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Antecedent events as predictive variables for behavioral function

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ABSTRACT

Challenging behavior is one of the largest barriers to ensuring that people with intellectual disabilities (ID) are able to participate in the community. These difficulties have become one of the main causes of social exclusion. The research into and treatment of challenging behavior has usually involved the identification of its function and the manipulation of the events or environmental conditions that influence its occurrence (antecedent variables). The present research explores the relationship between antecedents and behavioral function and the extent to which antecedent variables may act as predictors of behavioral function. This relationship is explored using two standardized instruments: *Questions About Behavioral Function* and *Contextual Assessment Inventory*. Data from the validation of these instruments for the Spanish population involved 300 participants with ID and 328 challenging behaviors. The results suggest that social/cultural variables are most related to challenging behavior, whereas biological variables seem to only be related to physically maintained behavior.

1. Introduction

The assessment and treatment of challenging behavior has become a topic of particular interest. Challenging behavior has emerged as one of the largest and most highly studied issues in the field of disabilities (Matson et al., 2011) and is one of the major challenges faced by modern social services (Crone, Hawken, & Horner, 2010; Font & Castells, 2009). The prevalence of challenging behavior has been explored in different countries and for different disabilities; high rates of challenging behavior have been found among populations with intellectual disabilities (ID; i.e., Jones et al., 2008; Lowe et al., 2007; Matson et al., 2011; Murphy, Healy, & Leader, 2009).

To increase treatment success, interventions should match behavioral function (Brosnan & Healy, 2011; Hanley, Iwata, & McCord, 2003) and should consider the identification and modification of those antecedents that are related to the occurrence of challenging behavior (Brosnan & Healy, 2011; Cannella, O'Reilly, & Lancioni, 2005; Lang et al., 2010; Smith, 2011). Over the last several years, there has been a growing recognition of the importance and benefits of applying a function-based, antecedent variables approach to the understanding and treatment of challenging behavior (Beavers, Iwata, & Lerman, 2013; Luiselli, 2006).

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Challenging behavior does not occur randomly; it is generally performed to avoid unpleasant situations or obtain favorable consequences, such as access to desired activities, interactions, or objects (Bambara & Knoster, 2009). The maintenance variables (behavioral functions) generally identified in the literature include attention, escape, non-social, and tangible functions (Matson et al., 2011). Moreover, physical functions, such as pain, have also been identified as behavioral functions (Matson et al., 2011). The literature provides significant evidence that the challenging behavior engaged in by people with ID usually has a meaning or function (i.e., Day, Horner, & O'Neill, 1994; Langthorne & McGill, 2012; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2001; Wasano, Borrero, & Kohn, 2009; Watkins & Rapp, 2013).

While the behavioral function has been widely studied and analyzed, the antecedent variables have also acquired a relevant role. Two types of antecedent variables have been identified in the literature: discriminative stimuli and setting events. Discriminative stimuli are antecedents that are present when a behavior is reinforced (Miltenberger, 2011); it *sets the occasion* for the behavior by preceding the occurrence of the behavior and predicting the presence of reinforcement for a specific behavior (Carr, Carlson, Langdon, Magito-McLaughlin, & Yarbrough, 1998; Cooper, Heron, & Heward, 2007; Mace, Pratt, Zangrillo, & Steege, 2011; Miltenberger, 1998; Pierce & Cheney, 2004; Steege & Watson, 2009). Setting events refer to those antecedents that may alter the stimulus-response relationship (Carr et al., 1998). Categories of setting events have also been suggested in the literature, which usually include a category that focuses on biological variables and one or more categories that focus on contextual variables (McAtee, Carr, & Schulte, 2004). For example, Carr, Smith, Giacin, Whelan, and Pancari (2003) suggested three categories: social, physical, and biological variables. Furthermore, a fourth category involving instructional variables has been suggested (Kern & Dunlap, 1998; McAtee et al., 2004; Steege & Watson, 2009). The effects of discriminative stimuli and setting events on challenging behavior have been studied extensively (i.e., Asmus et al., 1999; Chung & Cannella-Malone, 2010; Conners et al., 2000; McComas, Thompson, & Johnson, 2003; O'Reilly et al., 2009; Rapp, 2005; Ringdahl & Sellers, 2000; Winborn-Kemmerer et al., 2010).

In recent decades, applied behavioral analysis has contributed substantially to the field of education and disability (Greshman et al., 2004) by exploring the functional relationships of behavior (i.e., Butler & Luiselli, 2007; Carey & Halle, 2002; English & Anderson, 2006; Hagopian et al., 2002; Tiger, Fisher, Toussaint, & Kodak, 2009). Functional behavioral assessment (FBA) has emerged as an integral component of behavioral assessment (Rojahn, Zaja, Turygin, Moore, & van Ingen, 2012) aiming to identify the behavioral function and the specific antecedent variables that influence the behavior being assessed (Bambara & Knoster, 2009; Steege & Watson, 2009). The contextual variables that trigger challenging behavior and reinforcers that maintain it could be identified using experimental functional analysis and functional assessment (i.e., standardized tests). Experimental functional analysis requires specialized staff training and is often costly (Miltenberger, 1998; Paclawskyj et al., 2001). In contrast, the use of standardized tests in functional analysis requires the opinion of a third person and provides an efficient way to generate an initial hypothesis about the behavior being assessed (Paclawskyj et al., 2001). Although they generally have poor psychometric properties (Kelley, LaRue, Roane, & Gadaire, 2011), important efforts have been conducted to explore the degree of convergence between some standardized tests and other FBA methods. Although more research is needed, convergent validity was found between the *Questions About Behavioral Function* (QABF) and experimental functional analysis (Paclawskyj et al., 2001; Watkins & Rapp, 2013) and the *Contextual Assessment Inventory* (CAI) and direct observations (Carr, Ladd, & Schulte, 2008).

Previous research with large samples has used the QABF and CAI to explore their relationships with specific types of challenging behavior. For example, on one hand, the results of QABF studies suggest that aggressive behavior usually serves social consequences, which involve escape, tangible, and attention functions (i.e., Applegate, Matson, & Cherry, 1999; Embregts, Didden, Schreuder, Huitink, & van Nieuwenhuijzen, 2009; Matson & Mayville, 2001; Matson, Bamburg, Cherry, & Paclawskyj, 1999), self injury behavior may serves non social and escape maintained behavior (i.e., Matson et al., 1999) and skin-picking and stereotypic behavior usually serves non-social functions (i.e., Applegate et al., 1999; Didden, Korzilius, & Curfs, 2007; Matson et al., 1999; Rojahn et al., 2012) but can also serve social functions (Applegate et al., 1999). On the other hand, although very limited research with large samples has been published using the CAI, the results of Embregts, Didden, Huitink, and Schreuder (2009) suggest that social/cultural and task activity events are usually correlated with the occurrence of aggressive behavior.

To the best of our knowledge, no studies using large samples and exploring the relationship between behavioral function and antecedent variables have been published. However the results of a recent review study (Simó-Pinatella, Font-Roura, et al., 2013) suggest that specific categories of antecedent variables have been studied to a greater extent according to the specific behavioral functions with which they were associated. For example, for challenging behaviors that were attention-maintained, the setting events that have been specially assessed are those related to the *social context* (i.e., Ringdahl, Winborn, Andelman, & Kitsukawa, 2002; Roantree & Kennedy, 2006), such as attention from others (i.e., Chung & Cannella-Malone, 2010), whereas for challenging behaviors that were escape maintained, those events from the categories of *activity or nature of the task* (i.e., Butler & Luiselli, 2007) and *characteristics of the environment* (i.e., Buckley & Newchok, 2006) were more frequently studied. The authors (Simó-Pinatella, Font-Roura, et al., 2013) also suggested that the effects of these antecedent events could also be predictable in some cases based on the function of the behavior. For example, it might be expected that if the behavior is maintained by access to tangible, providing a pre-session condition in which the participant has access to the object should decrease the frequency of challenging behavior after the pre-session condition, whereas no access to tangible during the pre-session condition would increase the frequency of the challenging behavior after the pre-session (i.e., Carter & Wheeler, 2007; O'Reilly et al., 2007). The findings from this review study suggest that some antecedent variables may be more strongly related to specific behavioral functions.