Comparison of Functional Behavior Assessment Methodologies to the Functional Analysis of Problem Behavior

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INTRODUCTION

- Functional behavior assessment (FBA) is a government-mandated procedure to evaluate environmental causes of problem behavior (IDEA, 2004).
- Functional analysis (FA) is considered to be the "gold standard" (Hanley, Iwata, & McCord, 2001). However, FA procedures require extensive training to implement (Moore & Fisher, 2007). Thus, there is a need to identify FBA procedures that relate best to the FA but that are consumable by all practitioners (Paclawskyj et al., 2000).
- Alter et al. (2008) examined the correspondence between indirect and direct FBA procedures to the FA with four children. Results showed the direct FBA methods corresponded better to the FA than indirect methods.
- The purpose of the current study was to replicate and extend Alter et al. by answering the following questions: **What combination of FBA methods relates best to the FA, and do FBA methods discriminate certain functions better than others?**
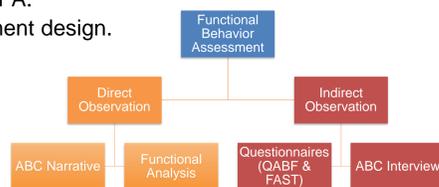
METHOD

Participants and Settings
- Participants were 14 children diagnosed with an intellectual or developmental disability (IDD) referred for the assessment and treatment of severe problem behavior.
- Procedures occurred as part of routine clinical care on a specialized inpatient and partial hospitalization unit for children diagnosed with IDD.

Experimental Design
- The current study represents a descriptive analysis of relations between routine FBA procedures and the FA.
- The FA was conducted within a multi-element design.

Dependent Variables

Comparison of FBA Methods to FA (Figure 1)
- We calculated percent correspondence with the FA by dividing agreements plus disagreements and multiplying by 100.
- <u>Agreement</u> was defined as when the results of one or more assessments matched the function(s) of problem behavior identified in the FA.
- <u>Disagreement</u> was defined as when the results of one or more assessments did not match the function(s) of problem behavior identified in the FA

Follow-Up Analysis Using Signal Detection Theory (Lerman et al. 2010; Figure 2)
- We calculated percentage hit, correct rejection, miss, and false alarm recorded by each FBA method across behavioral function by adding frequency of each outcome, dividing by 14, and multiplying by 100.
- These variables were defined as follows:
  - A <u>hit</u> was defined as an FBA method identifying the same function(s) as the FA.
  - A <u>correct rejection</u> occurred when an FBA method omitted a function that was not identified by FA.
  - A <u>miss</u> was when an FBA method did not identify a function that was identified by FA.
  - A <u>false alarm</u> was when an the FBA method identified a function that was not identified by FA.

Procedures
Antecedent-Behavior-Consequence (ABC) Interview (O'Neill et al., 1997)
- Caregiver and behavior analyst seated at a table across from each other. Behavior analyst asked questions to occasion responses about how the patient responded to particular situations such as:
  - <u>Attention</u>: How does child respond when parent is on the phone?
  - <u>Tangible</u>: How does child respond when they are told "No" they cannot have toy or snack?
  - <u>Escape</u>: How does child respond when told to complete homework, take shower, etc?
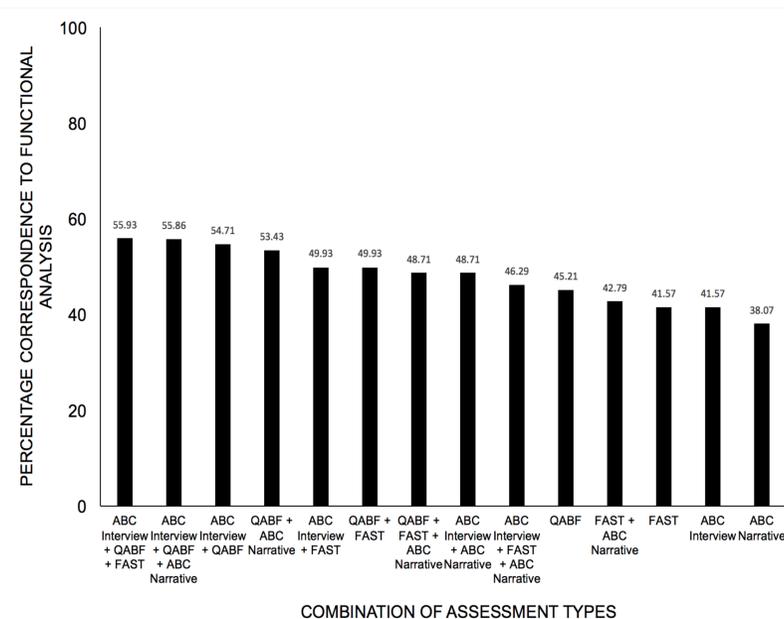
RESULTS: FIGURE 1

Figure 1 shows results of FBA Method(s) agreement to the FA.
Note: Bars represent combinations of FBA methods correspondence to FA. Number above bar represents percentage correspondence to FA.
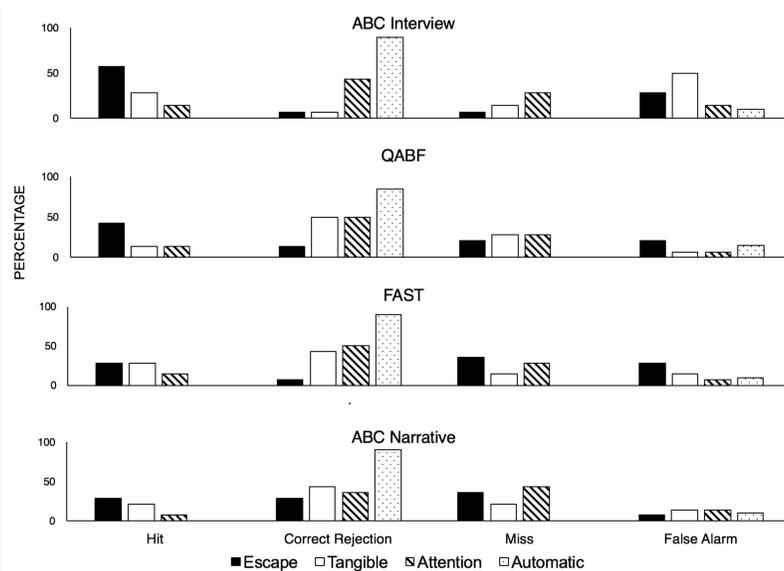
RESULTS: FIGURE 2

Figure 2 shows results from the follow-up analysis based on signal detection theory. Each FBA method was tested for percentage hits, misses, correct rejections, and false alarms.
Note: Each bar represents percentage hit, correct reject, miss, and false alarm within each FBA method.

METHOD (CONT'D)

Questions About Behavioral Function (QABF; Matson & Vollmer, 1996)
- Behavior analyst provided caregiver with questionnaire to complete in a quiet office and explained directions. Remained available for clarifying questions.
- The QABF is a 25-item questionnaire organized into five functional categories: attention, tangible, escape, non-social, and physical.
- Following completion of questionnaire, behavior analyst summed responses to produce hypotheses about behavioral maintenance.

Functional Analysis Screening Tool (FAST; Iwata et al., unpublished)
- Behavior analyst provided caregiver with questionnaire to complete in a quiet area and explained directions. Remained available for clarifying questions.
- The FAST is a 27-item questionnaire organized into 5 functional categories: attention, tangible, escape, sensory stimulation, and pain attenuation.
- Following completion of questionnaire, behavior analyst summed parent responses to produce hypotheses about behavioral maintenance.

ABC Narrative (Thompson et al., 2000)
- Behavior analyst provided ABC Narrative worksheet to direct-care staff. Provided instructions to write down topography of problem behavior and as much information as possible about the antecedent to and the consequences following problem behavior occurrence.
- Analyzed by calculating probability of problem behavior occurrence following an antecedent.

Functional Analysis of Problem Behavior (Iwata et al., 1982/1994)
- Behavior analyst conducted free play, escape, tangible, and attention conditions for all participants. Participants engaging in self-injurious behavior also experienced the ignore condition.
- During the FA, problem behavior produced the relevant consequence on a fixed ratio-1 schedule of reinforcement to evaluate reinforcers maintaining problem behavior occurrence.

DISCUSSION

- Various combinations of FBA methods produced moderate correspondence with the FA (*Figure 1*). Highest correspondence to the FA was demonstrated by the ABC Interview plus both questionnaires (QABF+FAST) and by ABC Interview + QABF + ABC Narrative. Lowest correspondence to the FA was ABC Narrative alone.
- These data supported previous research suggesting use of multiple FBA methods to evaluate behavioral function is best practice (Kelley et al., 2011).
- With previous research showing use of direct FBA methods relates best to the FA (Alter et al., 2008), and this sample showing equal correspondence with the combination of indirect methods, the combination of the indirect and direct methods may be most useful for practitioners.
- Follow-up analysis of these data (*Figure 2*) using signal detection theory showed escape as the reinforcer most likely to be identified via both the (in-) direct FBA methods. Tangible and attention functions were most likely to be correctly rejected. Approximately equal levels of misses and false alarms occurred across behavioral function.

Future Research/Limitations
- The current analysis was descriptive in nature. We believe future research should design experimental analyses to evaluate FBA methods relation to the FA. In particular, evaluating whether treatment prescribed based on FBA (without FA) is most helpful for the escape function versus tangible and attention functions.
- Future researchers should replicate these data across different levels of care (e.g., intensive outpatient, outpatient, school-based). For example, Matson and Wilkins (2009) showed the QABF may be more accurate when evaluating high-rate problem behaviors. Various levels of care may be associated with lower rate problem behavior occurrence and thus may lead to less accurate FBA results.