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QUILS: Language Components Represented

	PRODUCT	PROCESS
VOCAB	KNOWN NOUNS	
	KNOWN VERBS	
	PREPOSITIONS	FAST MAPPING NOUNS
	CLAUSAL CONNECTORS	FAST MAPPING ADJECTIVES
SYNTAX	WH-QUESTIONS	SYNTACTIC BOOTSTRAPPING OF NOVEL VERBS
	PAST AUXILIARY AND COPULA	CONVERTING ACTIVE VERBS TO PASSIVE
	PREPOSITIONAL PHRASES	
	EMBEDDED CLAUSES	


- ### Animations
- One of the advantages of a computer test is that it can show *animations* rather than static pictures.
 - Can present *events* or *event sequences*.
 - Animation is utilized in several subtests, e.g., for conjunctions like *after*, *before*, and *because*.

Sample Items


Vocabulary
"Show me the *hinge*."



Fast mapping adjectives



Wh- Questions



- ### Statistical Analyses
- Rasch models: Assess item properties independently of the sample used to estimate them.
 - Misfit scores indicate how consistent each item is with the model's predictions
 - Identifies redundant items (equivalent difficulty)
 - Cronbach alpha: The *internal consistency* reliability index of the items.
 - Differential Item Functioning (DIF)
 - AKA "measurement bias"
 - Tests whether different groups (e.g., males vs. females) perform differently on individual items, while controlling for overall performance



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YES! The **QUILS** works!

- Beautiful progressions on language growth (N=673) across ages
- Vocabulary, syntax and process are linked across the course of development
- In QUILS:ES bilingual test (English/Spanish) Products are linked *within* but not *across* languages (N= 364) but Processes (how you learn) are linked across languages

Pace et al. (under review); Levine et al., in press

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Predictable SES differences emerged: Clear evidence for a language gap by class in vocabulary, syntax, and process

Substantial and enduring differences between children in mid and low SES environments in syntax, vocabulary, and process

Syntax Product

Vocab Product


Process

NOTE: Graphs show proportion correct, not standard scores

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Results

- All three components of the assessment (Syntax Product, Vocabulary Product, and Process) exhibit excellent *item reliability*: Cronbach $\alpha > 0.8$
- Test-retest reliability
 $r = .85, p < .001$ (n =75)
- Convergent validity measures
 - PPVT $\rightarrow r = .69, p < .01$ (n=116)
 - PLS $\rightarrow r = .70, p < .01$ (n=112)




Norming

- Started with 96 items (all research based) and 2 item tryouts. culled down to a screener with 48 items.
- Norms: Over **600** children tested country-wide
 - Children from Northampton, MA; Philadelphia, PA; northern DE; Omaha, NB; and Miami, FL.
- Socioeconomic, racial, ethnic diversity
 - SES determined by primary caregiver's highest level of education; roughly half the sample is low income
 - Caucasian, Hispanic, African American, Asian etc.
- Brookes Publishing brought it out
 - Scores by individual, groups, classrooms
 - Can detect kids with language problems without specifying source



Part IV: The QUILS had a baby!



Waiting until age 3 to diagnose a language problem is too late!






Need to screen earlier!

Intervention is most effective and efficient when done early!!


Enter: the Baby QUILS for 2-year-olds!

Two-year-olds are easy (NOT) to work with!




Adjustments for two-year-olds

- Added fun sounds after each item to keep them engaged – sounds that played regardless of whether they made correct choices
- Incorporated “drag” items to make it more hands-on
- Put red circles on all items so kids knew where to touch
- Test has same structure: vocab + syntax = products; process = how readily kids learn new language items



The Current Items




Vocabulary

Nouns

1. Find the pants!

2. Find the buildings!



3. Find the pencil!

5. Find the handle!




Example: Nouns





Example: Verbs shown as dynamic events

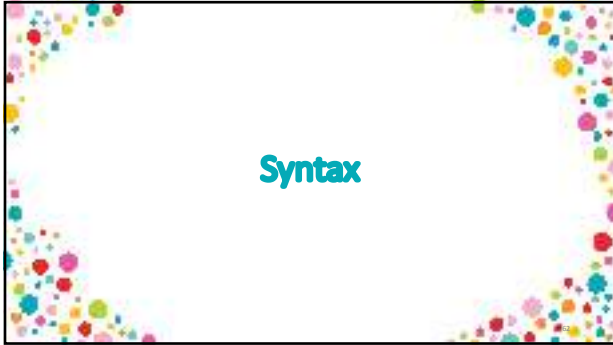


Example: Prepositions – a drag item



Example: Adjectives





Example: Negation



Fast mapping items have two parts

- What is fast mapping?
 - Linking a new word to a referent after but 1 or 2 exposures
- But touching new item not enough! Child asked to extend new word to another member of the category in another color or in a different orientation
- Children have to get both right to be credited with fast mapping

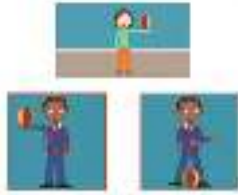
Example: Fast Mapping Nouns



Example: Fast Mapping Adjectives



Example: Fast Mapping Verbs



Where Are We Now?

We can assess 2-year-olds' language with a touchscreen based screener!

- Middle and lower SES children can perform on all subtests.
- Performance on subtests improves with age, e.g.,:
 - Nouns: $\theta = .03, t(160) = 4.87, p < .001$
 - Negation: $\theta = .36, t(96) = 1.78, p < .001$
 - Fast Mapping Adjectives: $\theta = .03, t(89) = 3.68, p < .001$
- Now starting with 53 items (second item tryout) to reduce items further for 40-item final screener
- Will conduct test-retest reliability, convergent validity and predictive validity one year later

In Summary:

- The Baby QUILS will be a quick, reliable, and easy to administer screener!
- Using touchscreen technology allows for a screener that's fun for kids!
- Can be utilized by teachers, practitioners, and researchers!
 - We now have the ability to move beyond the MCDI or PPVT for early measures of language ability
 - Daycares or early interventionists can use the Baby QUILS to identify at-risk children earlier

THANK YOU!

