the Big Hill*.

What do you think will happen?

1.		0 1 2

Now you are going to listen to the story. Listen carefully because I'm going to ask you some questions about the story.   Are you ready?

A few days ago, Danny was riding his new black bike on the sidewalk. He rode up and down the sidewalk in front of his house.

When Danny rode past his neighbor's house, he started going down a big hill. Then Danny's bike hit a bump in the sidewalk. He fell off his bike and injured his arm. Danny cut his arm on the rough ground.

Danny was sad.

He picked up his bike and slowly walked home. He found his mom and said, "Mommy, I fell and injured myself. My arm is cut." His mom gently cleaned his cut. Then she put a bandage on his arm.

After Danny got a bandage, his mom gave him a hug. He asked his mom if she would watch him ride his new bike. She said, "Of course. I want to watch you, but don't injure yourself again." Danny rode his bike so well that his mom clapped and cheered for him.

Thanks for listening. Now I'm going to ask you some questions.

▷

2.	What was Danny doing in this story?		0 1 2
3.	In this story, Danny was sad. Why was Danny sad?		0 1 2
4.	Danny fell off his bike and cut his arm. What happened next?		0 1 2
5.	Why do you think Danny's mom gave him a hug?		0 1 2
6.	What happened at the end of the story?		0 1 2
7.	The next time Danny rides his bike, do you think he will go down a big hill? Why / Why not? If child does not tell *why* or responds with *Because*, use the following prompt: ○ OK... Now tell me *why*.		0 1 2
8.	Tell me, what does *injure* mean?		0 2 3
If child receives 0, then ask:			
8a.	Does *injure* mean to cook something or to hurt something? (Circle response)		0 1
		Total Score	17

Standardized Scoring Procedures

▸ Answers are recorded in real time, but we have audio recorded all responses.

▸ After administration is completed, answers are scored.

▸ ASC Scoring Guides are specific to each story but consistent across stories.

▸ Questions 1-7 are scored 0-1-2

▸ Question 8 is scored 0-2-3.

　▸ If answer receives a 0, 8a is administered and it is scored 0-1.

▸ Total = 17 points

2 Jenny and the Mud Puddle

	Questions	Score	Description	Examples
1	**What do you think will happen?**	**2 =**	plausible, complete, and clear	She'll be muddy; Fun splashing
		1 =	plausible but incomplete or unclear	dirt; splash
		0 =	unrelated or implausible	Go shopping; watch tv
2	**Where was Jenny playing in this story?**	**2 =**	correct, complete, and clear	outside; backyard
		1 =	correct but incomplete/unclear	mud puddle; mud; her house
		0 =	incorrect; not a *where* answer	running; dirty; mad; play
3	**In this story, Jenny was sad. Why was Jenny sad?**	**2 =**	correct, complete, and clear	bear fell in mud; bear got dirty
		1 =	correct but incomplete/unclear	it's dirty; not clean; yucky
		0 =	incorrect	cry; playing in mud
4	**Jenny's teddy bear fell in the mud. What happened next?**	**2 =**	correct, complete, and clear	told her brother; washed it; cleaned the bear
		1 =	correct but incomplete/unclear; action by secondary character	soap and water; brother help her; wash
		0 =	incorrect	play outside; drop it in mud; sad
5	**Why do you think Jim wanted to help Jenny?**	**2 =**	plausible answer that incorporates story AND background knowledge	he likes to help; cares about her
		1 =	answer that is in the story OR includes background knowledge; characteristic	bear got dirty; she cried; he wants to play with it; he is nice; she's sad
		0 =	not plausible or not an answer to the question	he was mean; happy
				bear is clean; thanked brother;

		0 =	incorrect	cry; playing in mud
4	Jenny's teddy bear fell in the mud. What happened next?	2 =	correct, complete, and clear	told her brother; washed it; cleaned the bear
		1 =	correct but incomplete/unclear; action by secondary character	soap and water; brother help her; wash
		0 =	incorrect	play outside; drop it in mud; sad
5	Why do you think Jim wanted to help Jenny?	2 =	plausible answer that incorporates story AND background knowledge	he likes to help; cares about her
		1 =	answer that is in the story OR includes background knowledge; characteristic	bear got dirty; she cried; he wants to play with it; he is nice; she's sad
		0 =	not plausible or not an answer to the question	he was mean; happy
6	What happened at the end of the story?	2 =	correct, complete, and clear	bear is clean; thanked brother; hugged her bear; let brother hold it
		1 =	correct but incomplete/unclear	play; hug; clean; hold it
		0 =	incorrect	got dirty; fell in mud; happy
7	The next time Jenny plays outside, do you think she will take her teddy bear? Why/ Why not?	2 =	plausible answer that incorporates story OR background knowledge	she likes to play with her bear; it will get dirty again
		1 =	plausible answer that uses clues from the story OR background knowledge, but is incomplete/unclear	it's clean; it's fixed; not dirty
		0 =	unrelated or implausible; not a *why* answer	she's happy; camping
8	Tell me, what does *filthy* mean?	3 =	fully accurate; synonym; definition in example	dirty; muddy; when toys get dirty
		2 =	related to story; example without definition	wash it; soap; you take a bath
		0 =	incorrect or unrelated	tell your brother; mad
8a	Does *filthy* mean very tall or very dirty?	1 =	correct	very dirty
		0 =	incorrect	very tall

Time Efficient, Economical, and Easy

- Administration takes about 3-5 minutes each.

- Administration materials: double sided administration and scoring forms, clipboard, and a pencil.

- Very easy to learn: follow script, read slowly and clearly, provide encouragement, but don't prompt, and write answers quickly.

- Children like the stories and mixed difficulty of questions keeps children engaged.

ASC Technical Adequacy

▶ Study 1

  ▶ 36 preschool children received 3 ASC forms

  ▶ Preliminary evidence of construct/concurrent validity, inter-scorer reliability, and implementation fidelity

  ▶ Used results to identify outlier stories and items

▶ Revisions

  ▶ Rewrote 3 stories

  ▶ Eliminated 1 question

  ▶ Developed story specific scoring guides

ASC Technical Adequacy

▸ ## Study 2

> ▸ Undergraduate research assistants administered 20 preschool children all 9 revised ASC forms in sets of 3 within one week.

> ▸ The order of ASC forms were counterbalanced across children.

> ▸ Children received the Clinical Evaluation of Language Fundamentals (CELF-P) a day or two before beginning ASC administration.

> ▸ Two developers scored every story independently (180 stories).

> ▸ An undergraduate volunteer independently scored 27 stories.

> ▸ Two undergraduate research assistants listened to 27% of the digital recordings to assess administration fidelity.

▶

Results

- Administration Fidelity
  - 99.7% (93%-100%)

- Inter-Scorer Reliability
  - Kappa coefficients = .70-.90
  - Percent agreement between developers = 89%
  - Percent agreement between developer and naïve scorer = 93%

Results

▸ **Construct/Concurrent Validity**
  ▸ Based on first set of 3 ASCs
  ▸ Median score and the best score correlate with CELF-P,
  ▸ *r* = .66
  ▸ Significant at .01 level

▸ **Internal Consistency (total scores)**
  ▸ Cronbach's Alpha = .95

▸ **Alternate Form Reliability**
  ▸ *r* = .63-.77 (median correlations)
  ▸ *r* = .65-.79 (mean correlations)
  ▸ All correlations were statistically significant, but moderate

▸

Conclusions

‣ The ASC
  ‣ samples authentic child behaviors that reflect key outcomes
  ‣ has standardized administration and scoring procedures
  ‣ is time efficient, economical, and easy to use
  ‣ shows promise in terms of technical adequacy

Next Steps

‣ We plan to

- ▸ Investigate the ASC's technical adequacy using a larger sample
- ▸ Investigate the ASC's sensitivity to growth due to intervention or change over time

Questions?

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