

*INFLUENCE OF ASSESSMENT SETTING ON THE RESULTS  
OF FUNCTIONAL ANALYSES OF PROBLEM BEHAVIOR*

RUSSELL LANG

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

JEFF SIGAFOOS

VICTORIA UNIVERSITY OF WELLINGTON, NEW ZEALAND

GIULIO LANCIONI

UNIVERSITY OF BARI, ITALY

ROBERT DIDDEN

RADBOUD UNIVERSITY NIJMEGEN, THE NETHERLANDS

AND

MANDY RISPOLI

TEXAS A&M UNIVERSITY

Analogue functional analyses are widely used to identify the operant function of problem behavior in individuals with developmental disabilities. Because problem behavior often occurs across multiple settings (e.g., homes, schools, outpatient clinics), it is important to determine whether the results of functional analyses vary across settings. This brief review covers 3 recent studies that examined the influence of different settings on the results of functional analyses and identifies directions for future research.

*Key words:* autism, assessment, developmental disability, functional analysis, setting

---

Analogue functional analyses are designed to identify functional relations between problem behavior and reinforcement contingencies through systematic environmental manipulations (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994). Several idiosyncratic and contextual variables have been shown to influence the results of analog functional analyses (Carr, Yarbrough, & Langdon, 1997). For example, pre-session attention (McComas, Thompson, & Johnson, 2003; O'Reilly, Edrishina, & Sigafos, 2007), the characteristics of task demands (Smith, Iwata, Goh, & Shore, 1995), the order of assessment conditions

(Hanley, Iwata, & McCord, 2003), and the person who implements the assessment (Ringdahl & Sellers, 2000) have all been identified as variables that can influence the results of the assessment. Given this evidence, it is plausible that the setting in which the functional analysis is conducted might also influence results.

Functional analyses to identify the operant function of problem behavior have been conducted in a variety of settings, ranging from clinical settings (e.g., hospitals, outpatient clinics, unoccupied rooms in schools) to relatively natural contexts (e.g., bedrooms in children's homes and classrooms with other children present). It is not uncommon for the results of a functional analysis conducted in one setting to be used to design an intervention that is implemented in another setting (Hanley et al., 2003). When this is done, it is assumed that

---

Address correspondence to Russell Lang, who is now at the Department of Curriculum and Instruction, Texas State University, 601 University Drive, San Marcos, Texas 78666 (e-mail: russlang@txstate.edu).  
doi: 10.1901/jaba.2010.43-565

the variables that influence behavior in the the functional analysis setting are the same as those that control the behavior in the intervention setting.

The purpose of this brief review is to describe three recent studies (i.e., Lang et al., 2008, 2009, 2010) in which this assumption was tested by examining the influence of setting on functional analysis results and subsequent function-based interventions. Based on this brief review, we offer practical suggestions for practitioners who implement functional analyses and elucidate directions for future research.

Lang et al. (2008) conducted functional analyses using a procedure similar to that of Iwata et al. (1982/1994) with two school-aged girls with autism who engaged in problem behavior. In the Lang et al. study, both children participated in functional analyses in two settings (a therapy room and a classroom). To isolate the potential influence of setting, other variables known to affect the results of functional analyses were held constant (i.e., the sequence of conditions, materials, task demands, and therapist). For both children, escape from task demands and attention from the therapist were identified as maintaining consequences for problem behavior in both settings. However, for the second child, levels of problem behavior were higher in the escape condition in the therapy room than in the classroom.

Lang et al. (2009) replicated the procedures of Lang et al. (2008) with a child with autism who engaged in aggression. Lang et al. (2009) conducted functional analyses in the child's classroom and on the school playground. The playground assessment results indicated that problem behavior was maintained by adult attention as reinforcement, whereas the classroom assessment results indicated that problem behavior was maintained by access to toys. These results suggested that the controlling variables for problem behavior may differ across settings. Lang et al. (2009) then validated the results of the functional analyses and evaluated

whether the discrepancy in the results across settings was important in the design of an intervention by comparing an attention-based intervention and a tangible-based intervention in both settings. Results of the comparison validated the assessment results (i.e., the attention-based intervention was more effective on the playground and the tangible-based intervention was more effective in the classroom) and demonstrated the importance of considering potential variations in the function of problem behavior across settings in the design of function-based interventions.

In the third study (Lang et al., 2010), a child with Asperger syndrome was assessed in two different rooms (i.e., resource room and classroom). Functional analysis results indicated that elopement was maintained by access to attention in the resource room and by access to tangible items in the classroom. Two interventions (an attention-based intervention and a tangible-based intervention) were then compared in an alternating treatments design in both settings. The attention-based intervention was more effective in the resource room, and the tangible-based intervention was more effective in the classroom. As in the 2009 study, results of this comparison again validated the findings of the functional analyses and demonstrated the importance of conducting the functional analyses in the setting in which the intervention will be implemented.

Overall, these three studies suggest that at least two patterns of results are possible when functional analyses are compared across settings. The first pattern is one in which the functional analyses identify the same behavioral function or functions. In this pattern, the same conclusion and subsequent treatment decisions would be made regardless of the assessment setting. This was the case for Participant 1 in Lang et al. (2008). The second pattern is one in which the results of the functional analyses differ across settings; this was the case in Lang et al. (2009, 2010). It is this second pattern that is important

to practitioners because it may lead to the design of an ineffective function-based intervention. Specifically, if a functional analysis is conducted in one setting and the results of that analysis are used to design an intervention that is implemented across settings, the intervention may fail in settings in which the maintaining consequences are different from those of the assessment setting. For example, a functional analysis conducted at school may result in the design of an intervention that is effective at school but is ineffective in the home. It is perhaps not uncommon for implementation fidelity to be questioned following such intervention failures. The results of these studies suggest that, in addition to implementation fidelity, practitioners should also consider the possibility of ungeneralizable functional analysis results.

The results of these studies raise several questions that warrant future research. First, it is not always practical to implement functional assessments in every setting in which problem behavior occurs. Therefore, future research should determine what factors contribute to the development of setting-specific functions, with the aim of creating a procedure for identifying when functional reinforcers will differ across settings. Second, conducting functional analyses in classrooms, on playgrounds, and other similar settings often requires extensive planning to control possible confounding variables inherent in such settings (i.e., other students may deliver attention when attention is not a programmed consequence for problem behavior). To the extent that the procedural integrity of these assessments is compromised, functional analyses may yield inaccurate results. Therefore, future research should also focus on identifying adaptations to functional analyses that control potential confounding variables in applied settings.

## REFERENCES

- Carr, E. G., Yarbrough, S. C., & Langdon, N. A. (1997). Effects of idiosyncratic stimulus variables on functional analysis outcomes. *Journal of Applied Behavior Analysis, 30*, 673–686.
- Hanley, G. P., Iwata, B. A., & McCord, B. E. (2003). Functional analysis of problem behavior: A review. *Journal of Applied Behavior Analysis, 36*, 147–185.
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis, 27*, 197–209. (Reprinted from *Analysis and Intervention in Developmental Disabilities, 2*, 3–20, 1982)
- Lang, R., Davis, T., O'Reilly, M. F., Machalicek, W., Rispoli, M. J., Sigafoos, J., et al. (2010). Functional analysis and treatment of elopement across two school settings. *Journal of Applied Behavior Analysis, 43*, 113–118.
- Lang, R., O'Reilly, M., Lancioni, G., Rispoli, M., Machalicek, W., Chan, J. M., et al. (2009). Discrepancy in functional analysis results across two applied settings: Implications for intervention design. *Journal of Applied Behavior Analysis, 42*, 393–397.
- Lang, R., O'Reilly, M., Machalicek, W., Lancioni, G., Rispoli, M., & Chan, J. M. (2008). A preliminary comparison of functional analysis results when conducted in contrived versus naturalistic settings. *Journal of Applied Behavior Analysis, 41*, 441–445.
- McComas, J. J., Thompson, A., & Johnson, L. (2003). The effects of pre-session attention on problem behavior maintained by different reinforcers. *Journal of Applied Behavior Analysis, 36*, 297–307.
- O'Reilly, M. F., Edrisha, C., & Sigafoos, J. (2007). The effects of pre-session attention on subsequent attention-extinction and alone conditions. *Journal of Applied Behavior Analysis, 40*, 731–735.
- Ringdahl, J. E., & Sellers, J. A. (2000). The effects of different adults as therapists during functional analyses. *Journal of Applied Behavior Analysis, 33*, 247–250.
- Smith, R. G., Iwata, B. A., Goh, H., & Shore, B. A. (1995). Analysis of establishing operations for self-injury maintained by escape. *Journal of Applied Behavior Analysis, 28*, 515–535.

Received February 17, 2010  
 Final acceptance May 4, 2010  
 Action Editor, Cathleen C. Piazza