Interpreting Standardized Language Assessments in Young Children with Autism

How Do Standardized Measures Capture Functional Language?

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Abstract

Standardized language testing may underestimate abilities of young children with autism due to lack of motivation and social or behavioral difficulties in the testing environment. This study examined how standardized measures capture functional language used in the natural environment by young children with autism. The results of a standard pictorial naming assessment were compared to the results of a 10-minute communication probe with the primary parent for 34 young children with autism (average age at pre-intervention = 29 mos). At three timepoints (prior to intervention, after 200 hours of intervention, and six months after termination), a higher percentage of children had expressive language on the naturalistic assessment as compared to the standardized measure. The naturalistic assessment captured 100% of children with words on the standardized measure, but the standardized measure did not capture all of the children with words on the naturalistic assessment. This study suggests that supplementing standardized measures with a 10-minute naturalistic assessment adds valuable information about linguistic abilities in young children with autism.

Introduction

Standardized testing is used to demonstrate competencies for functioning in society (Williams, 1983). Standardized administration and scoring gives norm-referenced scores to indicate level of performance relative to peers. Standardized tests are used for assessment, to track progress over time (determination of funding), to suggest placements, to evaluate interventions (Hayes et al., 1987), and to compare interventions.

Standardized language measures in which children are asked to label pictures are widely used for children with autism for various purposes, including assessment (Ozonoff et al., 2005), sampling (Howlin et al., 2005), treatment progress and outcome (Stahmer, 1995; Howlin et al., 2007; Magiati et al., 2007; Cardigan & Missall, 2007; Kelley et al., 2003, Turner et al., 2005), treatment comparisons (Howard et al., 2005; Rogers & Vismara, 2008), and differential diagnosis (Howlin, 2003)

Standardized testing may underestimate abilities of children with autism. In one study, participants showed consistently higher performance on standardized cognitive tests when motivational procedures were implemented (Koegel et al., 1997). This study examines standardized language testing in this population.

Natural language samples are correlated with standardized language tests in typical children (Bornstein & Haynes, 1998; Ukrainetz & Blomquist, 2002). Natural language samples are found to be more sensitive than standardized language measures for children with specific language impairments (Dunn et al., 1996) and toddlers identified as late talkers (Rescorla, Roberts & Dahlsgaar, 1997). In older (4-14 years) children with autism, standardized measures (PPVT-III, EVT) and natural observation measures (MLU, NDWR) were highly correlated (Condouris, Meyer, Tager-Flusberg, 2003). Standardized measures were sensitive to sample. No research has examined whether standardized measures are sensitive to the sample in younger or lower-functioning children with autism.

Our purpose was to determine how standardized measures capture functional language used in the natural environment in young children with autism. We also explored whether children who were identified as having language on either a standardized or naturalistic measure were also identified by the other measure.

Materials and Methods

Participants: Data were collected from a larger project measuring outcomes of early intervention for children with autism. All participants were given an assessment of their verbal abilities at pre, post (after 200 hours of intervention), and follow-up (six months after termination). Participants were included if they had been given both the naturalistic and standardized language measure at each time point (N=34 at pre, 37 at post, 36 at follow-up). The average age of participants was 29.0 months (SD=5.8) at pre, 36.5 months (SD=6.1) at post, and 39.3 months (SD=6.2) at follow-up.

Assessments: The standardized language measure was the Expressive One Word Picture Vocabulary Test (EOW) and the naturalistic assessment was the Structured Laboratory Observation (SLO). Participants were included if they had been given both the naturalistic and standardized language measure at each time point (N=34 at pre, 37 at post, 36 at follow-up). The average age of participants was 29.0 months (SD=5.8) at pre, 36.5 months (SD=6.1) at post, and 39.3 months (SD=6.2) at follow-up.

Procedures: At pre, post, and follow-up, an administration of the EOW and a 10-minute SLO with primary parent were recorded for each child. The SLO was recorded in a room with a variety of age-appropriate toys. The parent was instructed to play with the child and elicit language. The EOW was scored in a standard manner. Videos of the SLOs were randomly assigned across timepoints to two blind, independent coders. Observers recorded a transcript of every word the child uttered during the 10 minute parent-child interaction. Words were classified as prompted, self-generated, or echolalic. The overall reliability between coders was 0.85.

Dependent Measures: Raw score on EOW-PVT; number of self-generated on SLO

Operational Definitions

Functional language: Expressive communication appropriate to environment for the purpose of requesting items or sharing information
Prompted: Functional utterance immediately preceded by an exact verbal model
Self-generated: Functional utterance not immediately preceded by a verbal model
Echolalia: Vocalizations that are not appropriate to the environment and that do not serve any functional purpose (e.g. requesting items or sharing information)
Blended words (all-done, my-turn) were scored as one word if the child did not otherwise use two-word utterances appropriately within the clip. **Songs and nursery rhymes** were excluded from analysis (cf. Condouris, Meyer, Tager-Flusberg, 2003).

Results

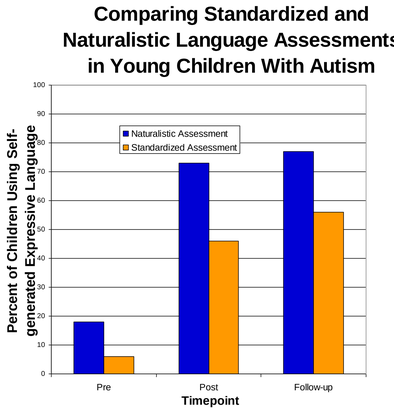

Figure 1. Percentage of children with scores on both measures who had some language (greater than 0 self-generated words on naturalistic assessment, score >0 on standardized assessment.

At pre-intervention, 18% of children had some self-generated expressive language on the naturalistic assessment and 6% of children on the standardized measure. At post, 73% of children had some self-generated expressive language on the naturalistic assessment and 46% on the standardized measure. At follow-up, 77% of children had some self-generated expressive language on the naturalistic assessment and 56% on the standardized measure.

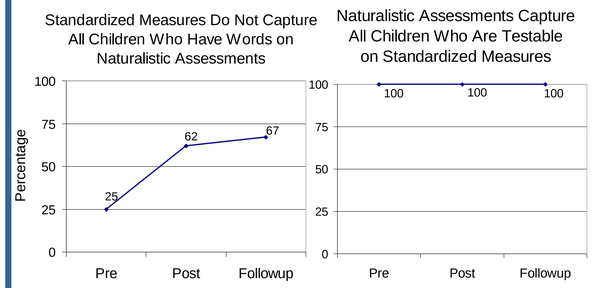

Figure 2a. Of the children who had some language in the naturalistic assessment, 25%, 62%, and 67% had scores greater than 0 on the standardized measure at each timepoint.

Figure 2b. Of the children who had scores greater than 0 on the standardized measure, 100% spoke at least one self-generated word on the naturalistic assessment at each timepoint.

At the first timepoint, 25% of the children with scores on the naturalistic assessment had language on the standardized measure. The second and third timepoints, this percentage increased to 62% and 67%, respectively. At all three timepoints, 100% of children with scores on the standardized measure had language on the naturalistic assessment.

Conclusions

The purpose of this study was to examine how standardized language measures captured functional language in the natural environment in young children with autism. We found that, at three different timepoints, a greater percentage of the children were classified as having some language by the naturalistic assessment. Therefore, the standardized assessment failed to capture children who were speaking in the naturalist environment.. The standardized assessment was more sensitive as the children became older and acquired more language.

We also found that the naturalistic assessments correctly classified all the children who were responsive to the standardized measure at all timepoints. This indicates that the naturalistic assessment is sufficient to determine if functional language is being used by the child with autism.

Standardized testing may be problematic for young children with autism for a number of reasons. The social deficits core to the disorder make administration of the test difficult. Furthermore, many children with autism are prone to disruptive behavior which can render them untestable on standardized measures. Children are often not motivated to respond to the test questions, and may not have the attention span necessary to complete the standardized measures. In addition, standardized tests fail to capture language used in naturalistic settings, thereby underestimating the cognitive and/or language ability of children with autism.

By observing children with autism in a naturalistic setting, we are able to capture functional language, control for non-functional speech, and control for labeling that does not generalize. Naturalistic observation picks up on both communication and social language. This type of observation is also beneficial because the child's responsivity may increase, their disruptive behavior may decrease, their ability to attend may increase, and they are motivated due to natural reinforcers.

There are a number of limitations to this study. For both assessments, children were categorized into no expressive language and some expressive language (>1 self-generated word). It is important to note that this analysis does not speak to the value of either assessment in determining linguistic ability beyond presence of at least one self-generated word. However, it is interesting that at least one child spoke in multiple word utterances in the naturalistic assessment at follow-up and was classified as untestable on the standardized measure. This study indicates that standardized measures should be supplemented by naturalistic assessments when assessing functional language in young children with autism.

References

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