



Functions of maladaptive behavior in intellectual and developmental disabilities: Behavior categories and topographies

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ABSTRACT

Research has shown that different maladaptive behavior categories may be maintained by different contingencies. We examined whether behavior categories or behavior topographies determine functional properties. The *Questions about Behavioral Function* with its five subscales (*Attention, Escape, Nonsocial, Physical, and Tangible*) was completed by direct care staff for one target behavior for each of 115 adults with varying degrees of intellectual disabilities. In the first step we examined the functional properties of three broad behavior categories (self-injurious behavior [SIB], stereotypic behavior, and aggressive/destructive behavior). Consistent with previous research stereotyped behaviors and SIB had significantly higher QABF *Nonsocial* (i.e., automatic positive reinforcement or self-stimulation) subscale scores than aggressive behavior, while none of the other subscales showed differences across the three behavior categories. Contrary to earlier studies, escape (or negative social reinforcement) was an important function not only for aggressive behavior, but also for SIB and stereotypies. A second analysis examined functional properties depending on two factors: the behavior topography (hitting vs. non-hitting behaviors) and their respective behavior category (SIB vs. aggression). SIB topographies had higher ratings than aggressive behavior on the QABF *Nonsocial* subscale. Of the five QABF subscales, only the subscale *Nonsocial* differed between categories of maladaptive behavior. Furthermore it was the behavior categories rather than the topographies that determined functional properties.

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1. Introduction

Maladaptive behavior among individuals with intellectual disabilities can take many different forms and is sometimes generically defined as behavior that is frequent and/or severe enough to limit a person's ability to function in everyday life, to learn new skills, and to gain full access to resources in the environment (Moss, 1999; Sigafos, Arthur, & O'Reilly, 2003). Cooper, Smiley, Morrison, Williamson, and Allan (2007) estimated the point prevalence of behavior problems among individuals with intellectual or developmental disabilities across all levels of functioning to be 22.5%. Maladaptive behaviors by definition are a major source of concern for parents, school teachers and administrators, and other service providers who care for individuals with intellectual or developmental disabilities.

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Interventions for maladaptive behaviors in persons with intellectual disabilities with the strongest empirical support are based on applied behavior analysis (Emerson, 2001; Rush & Frances, 1999), which views behavior challenges as operant behavior. Behavioral assessment as an integral component of applied behavior analysis involves defining the topography of a target behavior and identifying its functional properties or maintaining contingencies (functional assessment). Behavior topography refers to the observable features of a specific behavior of a specific individual. Descriptions of a behavior's topography can include, among others, the body parts involved in the behavior, its rate of occurrence, and its intensity. In applied behavior analysis it is expected that the topography of the target behavior is operationally defined, meaning that the behavioral features of interest are explicitly described (e.g., head banging – fist makes forceful contact with the forehead).

Different kinds of behavior problems are often referred to by summary terms such as *self-injurious behavior* or *aggressive behavior* and consist of topographically and perhaps even functionally heterogeneous behaviors (e.g., self-hitting, self-biting, self-scratching). Although summary terms are treated with skepticism by behaviorists (due to the concern of evoking a hypothetical construct, or because they are too unspecific for a behavioral analysis of a specific person's behavior), they nonetheless are being used for ease of communication (e.g., as library search terms). In this paper we will refer to such summary terms as behavior categories.

Functional assessment involves the identification of the maintaining contingencies of a target behavior, which includes positive reinforcement (social, tangible, or internal/automatic reinforcers) and/or negative reinforcement contingencies (escape/avoidance of social or non-social events). Functional behavioral assessment (O'Neill et al., 1997) is based on direct behavior observations, informant-based rating scales, and interviews.¹ Of these tools, informant-based rating scales are among the most preferred and most widely used because they are easy to administer and do not require lengthy prospective observations. Although reliability and validity of functional assessment instruments are generally a concern, some of these scales have good psychometric properties. The *Questions About Behavior Function* (QABF; Matson & Vollmer, 1995) is one such rating scale, which has been used widely and has shown to have solid psychometric properties across many populations (Freeman, Walker, & Kaufman, 2007; Matson & Boisjoli, 2007; Nicholson, Konstantinidi, & Furniss, 2006; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2000; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2001; Shogren & Rojahn, 2003).

Behavior analysts have long maintained the predominance of a behavior's function over its topography or category when it comes to individualized treatment development (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Rojahn, DeLeon, et al., 2012). However, it is reasonable to assume that form and function of maladaptive behaviors are non-independent, albeit perhaps even only to a small degree. Several studies have addressed the relationship between maladaptive behavior categories and their function in the past. For instance, Emerson and Bromley (1995) found in a sample of 70 individuals with mild to severe intellectual disabilities that SIB and destructiveness was maintained by self-stimulation as measured by the *Motivation Assessment Scale* (MAS; Durand & Crimmins, 1988), while seeking the attention of others was the primary function of aggressive behaviors. Barrera and Graver (2007), using a computerized ambulatory monitoring system with three individuals that the heart rate consistently increased prior to the occurrence of SIB followed by a temporary decline in SIB episode. This suggests that SIB was maintained by escape from autonomic arousal. Didden, Korzilius, and Curfs (2007) also discovered that skin-picking in a large group of individuals with Prader-Willi syndrome predominantly had non-social functions, namely contingent arousal reduction. Didden et al. (2007) used the *Questions about Behavioral Function* (QABF; Matson & Vollmer, 1995) to determine the functional properties of skin picking.

Studies on aggressive behaviors, on the other hand, suggest that they tend to be maintained more by external-social reinforcement. Matson and Mayville (2001) examined the functions of aggressive behaviors in 135 adults with severe and profound intellectual disabilities as a function of the presence or absence of psychopathological comorbidities. While they did find significant group differences for some of the functional properties of aggressive behavior between the two subgroups, social functions (as captured by the QABF subscales *Attention*, *Escape*, *Tangible*) were the predominant functions as compared to non-social functions (reflected in the subscales *Nonsocial* or self stimulation and *Physical* or physical discomfort). Embregts, Didden, Schreuder, Huitink, and van Nieuwenhuijzen (2009), found essentially the same general outcome as Matson and Mayville (2001), although their participants consisted of a cognitively higher functioning group of 87 individuals with moderate to borderline intellectual disabilities. Aggressive behavior was maintained significantly more strongly by social functions rather than by non-social functions. Embregts et al. (2009) selected the QABF (Matson & Vollmer, 1995) for the functional assessment.

Applegate, Matson, and Cherry (1999) also used the QABF (Matson & Vollmer, 1995) to identify differential functional properties of three different maladaptive behavior categories (aggressive behavior, SIB, and stereotypies) in a group of 417 individuals with severe to profound intellectual disabilities. The most common function of SIBs and stereotypies was nonsocial reinforcement, while aggressive behavior tended to be maintained by social reinforcement.

One aim of the present study was to replicate earlier research by determining the function of three maladaptive behavior categories: self-injurious behavior, stereotypic behavior, and aggressive behavior. The second aim was to determine the relative role of specific maladaptive behavior topographies compared to their behavior categories as far as their relationship to behavioral functions was concerned.

¹ Functional assessment that involves experimental manipulations is usually referred to functional analysis.

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