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Instruments d'avaluació per tractar les conductes problemàtiques de persones amb discapacitat intel·lectual a partir del model E-M-I-R-C

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Títol **Instruments d'avaluació per tractar les conductes problemàtiques de persones amb discapacitat intel·lectual a partir del model E-M-I-R-C**

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Instruments d’avaluació per tractar les conductes problemàtiques de persones amb discapacitat intel·lectual a partir del model E-M-I-R-C

[Assessment tools based on SMIRC model to treat problem behavior displayed by people with intellectual disabilities]

Aquest treball ha estat possible gràcies a l'ajut per a la contractació de Formació de Personal Investigador Novell (FI) concedida per l'Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR) de la secretaria d'Universitats i Recerca (SUR) del Departament d'economia i coneixement (ECO) de la Generalitat de Catalunya (2012_B2 00160).

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GLOSSARY

Contextual Assessment Inventory. An indirect functional behavioral assessment tool that allows professionals to identify those environmental events that relate to the problem behaviors displayed by people with intellectual disabilities.

Discriminative stimuli. An antecedent that precedes the occurrence of the behavior and predicts that a specific behavior will be reinforced.

Functional behavioral assessment. A set of strategies for identifying those antecedents and reinforcers that relate to problem behavior.

Intellectual disabilities. "Intellectual disability is characterized by significant limitations both in intellectual functioning and in adaptative behavior as expressed in conceptual, social, and practical adaptative skills. This disability originates before age 18" (Schalock et al., 2010, p. 5).

Motivating operations. Antecedent variables that alter (a) the effectiveness of a stimulus that acts as a reinforcer, and (b) the frequency of those behaviors that have been reinforced by that stimulus (Michael, 2007).

Questions About Behavioral Function. An indirect functional behavioral assessment tool that was designed to identify the function of problem behavior in people with intellectual disabilities.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

CAI – Contextual Assessment Inventory

FBA – Functional behavioral assessment

ID – Intellectual disabilities

MO – Motivating operations

QABF – Questions About Behavioral Function

S^D – Discriminative stimuli

CONTENTS

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1. INTRODUCTION

1.1. Layout of the dissertation

All people experience a moment that changes the direction of their lives. I think that I can place that moment in 2007. I worked as a tutor in a special school for children with intellectual disabilities (ID). The class contained seven children aged 12 to 21. One of the students was a 20-year-old young lady who had Ret Syndrome. She was adorable, pleasant and quiet, but did not possess communicative skills. Normally she spent her time in a wheelchair, however she was able to leave the wheelchair and move along the ground at will. I was uninterested the first time I witnessed her perform a repetitive movement (stereotypic behavior) with her hand (specifically, I witnessed her spreading spit on her face, table, floor, etc. using her hand). However, when I began to work with her, I noticed that the constant stimulation caused by this behavior hindered my educational work with her. Her peers and teachers considered the movement irritating and unhygienic. The school teachers informed me that she performed that movement constantly and that rigorous intervention had not been implemented to teach her more appropriate behaviors. Sometimes, reactive strategies (i.e., punishment) were used, such as denying her the opportunity to perform or complete an activity in which she was engaged. Other procedures were also implemented, such as shouting at her after the behavior; procedures that difficultly provide her positive support. During the same time period, I read a study conducted by Wales, Charman, and Mount (2004). The authors of this study explored the extent to which the conditions of the functional analysis influenced the frequency of stereotyped behavior displayed by eight students who had Ret Syndrome. One important personal development was the understanding that the occurrence and the frequency of the behavior was not something intrinsic to ether the person or to the disability and that environmental conditions could strongly influence the occurrence of the behavior. Moreover, the understanding that problem behavior, in this case, the stereotypic behavior, is meaningful for the student allowed me to form an intervention plan that better focused on the student's needs.

The research from other articles (i.e., Iwata, Dorsey, Slifer, Bauman, & Richman, 1994; Nuzzolo-Gomez, Leonard, Ortiz, Rivera, & Greer, 2002; Preciado & Sugai, 2007) and the rigorous guidance of Josep Font in devising a precise intervention plan for this student considerably increased my interest and motivation for researching problem behavior in people with ID.

The interest generated by these readings, combined with two specific events, generated the development of the current thesis.

First, the opportunity to participate as an intern in the research group *"Discapacitat i Qualitat de Vida: Aspectes Educatius" de la Facultat de Psicología, Ciències de l'Educació i de l'Esport Blanquerna (URL),* whose main researcher is Dr. Climent Giné. This opportunity not only allowed me to participate in research projects designed to improve the quality of life of people with ID and their families but also provided me with the opportunity to begin PhD studies and to continue investigating the different aspects of problem behaviors and their treatment. Some of these concepts required considerable examination. Key factors in beginning the current studies included sharing research experiences with research group partners, contributing to the development of research projects, and observing how research could promote a better understanding of the complexities of problem behavior.

Second, I participated in the working group that organized the *"Grup d'Investigació en Educació Especial (GIEE)"* about problem behavior displayed by people with ID. Key factors in my research development were listening discussing problem behavior with other professionals from different fields, exploring new research topics, thinking about factors that related to the frequency and severity of problem behavior in real cases, and learning about how research could apply to everyday practice by providing tools for the professionals who treat problem behavior.

In summary, this thesis arises from both personal and professional motivations to better understand the nature of problem behavior displayed by people with ID and to establish comprehensive assessment procedures and intervention plans that completely serve the people's needs.

In recent years, the assessment and treatment of problem behavior has become a topic of particular interest. Problem behavior has emerged as one of the most severe and 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 problem behavior has been explored in different countries and for different disabilities; high rates of problem behavior have been found among people populations with ID (i.e., Jones et al., 2008; Lowe et al., 2007; Matson et al., 2011; Murphy, Healy, & Leader, 2009).

Problem behavior has negative effects on both the person who engages in the behavior and on that person's closest relations. Problem behavior is one of the biggest barriers to ensuring that people with ID are able to participate in the community (Carr, Ladd, & Schulte, 2008) and has become one of the main causes of social exclusion (Font, 2001)

among people with ID. These behaviors can affect both the people's quality of life (Langthorne, McGill, & O'Reilly, 2007) and the quality of life of their staff or families (Emerson, 2001).

The understanding of these behaviors has usually been associated with the people themselves. Therefore, as Snell (2010) stated, interventions aimed at rapidly reducing or temporarily eliminating problem behavior and the consequences of these interventions have not been analyzed. Moreover, these interventions were frequently reactive; the intervention was conducted immediately after the occurrence of the problem behavior to fix the person to its environment. These intervention procedures frequently used punishment as a strategy to temporarily stop the behavior.

Nevertheless, in recent decades, applied behavioral analysis has substantially contributed to the field of education and disability (Greshman et al., 2004) by exploring the functional relationships of the behavior (i.e., Butler & Luiselli, 2007; Carey & Halle, 2002; English & Anderson, 2006; Hagopian et al., 2002; Simó-Pinatella, 2008; Tiger, Fisher, Toussaint, & Kodak, 2009) and by providing different perspectives that promote a better understanding of problem behavior (Steege & Watson, 2009). Thus, new theoretical models have emerged as a result of research and everyday practice.

For many years the *three term contingency* model was used for practitioners and researchers. This model was quite linear (Steege & Watson, 2009) in that a behavior was preceded by an antecedent (discriminative stimuli; S^D) and reinforced by consequences. Nevertheless, another type of antecedent (motivating operations; MO) that influenced the three term contingency (Cooper, Heron, & Heward, 2007) has been an object of study during recent decades. Steege and Watson (2009) recently suggested the SMIRC model, which incorporates the presence of MOs in the understanding of problem behavior. This model considerers the dynamic interactions of variables within and external to the individual and recognizes that these variables generally interact with each other (Watson, Steege, & Watson, 2011).

Considering the importance of incorporating MOs in the assessment of problem behavior (SMIRC model), the study entitled "*Instruments d'avaluació per tractar les conductes problemàtiques de persones amb discapacitat intel·lectual a partir del model E-M-I-R-C"* is presented. This study focused on people with ID and aims (a) to obtain assessment tools that permit the identification of MOs and behavioral function and (b) to explore whether behavioral functions and antecedent variables (S^D and MO) are

related. To achieve these goals, the concept of MO and its effects on problem behavior are explored below.

1.1. Layout of the dissertation

This thesis is presented using several publications that arose from the research discussed below. Specifically, three published articles and one under review are presented. Furthermore, it serves part of the requirements for a European doctorate; this thesis is presented in English, although a summary of all of the publications is provided in both English and Catalan.

The present work is divided into five parts: theoretical framework, aims of the research, method and results, general discussion and conclusions.

In terms of theoretical framework, the research approach is presented. Several aspects of this approach such as the theoretical models of assessment, the important role of antecedents (S^D and MO) and reinforcers, and the most significant assumptions of functional assessment are presented. Furthermore, two articles are presented (Simó-Pinatella et al., 2011; Simó-Pinatella, Font-Roura et al., 2013) to provide details about the concept of MO, its effects, and the importance of including MO in the assessment and treatment of people with ID.

Next, based on the theoretical foundations of and the results from both articles, the aims of the dissertation are presented.

Two articles are presented (Simó-Pinatella, Alomar-Kurz, Font-Roura, & Giné, 2013; Simó-Pinatella, Alomar-Kurz, Font-Roura, Giné et al., 2013) to describe the methods and results. These articles present the entire process that was followed for the validation of the two questionnaires and the results obtained from these questionnaires. Moreover, an article about the relationship between behavioral function and antecedent variables is still in progress. Therefore, the preliminary results from this study are explained.

Discussion about the findings obtained from this work, the study's limitations and outlines for practitioners and further research is presented.

Finally, the most relevant conclusions from the study are explained.

2. THEORETICAL FRAMEWORK

2.1. Conceptual models and keywords

Problem behavior[1] is related to context and is influenced and maintained by the environment. That is, although people with ID may be prone to engage in problem behavior (Allen, 2008; Dunlap & Fox, 2007; Heyvaert, Maes, & Onghena, 2010; Matson et al., 2011) and show difficulties in learning and adaptive skills (Neidert, Dozier, Iwata, & Hafen, 2010), the problem behavior is not itself caused by the disability (Bambara & Knoster, 2009). According to Carr et al. (2008), problem behavior is influenced by the environment, which may cause, remove or maintain the behavior (Crone & Horner, 2003).

One model that has been used in both research and practice for the understanding and treatment of problem behavior is the ABC model (antecedent-behavior-consequence), also known in the literature as the *three term contingency* (Cooper et al., 2007) model. This model examined the environmental variables that cause and reinforce problem behaviors (Steege & Watson, 2009). The occurrence of problem behavior is influenced by an antecedent (S^D) and reinforced by some of the events that immediately occur after the behavior (consequences).

S^D is an antecedent that is present when a behavior is reinforced (Miltenberger, 2011). That is, an S^D is a stimulus that *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 et al., 2007; Mace, Pratt, Zangrillo, & Steege, 2011; Miltenberger, 1998; Pierce & Cheney, 2004; Steege & Watson, 2009). The effects of an S^D on problem behavior have been studied to a large extent (i.e., Asmus et al., 1999; Conners et al., 2000; Ringdahl & Sellers, 2000; Winborn-Kemmerer et al., 2010).

Consequences of the behavior include those stimuli or events that occur after the behavior and strength it (Pierce & Cheney, 2004; Steege & Watson, 2009). There are three types of reinforcement: positive, negative and automatic reinforcement. Positive reinforcement indicates the maintenance of a behavior via reinforcement by an event or an object (Stormont, Lewis, Beckner, & Johnson, 2008). Positive reinforcement involves attention from others or access to tangible objects (Emerson, 2001). Therefore,

[1] Problem behavior is defined as behavior that is culturally unacceptable and that occurs with enough intensity, frequency or duration to affect both the health of the person who engages in the behavior and those people who surround them. Problem behavior has a negative effect on their participation in the community (Emerson & Einfeld, 2011).

problem behavior that is maintained by positive reinforcement could occur in situations in which little or no attention is provided (Cooper et al., 2007). Negative reinforcement consists of avoiding unpleasant or painful situations (Steege & Watson, 2009) or escaping from unpleasant events, such as possible demands (Emerson, 2001). Finally, automatic reinforcement is generally considered an illustration that the behavior is performed in search of some physiological sensation (Steege & Watson, 2009). Automatic reinforcement may be either positive or negative (Emerson, 2001; Steege & Watson, 2009) and involves self-stimulatory or non-social consequences (Matson et al., 2011).

Problem behavior does not occur randomly, it is generally performed to avoid unpleasant situations or to obtain favorable consequences, such as access to desired activities, interactions or objects (Bambara & Knoster, 2009). For example, a behavior that aims to get attention from professionals would be considered positively reinforced if attention is given to the person who engaged in the behavior.

The maintenance variables (behavioral functions) generally identified in the literature include attention, escape, non-social and tangible (Matson et al., 2011). Moreover, physical functions such as pain have also been identified as behavioral functions. The literature provides significant evidence that the problem 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).

Although the ABC model is important to the understanding of problem behavior, research has identified some limitations to this model, such as the linear analysis of the behavior and the lack of consideration of motivation (Steege & Watson, 2009). Therefore, Steege and Watson (2009) suggested a conceptual approach, entitled the SMIRC model, which considered the complex nature of human behavior (Watson et al., 2011) and permitted a broader understanding of problem behavior (Kubick & Mcloughlin, 2010). This model evaluated "the dynamic relationship among antecedents (S^D and MO), individual variables, and reinforcing consequences," (Steege & Watson, 2009, p. 61). The effectiveness of a stimulus (S^D) that influences the occurrence of the behavior, the behavior itself and the reinforcing effect of consequences all depend on the MO (Cooper et al., 2007). The important influence that MOs have on the three term contingency has been well studied (i.e., Carr, Smith, Giacin, Whelan, & Pancari, 2003;

Edrisinha, O'Reilly, Sigafoos, Lancioni, & Choi, 2011; Kennedy & Itkonen, 1993; McGill, Teer, Rye, & Hughes, 2005; Rispoli et al., 2011).

It is necessary to note that MOs are not a new concept (Davis, 2008), but are the result of an evolution of the operant terminology (Langthorne & McGill, 2009). Initially, the concept of establishing operations (Michael, 1982) referred to those antecedents that altered both the effectiveness of the reinforcement (establishing effect) and the frequency of responses that were previously associated with these consequences (evocative effect). However, this term was unable to represent the bidirectional effects of these antecedents (Langthorne & McGill, 2009): establishing effects (an increase in the behavior) and abolishing effects (a decrease in the behavior). Thus, Laraway, Snycerski, Michael, and Poling (2003) suggested a new concept, MO, to refer to these establishing and abolishing effects. MOs are considered to be those variables that alter (a) the effectiveness of a stimulus that acts as a reinforcer, and (b) the frequency of those behaviors that have been reinforced by that stimulus (Michael, 2007). That is, MOs possess two main properties (Laraway et al., 2003). The first property, the *value-altering effect*, refers to the impact that an antecedent has on the effectiveness of another stimulus that acts as reinforcement or punishment (Langthorne & McGill, 2009). The second property, the *behavior-altering effect*, refers to the extent to which the MO can alter the likelihood of the occurrence of a behavior that has been associated with a specific consequences in the past (Laraway et al., 2003). For example, consider the case of a student who engages in problem behavior (tantrums) to gain access to a preferred item (i.e., access to computer). As Langthorne and McGill (2009) suggested, not having access to the computer when the student wishes acts as an establishing operation, which increases the effectiveness of the computer as reinforcement (*value-altering effect*) and causes those problem behaviors (tantrums) that have been associated with computer access on previous occasions (*behavior-altering effect*). Conversely, having access to the computer acts as an abolishing operation, which decreases the value of the computer as an effective reinforcement (*value-altering effect*) and decreases those problem behaviors that have been associated with obtaining computer access on previous occasions (*behavior-altering effect*).

Although the MO and S^D are antecedents that influence problem behavior (Steege & Watson, 2009), the MO alters the value of the reinforcement, while the S^D indicates the availability of the reinforcement (Kennedy & Meyer, 1998). That is, if a problem behavior occurs when, for example, a person enters a particular room, it is more likely

that this event (the person entering the room) will serve as an S^D. However, if the problem behavior occurs without an apparent change in or modification of the environment, it is more likely that an MO has influenced the occurrence of problem behavior (Kennedy & Meyer, 1998).

Due to determine whether an antecedent acts as MO, Langthorne and McGill (2009) posed the following question: Does the antecedent meet the two characteristics of the S^D definition? That is, an antecedent is considered an S^D if (a) in its presence, reinforcement is available for such a response, and (b) in its absence, reinforcement is not available for such a response.

Using the same example from before, in which a student engages in tantrums to gain access to a computer, the value of having access to a computer increases in its absence. In other words, deprivation of computer access establishes access to the computer as reinforcement. Then, as the reinforcement is present in the absence of the antecedent, the second characteristic of the S^D is not met. Thus, access to the computer acts as an MO rather than an S^D.

Alternatively, if the student engages in problem behavior every time that he watches a picture of the computer, then the presence of the picture would act as an S^D for the occurrence of this problem behavior because the picture's absence would not increase these behaviors. In this case, the picture would fulfill the two properties of the S^D suggested by Langthorne and McGill (2009).

In summary, the recent conceptual models of problem behavior include the behavior's immediate antecedents (S^D), the variables that maintain its occurrence, and the MO, which is the type of antecedent that influences the S^D, the behavior and the behavior's consequences. Therefore, the assessment and treatment of problem behavior should consider the influence of MO. The results from a recent review of MOs (Simó-Pinatella, Font-Roura et al., 2013) suggested that interventions that include MOs have a clear effect on the problem behaviors by establishing or abolishing the behaviors' motivation. The review also emphasized that some types of MOs appeared to relate to the behavior's function. However, this relationship has not been studied among large populations. For example, deprivation of attention could have an establishing effect for an attention-maintained-behavior. Furthermore, the results of another study (Simó-Pinatella et al., 2011) suggested that a pre-session (antecedent intervention strategy) strategy generally affected the occurrence of problem behavior. The authors emphasized

that behavioral interventions that focus on the antecedents promote the development of preventive rather than reactive interventions.

2.2. Assessment of problem behavior

Researchers have attempted to design effective intervention plans that meet the needs of the people who engage in problem behavior. These interventions should consider the complexity of the behavior and those elements of the environment that influence the behavior. One way to obtain this information is to conduct a functional behavioral assessment (FBA). The FBA is a process that involves a range of assessment strategies that were designed to identify the behavioral function and the specific contextual events (S^D and MO) that influence the behavior under assessment (Bambara & Knoster 2009; Steege & Watson, 2009). The contextual variables that trigger problem behavior could be identified using different strategies such as questionnaires, interviews, direct observations or functional analysis.

Several reviews of the assessment and treatment of problem behavior have been published on the last decade (i.e., Brosnan & Healy, 2011; Campbell, 2003; Cannella, O'Reilly, & Lancioni, 2005; Gresham et al., 2004; Hanley, Iwata, & McCord, 2003; Lang et al., 2010; Machalicek, O'Reilly, Beretvas, Sigafoos, & Lancioni, 2007; Matson et al., 2011; Simó-Pinatella, Font-Roura et al., 2013). An examination of their results indicates that several features of the FBA make it particularly relevant to the assessment and intervention of problem behaviors.

First, the FBA is a powerful strategy for increasing the likelihood of a treatment's success. Treatments are more effective when they are preceded by an FBA (Brosnan & Healy, 2011; Campbell, 2003; Cannella et al., 2005; Hanley et al., 2003; Matson et al., 2011). FBA-based interventions have been identified as a significant factor in reducing the frequency of problem behavior (Campbell, 2003). However, there were some exceptions in which no significant differences were found between those studies that did or did not use the FBA (Gresham et al., 2004; Machalicek et al., 2007).

Second, antecedent intervention should be considered an essential part of any intervention plan (Brosnan & Healy, 2011; Canella et al., 2005; Lang et al., 2010). Antecedent interventions include the identification and modification of the S^D and MOs, such as providing access to preferred items (Lang et al., 2010; Simó-Pinatella et al.,

2011) or choice intervention (Canella et al., 2005). Alterations of these variables generally decrease the occurrence of problem behavior by providing a preventive context.

Third, the interventions should match the behavioral function (Brosnan & Healy, 2011; Hanley et al., 2003). Identifying the function of the behavior is a key aspect of the FBA. This function provides relevant information to the professional for identifying the reinforcers of the behavior and treating these behaviors (Matson et al., 2011). The identification of behavioral function may let professionals to develop more effective and specific interventions (Simó-Pinatella, Font-Roura et al., 2013).

Finally, and of great importance for the assessment and treatment of problem behavior, experimental or functional analyses have been used increasingly compared with the indirect or direct strategies from the FBA, such as interviews, questionnaires or direct observations (Brosnan & Healy, 2011; Campbell, 2003; Hanley et al., 2003). Functional analysis has emerged as a method of examining those antecedents and consequences that influence or maintain problem behavior in greater detail.

Based on the above-mentioned characteristics of the FBA and the conceptual SMIRC model, it is important that professionals be provided with tools that permit them to identify the antecedents and reinforcers of the problem behavior during the development of effective intervention plans. Although the interventions that use functional analyses have obtained better results than those interventions that use other types of assessment (Campbell, 2003), this method requires specialized staff training and is often costly (Miltenberger, 1998; Paclawskyj et al., 2001). Indirect FBAs generally have poor psychometric properties (Kelley, LaRue, Roane, & Gadaire, 2011), so important efforts have been conducted to explore the degree of convergence between some of the indirect FBAs and other FBA methods. Although more research is needed, convergent validity was found between the *Questions About Behavioral Function* (QABF) and functional analysis (Paclawskyj et al., 2001; Watkins & Rapp, 2013) and the *Contextual Assessment Inventory* (CAI) and direct observations (Carr et al., 2008).

2.3. First publication

Simó-Pinatella, D., Font-Roura, J., Planella-Morató, J., McGill, P., Alomar-Kurz, E., & Giné, C., (2013).Types of motivating operations in interventions with problem behavior: A systematic review. *Behavior Modification, 37,* 1-36.

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Types of Motivating Operations in Interventions With Problem Behavior : A Systematic Review

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Types of Motivating Operations in Interventions With Problem Behavior: A Systematic Review

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Abstract

A motivating operation (MO) alters both the effectiveness of a stimulus as a reinforcer and the current frequency of all behavior that has been reinforced by that particular stimulus. This article reviews studies that have manipulated a MO during interventions with school-age participants with intellectual disabilities and problem behavior. A systematic review was conducted using the following major electronic databases: PsychInfo, Education Resources Information Center, Science Direct, Blackwell, SAGE, and Medline. A total of 31 published articles representing 55 participants was examined. Findings from this study suggest that the modification of a MO usually has an effect on the problem behavior by either establishing or abolishing its motivation. Furthermore, a relationship was found between the type of MO and the behavioral function identified. The theoretical and practical implications of these findings, limitations of this study and potential issues for future research are discussed.

Keywords

motivating operations, setting events, problem behavior, behavioral function, intellectual disabilities

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Introduction

The problem behavior of people with intellectual disabilities[1] (IDs) has a negative impact on their own lives and their environment (Heyvaert, Maes, & Onghena, 2010). It deeply affects their health and quality of life (Langthorne, McGill, & O'Reilly, 2007) as well as their caregivers and families (Emerson, 2001). Thus, problem behavior is one of the biggest challenges to improving participation and inclusion of people with ID in the community (Carr, Ladd, & Schulte, 2008; McAtee, Carr, & Schulte, 2004).

Problem behavior can manifest in many different ways. As Kiernan and Kiernan (1994) noted, the behavior may be in the form of aggression, stereotypic behavior, tantrums, self-injurious behavior, challenging social behaviors, and so on. The prevalence of problem behavior has been a concern and an issue of study (Cormack, Brown, & Hastings, 2000; Emerson et al., 2001).

Since the 1980s, an important shift has taken place in the understanding and conceptualization of problem behavior (Emerson & Einfeld, 2011). Applied behavior analysis is an approach that has had a major impact on this change. One of the main contributions of this approach is its emphasis on the environmental determination of behavior (Emerson & Einfeld, 2011). When the focus is challenging behavior, the emphasis lies on the function of the behavior rather than its form (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994). The behavior does not occur randomly; it is displayed in the context of multiple interacting variables (environmental, individual, motivational, instructional, and biological). This complexity adds new challenges to the understanding and treatment of problem behavior. Therefore, one way to understand and treat problem behavior is through a behavioral functional assessment, "a set of assessment procedures that results in the identification and description of the relationships between the unique characteristics of the individual and the contextual variables that trigger, motivate, and reinforce behavior" (Steege & Watson, 2009, p. 7). Intervention plans can be designed and developed based on this knowledge (Riffle, 2011).

Several reviews on the assessment and treatment of problem behavior have been published recently. These reviews were generally designed to acknowledge the challenge that problem behavior poses for the professionals and families it affects. In general, these reviews have focused their efforts on evaluating the benefits of functional assessment as well as the effects of different treatments or interventions (e.g., Brosnan & Healy, 2011; Denis, Van den Noortgate, & Maes, 2011; Hanley, Iwata, & McCord, 2003; Heyvaert et al., 2010; Matson & Neal, 2009). For example, Hanley et al. (2003) reviewed a total of 277 studies that conducted a functional analysis and

identified the relationship between environmental variables and problem behavior. Functional analysis is a specific approach to functional assessment involving "an experimental analysis of the function of the behavior under contrived test conditions" (Cipani & Schock, 2007, p. 43). Hanley's review demonstrates that there is a voluminous database of articles that have used functional analysis involving different topographies of problem behavior and different participant characteristics. Furthermore, their review provides guidelines for better practices. More recently, Heyvaert et al. (2010) completed a meta-analysis to examine the effects of different interventions on problem behavior. The authors included articles that have conducted contextual, psychotherapeutic, and biological interventions among persons with ID. In short, previous research has provided important evidence to guide the assessment and treatment of problem behavior.

One way to address problem behavior is through working with the antecedents and consequences of problem behavior (McGill, Teer, Rye, & Hughes, 2005). As Steege and Watson (2009) noted, two different types of antecedent variables can be identified: discriminative stimuli and motivating operations (MOs). A discriminative stimulus is an event whose presence is correlated with a changed availability of reinforcement and, therefore, with a change in the frequency of behaviors producing such reinforcement (Carr et al., 2008), whereas a MO alters the effectiveness of reinforcement (Steege & Watson, 2009). There is a growing body of evidence exploring how the problem behavior of people with ID can be influenced by antecedent events (e.g., Call, Wacker, Ringdahl, & Boelter, 2005; Garbutt & Furniss, 2007; O'Reilly, Lacey, & Lancioni, 2000; Roscoe, Carreau, MacDonald, & Pence, 2008; Simó-Pinatella, 2008). Although the needs and characteristics of people with ID may make them more likely than other groups to develop specific problem behaviors (Langthorne et al., 2007; McGill, 1993), antecedent interventions may help to reduce the incidence of such behaviors. MOs, in particular, may alter the stimulus control found in the typically understood three-term contingency of discriminative stimulus, behavior, and reinforcer (Edrisinha, O'Reilly, Sigafoos, Lancioni, & Choi, 2011).

In the literature, the variables that influence the three-term contingency have been referred to by various terms, such as setting events (Morris & Midgley, 1990) or contextual variables (McAtee et al., 2004). Although some of these terms are generally understood to be environmental variables that are developed within different theoretical systems (Kennedy & Meyer, 1998), in this article, we refer to these variables as MOs. Furthermore, MOs are understood to be those variables that "alter (a) the effectiveness of reinforcement or punishment (the value-altering effect) and (b) the frequency of operant response classes related to those consequences (the behavior-altering effect)"

(Laraway, Snycerski, Michael, & Poling, 2003, p. 412). MOs may increase (establish) or reduce (abolish) the effectiveness of reinforcement. At the same time, they may increase (evoke) or reduce (abate) the behavior that produces reinforcement (Laraway et al., 2003; McGill, 1999; Michael, 1982; O'Reilly et al., 2008).

In the literature, three main categories of MO have been recognized: biological, social, and physical (Carr, Smith, Giacin, Whelan, & Pancari, 2003). As Barratt, Hughes, and McGill (2012) suggested, the biological category involves fatigue, pain, or illness, whereas the social category includes nonpreferred activities, lack of choice, communication difficulties, and the presence or absence of particular people (Carr et al., 2003). Finally, the physical category includes environmental aspects such as noise, temperature, or environmental enrichment. However, a review of the different indirect assessment tools that are used to gather information indicates that there is no consensus regarding the three categories noted (e.g., Crimmins, Farrell, Smith, & Bailey, 2007; Dunlap et al., 2010; McAtee et al., 2004; Steege & Watson, 2009); rather, a wide range of categories are used. For example, for interview-based assessments, different categories are considered, as in the Ecological Interview (McGill et al., 2005) and the Functional Assessment Interview (O'Neill et al., 1997). The Ecological Interview includes 10 categories (physical setting, time of day, day of week, time of year, weather conditions, activities, the presence of particular clients, the presence of particular staff, social context, and personal context), whereas the Functional Assessment Interview includes two main categories (physiological setting events, and environmental and social setting events). Less extensive differences are apparent on existing checklist or assessment forms. For instance, the Contextual Assessment Inventory (McAtee et al., 2004) has four categories (social/cultural context, nature of the task or activity, physical environment, and biological context), and the Antecedent Variables Assessment Form (Steege & Watson, 2009) also includes four unique categories (environmental variables, instructional variables, social variables, and transition variables).

Although there are similarities between the categories used by these assessment tools, there is no general agreement about the MO categories that should be considered when assessing the problem behavior of people with ID. Therefore, an understanding of MO must be advanced. As there are no recent reviews, this article is an attempt to contribute a review of the overall knowledge obtained from recent extensive empirical studies. Specifically, this review has the following two specific objectives: (a) to conduct a systematic review of studies that have conducted a functional

assessment and a subsequent MO-based intervention of problem behavior in school-age children with ID, and (b) to identify those types of MOs that have been investigated, and the extent to which consistent relationships have been established between types of MO and the function of problem behavior.

Method

Procedure

A comprehensive review of the literature was conducted using the following major electronic databases: PsychInfo, Education Resources Information Center (ERIC), Science Direct, Blackwell, SAGE, and Medline (Ebsco and PubMed). The search was conducted using a combination of the following search terms: "motivating operations, setting events, antecedent variables, establishing operations, contextual assessment, contextual intervention, functional assessment and functional analysis" and "problem behavior, challenging behavior, behavior modification, mental retardation and intellectual disabilities." The search was limited to publication dates within the last 10 years (January 2000 to December 2010). The first author selected articles by choosing those that included an evaluation and/or treatment of problem behavior using antecedent modification in the title or abstract. In the case of ambiguous abstracts, the full article was reviewed. The initial electronic search resulted in 360 potential articles. The electronic review was carried out from October 2010 to March 2011. The first three authors independently reviewed the abstracts of potential articles as to whether the articles met the inclusion criteria described in the following section. Articles that were judged to meet the inclusion criteria by all three reviewers were included in the review. Articles that were ambiguous with regard to the inclusion criteria were included for further review. A total of 36 articles were selected after three rounds of meetings between investigators. A manual search was conducted using the reference section of the 36 selected articles to find additional MO articles that were missed in the initial electronic search. In addition, the three journals (*Journal of Applied Behavior Analysis, Behavior Modification*, and *Behavioral Interventions*) that contained the highest number of articles selected (see Table 1) were also manually searched.

Finally, to identify additional articles missing from the initial electronic search, two strategies were used. First, the journals listed in Table 1 were hand searched to identify literature reviews published between 2005 and 2011 that involved problem behavior and IDs. The reference sections of these reviews were consulted. Second, a list of authors of published empirical

Table 1. Journals That Publish Motivating Operations Assessment and Intervention Studies

Name of the journal	Number of citations	Percentage of sample
Journal of Applied Behavior Analysis	17	47.22
Behavior Modification	5	13.88
Behavioral Interventions	5	13.88
Research in Developmental Disabilities	4	11.11
Journal of Early and Intensive Behavior Intervention	2	5.55
Education and Treatment of Children	1	2.77
Journal of Positive Behavioral Interventions	1	2.77
Journal of Research in Special Educational Needs	1	2.77
Total	36	100

studies on MOs was created, and each author was searched individually to identify other potential studies. The manual search identified one missing article.

Inclusion and Exclusion Criteria

Articles included in this review were required to meet all of the following selection criteria: (a) were published between 2000 and 2010, (b) involved a process of functional assessment plus an intervention focused on the modification of a MO, (c) were empirically based, (d) included child participants (under 18 years old), (e) included participants who had IDs, and (f) were peer-reviewed articles. Therefore, descriptive studies that only conducted a functional analysis (with or without modification of one of the conditions) but that did not carry out a subsequent intervention (e.g., English & Anderson, 2004; Lang et al., 2008) were excluded. Also excluded were those articles that focused on the evaluation of precursors of problem behavior (e.g., Najdowski, Wallace, Ellsworth, MacAleese, & Cleveland, 2008), those in which the intervention focused on functional replacement (e.g., Luiselli, Ricciardi, Schmidt, & Tarr, 2004; O'Reilly, Murray, Lancioni, Sigafoos, & Lacey, 2003), and those in which the participants had developmental delays and/or disruptive behavior but not IDs (e.g., Boelter et al., 2007). Articles that focused their interventions on the effects of medication (e.g., Carr & Blakeley-Smith, 2006; Dicesare, McAdam, Toner, & Varrell, 2005) were

also excluded as were those that used only an AB design in the intervention (e.g., DeLeon, Fisher, & Marhefka, 2004).

After the inclusion and exclusion criteria were considered, 31 articles were chosen for the review.

Data Extraction and Interrater Agreement

All articles that met the selection criteria were analyzed in the following terms: (a) participants' characteristics (age and disability), (b) research design, (c) setting, (d) participants' problem behavior, (e) behavioral function, (f) nature of MO, and (g) the establishing or abolishing effect of the MO. For articles that included only some participants under 18 (e.g., Ringdahl, Winborn, Andelman, & Kitsukawa, 2002), or one participant with IDs and another with developmental delays (e.g., Van Camp et al., 2000), data were extracted only for the participants who met the selection criteria.

Each reviewer independently summarized the articles, and interrater agreement was established for each variable. Agreement was calculated by dividing the number of agreements by the number of total variables observed (e.g., participants, setting, problem behavior) and multiplying the result by 100. The initial agreement between raters was 96.66%. Specific disagreements were discussed until unanimous agreement was achieved.

Results

Table 2 summarizes the 31 selected papers according to the features mentioned above. All results are explained below according to participants, design, problem behavior, behavioral function, MOs, and the establishing or abolishing operation.

Participants

The 31 articles included 55 participants. A total of 15 studies were single-participant studies with one participant (e.g., Ahearn, 2003), whereas 16 studies included more than one participant (e.g., Lang et al., 2010). As indicated earlier, data were obtained only for those participants in each study who met the selection criteria.

The mean age of participants was 9.01 years (range 4-17 years). A total of 44 participants (80%) were boys, and 11 were girls (20%). All participants were diagnosed with an ID. In addition to ID, some participants were diagnosed with autism (n = 24), autism and food selectivity problems (n = 3),

(text continues on p. 19)

Table 2. Summary of Reviewed Studies

	Participants							
References	Age and gender	Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
Ahearn (2003)	1 boy; 14 years old	Autism, profound range of ID	Multiple baseline design	NS (room)	Feeding problems	NS	Adding condiments on the consumption of previously rejected food (vegetables)	EO
Buckley and Newchok (2006)	1 boy; 7 years old	Autism	Reversal design	Special school	Tantrum	Escape	Music	EO
Butler and Luiselli (2007)	1 girl; 13 years old	Autism	Reversal design	Special school	SIB, aggression, tantrum	Escape	Altering the instructional requests	AO
Carey and Halle (2002)	1 boy; 12 years old	Severe mental impairment	Multielement design and alternating treatment design	Ordinary school	SIB	Multiple functions (escape and access to an activity)	Presence of music	As an AO in demand condition
Carter and Wheeler (2007)	1 boy; 9 years old	CDD, severe ID	Reversal design	Ordinary school	SIB, aggression	Escape	PSCs	

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
							a. Contingent reinforcement (access to preferred items)	AO
							b. Contingent reinforcement (access to preferred items) with delivery of auditory cue	AO
Cautilli and Dziewolska (2004)	1 boy; 9 years old	Mild impairment, oppositional defiant disorder	Reversal design	Family home and ordinary school	Aggression, property destruction	Escape	Sleep deprivation	EO
Chung and Canella-Malone (2010)	3 girls and 1 boy; 11, 11, 16, and 14 years old, respectively	Multiple disabilities, autism, ID	Multielement design	Special school	Stereotypic behavior	Automatic reinforcement	PSCs a. No interaction b. Attention c. Response blocking d. Attention with response blocking	Some conditions acted as an AO for some individuals and others as an EO

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
Kuhn, Hardesty, and Luczynski (2009)	1 boy; 9 years old	Disruptive behavior disorder, stereotypic movement disorder with self-injury, ID (unspecified)	Multielement design	Inpatient unit or facility	Aggression, destructive behavior, SIB	Attention	Noncontingent attention condition	AO
							Contingent attention condition	AO
							Contingent attention plus contingency modelling condition	EO
Lang et al. (2009)	1 girl; 8 years old	Autism	Alternating treatments design	School (NS)	Stereotypic behavior, tantrum	Automatic reinforcement	Pre-session with free access to stereotypy	AO
							Pre-session without free access to stereotypy	EO
Lang et al. (2010)	2 boys and 2 girls; 4, 7, 4, and 5 years old, respectively	Autism	Alternating treatments design	Special school	Stereotypic behavior, tantrum, destructive behavior, aggression	Automatic reinforcement	Pre-session with free access to stereotypy	AO

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
Lanovaz, Fletcher, and Rapp (2009)	3 boys; 7, 7, and 5 years old, respectively	Autism	Reversal design	Family home	Stereotypic behavior	Automatic reinforcement	Structurally matched stimuli and music	AO to immediate vocal stereotypy
							Structurally matched stimuli	AO to immediate vocal stereotypy for all participants and subsequent vocal stereotypy for one participant

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
							Structurally unmatched stimuli	AO to immediate vocal stereotypy for two participants and does not decrease subsequent vocal stereotypy for all participants
LeBlanc, Hagopian, Marhefka, and Whike (2001)	1 girl; 11 years old	Profound ID	Reversal design	Inpatient unit or facility and family home	Aggression, destructive behavior	Attention	Therapist gender (female)	AO
							Type of attention (physical and verbal attention)	AO
Levin and Carr (2001)	2 boys and 1 girl; 6, 5, and 6 years old, respectively	Autism, food selectivity problems, moderate-to-severe range of ID	Reversal design and multiple baseline design	Special school	Feeding problems	Access to tangible	Access to nonpreferred food items	EO

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
Lomas, Fisher, and Kelley (2010)	3 boys; 8, 8, and 9 years old, respectively	Asperger syndrome, ADHD, autism	Multielement design and Reversal design	Intensive day-treatment program	Aggression, destructive behavior, tantrum, SIB	Multiple functions (access to tangibles and escape), escape	Delivery of praise and preferred food items on a variable time	AO
McComas, Hoch, Paone, and El-Roy (2000)	3 boys; 8, 8, and 9 years old, respectively	Developmental disabilities, autism	Multielement design	Special school	Destructive behavior	Escape	Method of instruction (instructional strategy, choice of sequence of tasks and nonrepeated tasks)	AO
McComas, Thompson, and Johnson (2003)	4 boys; 11, 10, 11, and 12 years old, respectively	Down's syndrome, mild-to-moderate ID, vision and hearing impairments, language impairments, autism, moderate-to-severe developmental disabilities	Multielement design	Ordinary school	Aggression, destructive behavior	Attention, escape, multiple function (attention and escape)	Pre-session attention, pre-session no attention	Attention acts as AO for attention-maintained problem behavior, no influence on escape-maintained problem behavior

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
McGinnis, Houchins-Juarez, McDaniel, and Kennedy (2010)	3 boys; 6, 6, and 6 years old, respectively	Developmental disabilities	Multielement design	Center Behavior Analysis Clinic	Aggression, destructive behavior, tantrum, SIB	Attention	Pre-session attention deprivation	EO
							Pre-session of low level of attention	AO
							Pre-session high level of attention satiation	AO
O'Reilly et al. (2007)	1 boy; 14 years old	Autism, severe disabilities	Multielement design	Special school	SIB, aggression	Access to tangibles	Pre-session access to tangible	AO
							Pre-session no access to tangible	EO
O'Reilly and Lancioni (2000)	1 girl; 4 years old	Moderate level of intellectual disability	Reversal design	Family home	SIB, aggression	Escape	Sleep deprivation	EO

(continued)

Table 2. (continued)

References	Participants		Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
	Age and gender	Disabilities						
O'Reilly et al. (2009)	2 boys; 8 and 5 years old, respectively	Autism	Multielement design	Special school	Tantrum, destructive behavior	Multiple functions (access to tangible and escape), escape	Pre-session access to tangible (satiation condition)	AO
O'Reilly et al. (2006)	1 boy; 14 years old	Autism	Multielement design	Special school	SIB, aggression	Access to tangible	Pre-session access versus no access to reinforcer	Restricted access functioned as an EO
							Pre-session access versus no access extinction	Restricted access functioned as an EO
O'Reilly et al. (2008)	1 boy; 16 years old	Developmental disabilities, autism	Multielement design	Day service	SIB, aggression	Multiple functions (access to tangible and attention)	Pre-session access to tangible items	AO
							Pre-session no access to tangible items	EO
Pace and Toyer (2000)	1 girl; 9 years old	Severe ID	Reversal design	Outpatient setting	Pica	NS	Vitamin supplement	AO

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
Piazza, Adelinis, Hanley, Goh, and Delia (2000)	3 boys; 6, 8, and 17 years old, respectively	ADHD, profound and severe ID	Multielement design, reversal and multielement design	Inpatient unit	Aggression, SIB, disruptive behavior	Automatic reinforcement	Matched stimuli	AO
							Unmatched stimuli	EO
Rapp (2004)	1 boy; 10 years old	Down's syndrome, moderate ID	Multielement design	Short-term residential facility	Stereotypic behavior	Automatic reinforcement	Prior access to stereotypy	AO
							Environment enrich with music + guitar	EO
Rapp (2005)	3 boys; 9, 9, and 11 years old, respectively	ADHD, moderate ID, autism, unspecified ID, pervasive developmental disorder, Down's syndrome	Multiple-probe design and reversal design	Short-term residential facility	Stereotypic behavior	Automatic reinforcement	Visual and audio stimulation (television)	As an AO in some forms of stereotypy and EO for others. No clear effect for two participants

(continued)

Table 2. (continued)

References	Participants: Age and gender	Participants: Disabilities	Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
Reed, Dolezal, Cooper-Brown, and Wacker (2005)	1 boy; 4 years old	Bronchopulmonary dysplasia, immune deficiency, gastroesophageal reflux, developmental delays	Reversal design	Inpatient unit or facility	Feeding problems	NS	Sleep disruption	EO
Ringdahl, Winborn, Andelman, and Kitsukawa (2002)	1 boy; 5 years old	Mild to moderate range of ID	Reversal and multielement design	Inpatient unit or facility	Aggression	Attention	Attention only condition	EO
							Attention enriched condition	EO (access to alternative stimuli may be AO for attention)
Roantree and Kennedy (2006)	1 boy; 10 years old	Severe ID	Reversal design and multielement design	NS (room)	Stereotypic behavior	Attention	No pre-session attention	AO
							Noncontingent pre-session attention	EO
Thiele, Blew, and Luiselli (2001)	1 boy; 17 years old	Severe ID	Reversal design and multiple baseline design	Community-based group home	Tantrum	Attention	Preferred staff (noncontingent social reinforcement)	AO

(continued)

Table 2. (continued)

References	Participants		Design	Setting	Problem behavior	Behavioral function	MO	Establishing or abolishing effect
	Age and gender	Disabilities						
Van Camp et al. (2000)	1 boy; 8 years old	Moderate ID, hydrocephalus	Multielement design and reversal design	Ordinary school	SIB	Access to tangible	Bumble Ball with vibration, the sound and the plastic protrusions	No effect
							Bumble Ball without vibration	AO
							Bumble Ball without vibration and no protrusions	No effect

Note: MO = motivating operation; ID = intellectual disabilities; NS = not specified; EO = establishing operations; SIB = self-injury behavior; AO = abolishing operation; CDD = childhood disintegrative disorder; PSC = pre-session condition.

Down's syndrome (n = 3), multiple disabilities (n = 3), attention deficit hyperactivity disorder (ADHD; n = 3), pervasive developmental disorder and Down's syndrome (n = 1), Asperger syndrome and ADHD (n = 1), oppositional defiant disorder (n = 1), disruptive behavior disorder (n = 1), bronchopulmonary dysplasia (n = 1), childhood disintegrative disorder (n = 1), vision and hearing impairments (n = 1), and hydrocephalus (n = 1).

Designs

For the present review, all of the designs evaluated were for single-participant research. The designs most frequently used were reversal design (n = 17), multielement (n = 16), multiple baseline (n = 3), alternating treatments (n = 3), and multiprobe design (n = 2). It is important to note that nine studies used more than one design.

Setting

A high percentage of the studies included (45.16%) were conducted at the participants' school (n = 14). Of these studies, nine were conducted in special schools (64.28%; e.g., Butler & Luiselli, 2007) and four were conducted in ordinary schools (28.57%; e.g., McComas, Thompson, & Johnson, 2003). The remaining study (Lang et al., 2009) did not specify the type of school at which the intervention was conducted. Nonschool settings in which studies were conducted included an inpatient unit or facility (n = 4), family home (n = 2), and short-term residential facility (n = 2). One study each was conducted at the following locations: an outpatient setting, day service, intensive day-treatment program, community-based group home, and Center Behavior Analysis Clinic. Two studies were conducted in more than one setting: school and family home (Cautilli & Dziewolska, 2004), and inpatient unit or facility and family home (LeBlanc, Hagopian, Marhefka, & Whike, 2001). Finally, although two of the studies indicated that the assessment and treatment of the problem behavior was conducted in a room, the room's location was not specified (Ahearn, 2003; Roantree & Kennedy, 2006).

Problem Behavior

The most common problem behaviors in the studies were aggression (n = 15), self-injurious behavior (n = 12), tantrums (n = 8), destructive behavior (n = 8), and stereotypic behavior (n = 7). Other problem behaviors included feeding problems (n = 3), pica (n = 1), property destruction (n = 1), and

disruptive behavior (n = 1). Specifically, focusing on the study participants, the most common problem behaviors were aggression (n = 22), stereotypic behavior (n = 17), destructive behavior (n = 17), self-injurious behavior (n = 14), and tantrums (n = 11). Other problem behaviors among the participants included feeding problems (n = 5), disruptive behavior (n = 2), pica (n = 1), and property destruction (n = 1).

Because some studies included participants with more than one problem behavior and/or multiple participants with multiple behaviors, the total number of behaviors is not equal to the total number of participants.

Behavioral Function

The four most commonly found behavioral functions were all found in the reviewed articles. Problem behavior was maintained by automatic reinforcement (n = 7 studies), escape (n = 6), attention (n = 6), and access to tangible reinforcement (n = 4). Problem behavior was maintained by multiple functions in two studies (Carey & Halle, 2002; O'Reilly et al., 2008). In three studies (Lomas, Fisher, & Kelley, 2010; McComas et al., 2003; O'Reilly et al., 2009), different participants' problem behaviors were maintained by different functions. In three of the selected articles, the function of the problem behavior was not specified.

Across participants, problem behavior was maintained by automatic reinforcement (n = 19, 34.54%), escape (n = 12, 21.81%), attention (n = 9, 16.36%), and tangible reinforcement (n = 6, 10.9%). Problem behavior was maintained by multiple functions for six participants (10.9%), and the behavioral function was not specified for three participants (5.45%).

Behavioral function was established by an experimental functional analysis in more than half of the selected articles (58.06%). The other two strategies used were direct observation (12.9%) and direct observation with indirect assessment (12.9%). Some studies (16.12%) did not specify how function was identified.

MO

The articles reviewed in this study included many different MOs. To identify the categories of MO that are empirically supported, the first author generated (from Table 2) an initial pool of MOs and grouped all items into four categories (social context, activity or nature of the task, characteristics of the environment, and personal context). The second author grouped all MOs into these four categories separately. Then, the first and second authors identified

subcategories to precisely identify the types of MO included in this review. Any discrepancies were discussed until a consensus was reached.

Generally, the MOs were classified as follows: *social context variables* (*n* = 8), involving attention from others (e.g., Chung & Cannella-Malone, 2010) and factors related to others' characteristics (e.g., gender; LeBlanc et al., 2001); *activity or nature of the task* (*n* = 2), involving instructional requests (e.g., Butler & Luiselli, 2007), presentation of work, and the method of instruction (McComas, Hoch, Paone, & El-Roy, 2000); *characteristics of the environment* (*n* = 12), involving factors related to objects or activities (e.g., Levin & Carr, 2001) and environmental enrichment (e.g., Rapp, 2005); and *personal context* (*n* = 4), involving physiological states (Cautilli & Dziewolska, 2004). Only two studies included more than one MO. In one such study, Lomas et al. (2010) observed the effects of "delivery of praise" and "preferred food items on a variable time." In the other study, Carter and Wheeler (2007) considered the effects of "having access to preferred items" and "following systematic presentation of work tasks."

The categories mentioned above do not differ greatly from those offered by indirect assessment tools (e.g., Contextual Assessment Inventory). Given the importance that establishing the function of problem behavior has for treatment efficacy, the association of function with antecedent variables might be of significant practical interest. Therefore, the type of MO altered or modified, according to the function of the behavior, was investigated.

For each of the four MO categories (social context, activity or nature of the task, characteristics of the environment, and personal context), Table 3 shows the different types of MOs that were explored according to behavioral function. That is, to provide more precise information about the MOs used in the selected articles, Table 3 summarizes the different MOs involved in this review and their apparent effect on each participant.

As Table 3 shows, some categories occur more frequently than others. Most of the interventions involved an alteration of the social context or characteristics of the environment MOs. A small number of interventions took place involving a MO of the participant's personal context, and very few interventions considered the activity or nature of the task.

Table 3 also shows that some MOs were investigated for one specific behavioral function but not for others. For example, MOs such as access to stereotypy or method of instruction were investigated for participants whose problem behavior was maintained by automatic reinforcement or escape, respectively, but not the other way around.

MOs were frequently investigated in relation to specific behavioral functions rather than broadly investigated across functions. For example, a

Table 3. Effect of Different Types of MOs on Participants' Problem Behavior in Relation to Its Function

Type of MO	Behavioral function				
	Automatic reinforcement	Escape	Attention	Access to tangible	Not specified
Social context					
Therapist gender (female)			↓[a]		
Preferred staff (noncontingent social reinforcement)			↓		
Type of attention (verbal and physical attention)			↓		
PSC deprivation (no attention)	↓↓↑[b]↑	=*[c] =[d] =	↑* ↑↑↑↑↑		
PSC attention	↓↓↑↑	=* = =	↓* ↓↓↓↓		
PSC response blocking	= ↓↓↓				
PSC attention with response blocking	↓ = = ↑				
Non-CA condition			↓		
CA condition			↓		
CA plus contingency modeling condition			↑		
Attention only condition			↑		
Attention enriched condition			↑		
No PSC attention			↓		
Delivery of praise and preferred food items on a variable time		↓* ↓* ↓		↓* ↓*	
Activity or nature of the task					
Altering instructional requests/method of instruction		↓↓↓↓			
Characteristics of the environment					
Music/environment enrich with music and guitar	↑	↑ ↓*		↓*	
PSC access to tangible		↓* ↓	↓*	↓* ↓ ↓*	
PSC no access to tangible			↑*	↑* ↑ ↑	
PSC restricted access to extinction (no interaction)				↑	

(continued)

Table 3. (continued)

Type of MO	Behavioral function				
	Automatic reinforcement	Escape	Attention	Access to tangible	Not specified
PSC contingent reinforcement with or without delivery of auditory cue		↓↓			
Access to different tangibles				*	
Access to nonpreferred food items				↑↑↑	
Structurally matched stimuli with and without music	*[e]* *				
Structurally unmatched stimuli	* * * ↑↑↑				
Matched stimuli	↓↓↓				
Visual and audio stimulation (television)	* = =				
Delivery of praise and preferred food items on a variable time schedule		↓* ↓* ↓		↓* ↓*	
Personal context					
Adding condiments to the consumption of previously rejected food (vegetables)					↑
Vitamin supplement					↓
Sleep deprivation/disruption		↑↑			↑
PSC without free access to stereotypy	↑				
PSC with free access to stereotypy	↓ ↓ ↓ ↓ ↓ ↓				

Note: MO = motivating operations; PSC = pre-session condition; CA = contingent attention.
↓ Abolishing effect for participant
↑ Establishing effect for participant.
= No effect for participant.
* Mixed effects for participant.
[e]Behavioral function of this participant serves multiple functions.

pre-session condition with free access to stereotypy (e.g., Lang et al., 2010) and a pre-session condition with access to (or deprivation of) attention (e.g., Chung & Cannella-Malone, 2010) were well investigated for children whose problem behavior seemed to be maintained by automatic reinforcement. Similarly, this can be seen in those whose problem behavior was maintained by access to tangible reinforcement and attention. For studies involving problem behavior maintained by attention, most of the MOs investigated were those that involved access to or lack of attention (e.g., McComas et al., 2003). For studies involving problem behavior maintained by access to tangible reinforcement, the MOs used were those involving access or lack of access to tangible reinforcement (e.g., O'Reilly et al., 2007). Unlike the behavioral functions noted above, a broader range of MOs were investigated with respect to escape-maintained behavior (e.g., O'Reilly & Lancioni, 2000). Very few interventions included biological MOs or MOs that involved changes to instructional methods (e.g., McComas et al., 2000).

Establishing or Abolishing Operation

Although there were some exceptions (e.g., Van Camp et al., 2000), the majority of the MOs had a clear effect (establishing or abolishing) on the problem behavior in the predicted direction (Table 3). The MO had mixed results on the participant's problem behavior in only two studies (Lanovaz, Fletcher, & Rapp, 2009; Rapp, 2005).

The findings in Table 3 suggest that MOs' effects vary depending on the function of the problem behavior. MOs involving access or lack of access to a behavior producing automatic reinforcement (e.g., stereotypy) had predictable establishing or abolishing effects. Specific types of stimulation produced mixed effects consistent with research on matched/unmatched stimuli (e.g., Piazza, Adelinis, Hanley, Goh, & Delia, 2000). MOs involving changes in the level of attention had abolishing effects for some automatically maintained behaviors and establishing effects for others (e.g., Chung & Cannella-Malone, 2010).

The modification of instructional variables produced the clearest (abolishing) effects for escape-maintained behavior (e.g., McComas et al., 2000). In marked contrast, changes in the level of attention did not appear to function as MOs for escape-maintained behavior (e.g., McComas et al., 2003). Although the effects were somewhat mixed, providing access to different types of tangible reinforcement did appear to have an abolishing effect on some participants' escape-maintained behavior (e.g., Carter & Wheeler,

2007). For two participants, sleep disruption had an establishing effect on escape-maintained problem behavior (e.g., O'Reilly & Lancioni, 2000).

Predictably, changes in the level of attention had a generally consistent effect on attention-maintained behavior, with deprivation of attention having an establishing effect and access to attention having an abolishing effect (e.g., McGinnis, Houchins-Juarez, McDaniel, & Kennedy, 2010). The only other possible MO investigated was access to tangible reinforcement, which had an establishing effect for one participant and a mixed effect for another.

Changes in the availability of tangible reinforcement produced predictable MO effects on tangibly maintained behavior (e.g., O'Reilly et al., 2007), but no other possible MOs were investigated.

Three general points are noteworthy from an inspection of Table 3. First, most putative MOs were only investigated with respect to problem behaviors in one or two specific behavioral functions. For example, alterations to instructional variables were only investigated with respect to escape-maintained behavior. Second, as a result of this restriction, evidence of the "matching" of type of MO to function remains limited. To reach a conclusion that MOs are predictably matched to behavioral function, it would be necessary to demonstrate, for example, that alteration of instructional variables, while having a predictable effect on escape-maintained behavior, did not have a consistent effect on behavior serving other functions. There appears to be better evidence regarding the matching of attentional variables and attention-maintained behavior, although no studies examine the impact of alterations to the availability of attention on tangibly maintained behavior. Third, the information in Table 3 suggests that alterations in access to tangible reinforcement may have a more general effect across behaviors serving different functions, at least for those functions that are social in nature.

Discussion

This article provides one of the first reviews of the effects of MOs on the problem behaviors that people with ID display. Given the lack of precision and agreement regarding the differentiation of MOs from other antecedent events, caution is necessary when interpreting the results of the review.

Nevertheless, the review suggests that antecedent interventions involving MOs have a clear effect on problem behavior. That is, when an antecedent event that serves as a MO is changed or modified, the problem behavior that arises in individuals with ID can be reduced or increased. Collectively, the 31 studies used different types of MOs. According to the categorization suggested in the "MO" section, variables related to the social, environmental,

and personal contexts were the most used among the selected articles. In all of the studies evaluated, modification of the MO had either an establishing or an abolishing effect on at least one participant's behavior. The MO's establishing or abolishing effect on the behavioral function is frequently predictable (e.g., the MO "attention deprivation" may increase the occurrence of problem behavior maintained by attention, whereas "attention satiation" may decrease it), although the generalizability of this conclusion is limited by the lack of an investigation of the effect of the same MOs across problem behaviors serving different functions. As noted in the study by Chung and Cannella-Malone (2010), a MO may act as an abolishing operation for one person but as an establishing operation for another. In Chung and Cannella-Malone's (2010) study, a pre-session noninteraction acted as an abolishing operation for two participants but as an establishing operation for the other two participants. Interestingly, the use of pre-sessions as MOs was one of the most frequently used strategies in the reviewed studies.

Of the 55 participants included in this review, most presented a mild-to-severe ID, and many of the participants also displayed autism. Few studies included people with profound or multiple ID, even though this is a population with a high risk of displaying problem behavior. In general, the more severe the disability, the higher the likelihood of present challenging behavior (Cormack et al., 2000; Emerson et al., 2001). Of the participants in the reviewed studies, 80% were males. These results are consistent with other literature reviews on problem behavior (e.g., Campbell, 2003; Heyvaert et al., 2010) where most of the participants were males.

Most of the assessments and interventions took place in a very controlled setting. A majority of the studies were carried out in special schools, or inpatient units or facilities, whereas few interventions were conducted in ordinary settings (e.g., mainstream school).

A wide range of problem behaviors were included in the studies as a whole. The most frequent behaviors were aggression, stereotypic behavior, destructive behavior, self-injurious behavior, and tantrums. These behaviors are generally considered the most challenging behaviors for professionals and families.

Finally, almost all studies specified the function of the problem behavior. The behavioral functions found were, in order of prevalence among participants, automatic reinforcement, escape, attention, access to tangible reinforcement, and multiple functions. Curiously, this prevalence order differs from the order usually found in the literature (e.g., Iwata, Pace, et al., 1994). The higher prevalence of automatically reinforced behavior reported in this review may reflect the challenge that such behaviors pose to professionals

and researchers, with, therefore, greater investment in a search for their controlling variables. Although behavioral function was not specified for three participants, this likely would not have a major effect on the results of this study.

The analysis of MOs presented in this article was designed to enhance the understanding of MO types and effects. The first attempt at MO classification did not differ from those noted in existing indirect assessment tools, such as the Contextual Assessment Inventory. However, the second attempt (based on the effect of different MOs in relation to behavioral function) suggested interesting relationships between type of MO and behavioral function. Further pursuit of this approach may have a number of benefits. First, it may allow the development of new systems of assessment, relating the function of behavior to the MO. Second, it could help to determine which MOs are more associated with each behavioral function. Third, once the function of problem behavior has been identified, this approach may enable professionals and families to develop more specific and effective intervention strategies (involving MO modification) than those currently used.

Although more research is needed to explore those MOs that have an impact on each behavioral function, the first analysis presented in this review enables researchers to take a qualitative step in problem behavior treatment. That is, professionals may attend to those variables (MOs) that influence the problem behavior according to their function when designing intervention plans. There are a range of strategies available to identify the function of the behavior from the indirect (e.g., Questions About Behavioral Function; Matson, Bamburg, Cherry, & Paclawskyj, 1999; Matson & Vollmer, 1995) to the experimental (e.g., Functional Analysis; Iwata, Dorsey, et al., 1994). Similar tools could be designed that allow professionals to identify the MOs influencing problem behavior serving different functions.

A number of limitations to this review should be noted. First, studies that involved medication or people older than 18 years were not included. The effects of medication can alter people's behavior and their response to specific environmental situations (Mace et al., 2009). Moreover, certain substances (e.g., methylphenidate) can act as a MO for problem behavior (e.g., Carr & Blakeley-Smith, 2006; Dicesare et al., 2005). The literature contains a large number of articles that focus on MOs in an adult population with ID. The focus on children in this review stemmed from a professional interest in focusing on the variables that are most relevant to educational settings and to the management of problem behavior in such settings. Second, although the inclusion of unpublished studies could provide significant data to the present study, this systematic review was limited to peer-reviewed published studies.

Unpublished data are usually incomplete and their accuracy may be difficult to assess (McAuley, Pham, Tugwell, & Moher, 2000). Therefore, this systematic review provided us with a useful and rigorous summary of published studies. Third, deciding which studies met the inclusion criterion of having carried out an intervention was a difficult task. Many studies reported an experimental design as in the multielement presentation of conditions in "analogue" assessment, but this was not considered to constitute an intervention. Finally, one of the most difficult challenges for this review concerned those empirical studies that treated some antecedent variables as MOs, even though they might be acting as discriminative stimuli (or vice versa). It is believed that the second and third limitations have been addressed through independent examination by the first three authors of all potential articles using well-defined inclusion and exclusion criteria.

This review has a number of implications for further research and practical interventions. First, despite the significant efforts made in defining MOs so far (Laraway et al., 2003; McGill, 1999; Michael, 2000; Wahler & Fox, 1981), variation in different authors' classification of antecedents as discriminative stimulus and/or as MOs may lead to misunderstandings about what was really assessed and treated, and about how the intervention results are interpreted. More consistent usage of existing definitions and terminology is required. Further work may also be required to define, with greater operational clarity, the conditions necessary for the classification of an antecedent event as a MO or as a discriminative stimulus. Second, behavioral assessment and intervention require a significant time commitment from professionals. Antecedent interventions (especially those that focus on MOs) may be less time-consuming for professionals compared with other types of treatments (Luiselli, 2006; McLaughlin & Carr, 2005). However, the articles reviewed do not make a significant contribution to how professionals can use antecedent-based interventions in a school setting or an inclusive community. More research is necessary on the practical implementation of such interventions in such settings. In addition, further research could also focus on the duration of the intervention, a variable that may influence the MO's effect on the problem behavior. The need to conduct a meta-analysis of the effects of the MO should be a priority because such an analysis would provide increased rigor and new perspectives.

Antecedent interventions should also be accessible to children and young people who have the most severe IDs, including profound ID and multiple disabilities. The quality of life experienced by these people depends crucially on their physical and emotional well-being (Petry, Maes, & Vlaskamp, 2009).

Conclusion

This article reviews studies that treat problem behavior in school-age children with IDs by modifying a MO. This study highlights the importance of the relationship between behavioral function and type of MO. It also emphasizes the need for consistent classification of MOs and discriminative stimuli.

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Note

1. Here, the term *intellectual disability* (ID) is used as defined by the American Association of Intellectual and Developmental Disabilities (Schalock et al., 2010).

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Bios

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2.4. Second publication

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Las presesiones como estrategia para tratar las conductas problemáticas de los alumnos con discapacidad intelectual: una revisión

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Resumen

La presesión es una estrategia de intervención sobre los antecedentes que se utiliza para evaluar el impacto de las operaciones motivadoras (OM) sobre el problema de conducta. El presente trabajo revisa aquellos artículos empíricos que han utilizado esta estrategia para tratar la conducta problemática que manifiestan las personas con discapacidad intelectual en edad escolar. Se realizó una búsqueda bibliográfica entre los años 2000 y 2010. Se han encontrado 12 artículos implicando un total de 24 participantes. Los estudios han sido analizados teniendo en cuenta las siguientes variables: características de los participantes, diseño de la investigación, contexto, problema de conducta, función de la conducta, tipología de la OM, presesión y resultados. Los resultados de la revisión sugieren que la presesión tiene un claro efecto sobre la conducta problemática. El artículo finaliza con las implicaciones prácticas que tiene esta estrategia y planteando aquellas cuestiones que los trabajos futuros deberían tener en cuenta.

Palabras clave: Operación motivadora, presesión, problema de conducta, función de la conducta, discapacidad intelectual.

Abstract

The pre-session is an antecedent intervention strategy that is used to evaluate the impact of motivating operations (MO) on problem behavior. The present paper reviews those empirical studies that have used this strategy to address problem behavior displayed by people with intellectual disabilities at school-age. A systematic literature review was conducted between years 2000 and 2010. A total of 12 published articles representing 24 participants were examined. The studies have been analyzed according to the characteristics of the participants, research design, context, problem behavior, behavioral function, type of the MO, pre-session and results. Findings from this review suggest that a pre-session condition usually has a clear effect on problem behavior. The practical implications of this findings and potential issues for future research are discussed.

Keywords: Motivating operation, pre-session, problem behavior, behavioral function, intellectual disabilities.

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Muchas personas con discapacidad intelectual (DI) manifiestan conductas problemáticas como la destrucción de la propiedad, las agresiones, las rabietas, etc. (Luiselli, 1998) afectando negativamente la calidad de vida de las propias personas (Langthorne, McGill, & O'Reilly, 2007) y la de sus familiares o profesionales (Emerson, 2001). Las conductas desafiantes se convierten en una de las mayores barreras a las que los sistemas educativos deben dar una respuesta (Font & Castells, 2009) así como uno de los mayores retos para garantizar la inclusión y participación de las personas con DI en la comunidad (Carr, Ladd, & Schulte, 2008; McAtee, Carr, & Schulte, 2004).

Las intervenciones que se centran en la modificación de la conducta, normalmente implican la manipulación (o el control) de determinados eventos con el fin de eliminar, o al menos reducir, dicha conducta (Smith, 2011).

Una manera de tratar las conductas problemáticas es mediante el análisis funcional. Este término, introducido por Skinner en 1953, tenía el objetivo de nombrar el proceso por el cual se podían identificar aquellas variables independientes que están relacionadas de manera funcional con la conducta humana (Betz & Fisher, 2011). Es decir, permite identificar aquellas variables que están relacionadas funcionalmente con la ocurrencia de la conducta problemática (Miltenberg, 1998); el énfasis se sitúa en la función de la conducta en lugar de en su forma (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994). Así, el análisis funcional de la conducta se convierte en un método individualizado y comprensivo que posibilita identificar la razón o la función de una conducta problemática con el fin de diseñar e implementar intervenciones individualizadas a partir de este conocimiento (Riffel, 2011; Steege & Watson, 2009). De este modo, se asume una importancia cada vez mayor de los factores ambientales; la conducta no se produce al azar, sino que se manifiesta en un contexto de múltiples variables que interactúan (individuales, de motivación, de instrucción, ambientales y biológicas). Esta complejidad, añade nuevos retos a la comprensión y el tratamiento de las conductas problemáticas.

En los últimos años es posible encontrar distintos trabajos de revisión centrados en la evaluación y el tratamiento de las conductas problemáticas para personas con DI. Por ejemplo, Hanley, Iwata, y McCord (2003) revisaron un total de 277 estudios que llevaban a cabo un análisis funcional e identificaban la relación existente entre los eventos del entorno y las conductas desafiantes. Más recientemente, Heyvaert, Maes, y Onghena (2010) completaron un metaanálisis con el fin de observar los efectos que tenían distintas intervenciones sobre los problemas de conducta. Por otro lado, Lang, Didden et al. (2010) llevaron a cabo una revisión de la literatura centrándose en las intervenciones realizadas para tratar una conducta autolesiva de daños en la piel *(skin-picking)*.

En general, estas revisiones se han diseñado para mostrar la dificultad que los problemas de conducta suponen para los profesionales y sus familias. Además, normalmente se han centrado en la evaluación de los efectos de la evaluación funcional y de los distintos tratamientos o intervenciones (por ej., Brosnan & Healy, 2011;

Denis, Van den Noortgate, & Maes, 2011; Hanley et al., 2003; Heyvaert et al., 2010; Matson & Neal, 2009).

Actualmente, se puede encontrar un gran volumen de literatura interesada en la comprensión y tratamiento de los problemas de conducta en personas con DI a partir de los antecedentes (por ej., Ahearn, 2003; Butler & Luiselli, 2007; Garbutt & Furniss, 2007; Lanovaz, Fletcher, & Rapp, 2009; Roscoe, Carreau, MacDonald, & Pence, 2008; Simó-Pinatella, 2008) que son eventos que preceden a los problemas de conducta influenciando su ocurrencia (Miltenberg, 1998). La evidencia demuestra que algunas modificaciones en las variables de antecedentes pueden tener un impacto en el estímulo discriminativo-conducta-consecuencia (*three term contingency*) (Edrisinha, O'Reilly, Sigafoos, Lancioni, & Choi, 2011). Es decir, existe una relación dinámica entre los antecedentes, las variables individuales y las consecuencias (Steege & Watsosn, 2009).

Steege y Watson (2009) exponen que actualmente se puede encontrar dos tipos: los estímulos discriminativos y las operaciones motivadoras. Se entiende que un estímulo discriminativo es aquel que precede la ocurrencia de la conducta y señala la probabilidad de que se mantenga el refuerzo posterior a la conducta (Steege & Watson, 2009). En consecuencia, es más probable que la conducta se manifieste cuando el antecedente (estímulo discriminativo) está presente en un futuro (Carr et al., 2008; McGill, Teer, Rye, & Hughes, 2005). A modo de ejemplo, la actividad de demanda ha sido identificada como un indicador potencial para una gran variedad de conductas problemáticas (Cale, Carr, Blakeley-Smith, & Owen-DeSchryver, 2009). Por otro lado, una operación motivadora es un evento que altera (a) la eficacia de un estímulo que actúa como reforzador; y (b) la frecuencia actual de las conductas que han sido reforzadas por ese estímulo (Michael, 2007).

Es decir, las OM son antecedentes que tienen dos propiedades principales (Laraway, Snycerski, Michael, & Poling, 2003). La primera, el efecto de alterar el valor *(value-altering effect)*, hace referencia al efecto que tiene un antecedente sobre la efectividad de otro estímulo que actúa como un tipo de refuerzo o castigo (Langthorne & McGill, 2009). Por ejemplo, un caso típico. Una persona con DI manifiesta una conducta problemática (conducta estereotipada) para llamar la atención. Los profesionales no le prestan atención. Esta ausencia aumenta la efectividad reforzadora de la atención que pueda recibir la persona con DI después de realizar la estereotipia; mientras que el valor disminuye una vez ha recibido la atención social deseada.

La segunda, el efecto de alterar la conducta *(behavior-altering effect)*, hace referencia al efecto que tiene de alterar la probabilidad de que se realice una conducta que ha sido asociada a unas consecuencias en el pasado (Laraway et al., 2003). Retomando el mismo ejemplo, dicha persona tendrá más posibilidades de manifestar las conductas que han sido asociadas con recibir atención en el pasado (en este caso, la conducta estereotipada). Así pues, la probabilidad de que la persona realice la misma conducta disminuye después de haber recibido atención.

Centrándonos en las variables relacionadas con las operaciones motivadoras, se puede observar que en la literatura han sido nombradas de distintas maneras: eventos situacionales (Morris & Midgley, 1990), variables ecológicas, (O'Neill et al., 1997) o variables contextuales (McAtee et al., 2004). Aunque se entiende que dichas variables han sido analizadas desde distintos marcos teóricos (Kennedy & Meyer, 1998), a lo largo del presente trabajo nos referiremos a ellas como operaciones motivadoras (OM).

En la literatura, se han reconocido tres categorías principales de OM: biológica, física y social (Carr, Smith, Giacin, Whelan, & Pancari, 2003). Tal como expone McGill (2011), las OM biológicas incluyen la enfermedad, el dolor o el cansancio entre otros, mientras que las OM físicas incluyen características del entorno como la temperatura, el nivel de ruido, la presencia o ausencia de objetos, etc. Por otro lado, las OM sociales tienen en cuenta las dificultades en la comunicación, actividades que no gustan, falta de opciones para escoger, la atención recibida, etc.

Una manera de analizar el impacto que tienen las OM y, por lo tanto, de explorar aquellas variables que influyen en los problemas de conducta es a partir de las presesiones. A pesar de la gran dificultad que supone encontrar en la literatura una definición de esta estrategia, actualmente se entiende que una presesión supone crear una condición que se proporciona antes de una situación referente en la que la persona puede tener acceso (o una modificación -o deprivación- de acceso) a un evento que mantiene la conducta problemática.

En síntesis, como se ha explicado anteriormente, la evaluación funcional permite entender la función de la conducta y, a su vez, detectar aquellas OM que la influencian. Con dicha información, y a partir de las presesiones, se crea una condición experimental que permite evaluar el impacto que tienen dichas variables. Una condición se refiere a unas circunstancias creadas en una fase experimental o un conjunto de sesiones dentro de un experimento (Vollmer & Van Camp, 1998).

Por ejemplo, una persona con síndrome de Down realiza una conducta problemática puntual (por ej., autolesionarse). El análisis funcional indica que la función de la conducta es de refuerzo social. Así, utilizando un diseño experimental se crean dos condiciones que se realizan antes de una situación referente (presesiones) para ver el efecto que tiene la OM. En una de las condiciones se facilita atención a la persona que manifiesta la conducta problemática (presesión – acceso a atención social) mientras que en la otra no se le facilita atención (presesión – deprivación/no acceso a atención social). Si la conducta aumenta, se dice que la OM tiene un efecto establecedor (*establishing effect*) mientras que si la conducta disminuye, el término que se utiliza es efecto de abolición (*abolishing effect*).

Varios estudios han examinado los efectos de las OM sobre el problema de conducta a través de las presesiones (Chung & Canella-Malone, 2010). Curiosamente, en nuestro país es difícil encontrar artículos empíricos o de revisión que evalúen dicho efecto en personas con DI. Así, la presente investigación nace, por un lado, ante la necesidad de avanzar en la concepción de las OM que influencian los problemas de conducta de las personas con

DI y, en concreto, sobre la estrategia de las presesiones. Por otro, por los resultados obtenidos en un estudio previo (Simó-Pinatella et al., en prensa) en el que se revisan aquellas intervenciones sobre las OM que influencian los problemas de conducta de las personas con DI. Los resultados de este estudio de revisión revelan que la estrategia de presesión es una de las más utilizadas en el momento de tratar las conductas problemáticas.

En concreto, el trabajo que se presenta tiene dos objetivos específicos: (a) llevar a cabo una revisión a nivel internacional de aquellos estudios que han utilizado la estrategia de presesión para ver el impacto que tiene la OM sobre la conducta problemática de los participantes con DI en edad escolar y, (b) presentar las implicaciones que tiene el uso de las presesiones para tratar los problemas de conducta en nuestra práctica diaria.

Método

Procedimiento

La búsqueda bibliográfica del presente estudio de revisión se realizó en las bases de datos *PsychInfo, Education Resources Information Center, Science Direct, Blackwell, Sage Publications* y *Medline* (*Ebsco* y *PubMed*) entre los años 2000 y 2010. Para localizar los artículos en las distintas bases de datos, se utilizó una combinación de las siguientes palabras clave: «*operaciones motivadoras, eventos situacionales, antecedentes, operaciones establecedoras, evaluación del contexto, intervención en el contexto y evaluación funcional*» y «*problemas de conducta, conducta desafiante, modificación de la conducta, retraso mental y discapacidad intelectual*». Teniendo en cuenta que en este estudio se pretende hacer una revisión de la literatura a nivel internacional, dichos términos fueron escritos en lengua inglesa.

La búsqueda electrónica inicial dio lugar a un total de 353 artículos. El primer, tercer y quinto autor examinaron independientemente los resúmenes de estos 353 artículos con el propósito de seleccionar aquellos que cumplían con los criterios de inclusión (ver siguiente sección). Si los tres autores creían que el artículo cumplía con los criterios de inclusión, el artículo era seleccionado. Si alguno de los autores no estaba seguro, el artículo también se incluía para una futura revisión. Después de distintas reuniones, se seleccionaron un total de 34 artículos que hacían una evaluación y un posterior tratamiento de la conducta problemática a partir de la modificación de los antecedentes (OM). Teniendo en cuenta que durante la búsqueda electrónica se podían haber perdido artículos, se realizó una búsqueda manual del apartado de referencias bibliográficas de estos 34 artículos seleccionados. Aún así, dicha búsqueda no proporcionó más artículos de los ya incluidos en la búsqueda inicial. De estos 34, se rechazaron todos aquellos cuya intervención no utilizaba la estrategia de presesión. Finalmente, se seleccionaron un total de 12 artículos.

Criterio de inclusión y exclusión

Los artículos incluidos en este estudio debían cumplir con los siguientes criterios de selección: (a) publicados entre 2000 y 2010, (b) escritos en lengua inglesa, (c) haber realizado una evaluación funcional y una intervención

posterior utilizando la estrategia de presesión con las OM, (d) ser artículos empíricos, (e) haber sido revisado por pares, (f) que los participantes fueran niños y adolescentes (menores de 18 años de edad), y (g) que los participantes tuvieran DI.

De acuerdo con los objetivos del estudio, se han excluido aquellos artículos que aún habiendo explorado el efecto de la OM sobre la conducta problemática, no han utilizado la estrategia de presesión para hacerlo (por ej., Kuhn, Hardesty, & Luczynski, 2009; Lanovaz et al., 2009). Así, teniendo en cuenta los criterios de inclusión y exclusión y los acuerdos entre investigadores, este estudio incluye un total de 12 artículos.

Extracción de datos y acuerdo entre investigadores

Los artículos seleccionados fueron analizados en cuanto a las siguientes variables: (a) las características (edad y discapacidad), (b) el diseño de la investigación, (c) el contexto, (d) el problema de conducta, (e) la función de la conducta, (f) la tipología de la OM, (g) la presesión (condiciones, tiempo de la presesión y de la sesión referente), y (h) los resultados (el efecto establecedor o de abolición).

Dado que en más de un artículo, se realizaba una evaluación e intervención con más de un participante, en aquellos artículos donde un participante era menor de 18 años y otro mayor (por ej., O'Reilly et al., 2006) o un participante con DI y otro sin DI (por ej., McComas, Thompson, & Johnson, 2003), sólo se extraían los datos correspondientes a los participantes que cumplían con los criterios de inclusión.

Resultados

Los resultados se exponen en función a las ocho variables anteriormente citadas. La Tabla 1 resume los 12 artículos seleccionados.

Participantes

Los 12 artículos seleccionados han incluido un total de 24 participantes. La media de edad entre los participantes es de 9,5 años (rango 4-16). Dieciocho de los participantes son niños mientras que seis son niñas. De acuerdo con los criterios de selección, todos los participantes tienen DI. Además, algunos participantes han sido diagnosticados con autismo (n = 12), síndrome de Down (n = 3) y discapacidades múltiples (n = 3). Otras discapacidades asociadas identificadas en los estudios son trastorno desintegrativo infantil (n = 1) y discapacidad auditiva y visual (n = 1).

Diseño

El diseño multielemento es el más utilizado entre los estudios seleccionados (n = 8) (por ej., Chung & Canella-Malone, 2010). Dos estudios utilizan un diseño alternante (por ej. Lang et al., 2009) y uno un diseño de reversión (Carter & Wheeler, 2007). Sólo un estudio utiliza ambos diseños; diseño de reversión y de multielemento (Roantree & Kennedy, 2006).

Contexto

El 58,33% de los artículos seleccionados (n = 7) se han realizado en un entorno educativo. De estos, el 71,42% (n = 5) se han llevado a cabo en escuelas de educación especial, mientras que el 14,28% (n = 1) en escuelas ordina-

rias. Sólo en uno de los estudios no se indica la tipología de la escuela (Lang et al., 2009).

Otros centros donde se han realizado intervenciones son: centro de día (*n* = 1), centro clínico de análisis de la conducta (*n* = 1) y servicio residencial (*n* = 1). Únicamente en un estudio el proceso se ha realizado en dos entornos distintos (Cater & Wheeler, 2007). En este caso, la evaluación se realizó en la universidad mientras que la intervención se llevó a cabo en la escuela de educación especial. Finalmente, destaca que tan solo uno de los artículos no especifica el lugar donde se ha realizado el estudio (Roantree & Kennedy, 2006).

Problema de conducta

Las conductas problemáticas tratadas en los artículos seleccionados son la agresión (*n* = 7), la conducta estereotipada (*n* = 5), la autolesión (*n* = 5), la conducta destructiva (*n* = 4) y las rabietas (*n* = 4).

Teniendo en cuenta que cada participante puede manifestar más de una conducta problemática, los datos indican que las conductas más tratadas son las agresiones (*n* = 12), la conducta estereotipada (*n* = 10), las rabietas (*n* = 10) y la conducta destructiva (*n* = 8). Sólo cinco participantes muestran conducta autolesiva.

Función de la conducta

Las cuatro funciones conductuales refuerzo automático (*n* = 4), atención (*n* = 3), evitación o escape (*n* = 2) y acceso a tangible (*n* = 2) han sido investigadas en los distintos artículos. En tres de los artículos, la conducta problemática se manifestaba por funciones múltiples (por ej., McComas et al., 2003).

Entre los participantes, la función de la conducta más común era por refuerzo automático (*n* = 10) y atención (*n* = 5). Las conductas relacionadas por acceso a tangible, evitación o escape y funciones múltiples están presentes en tres participantes respectivamente.

En la mayoría de los estudios, el método utilizado para conocer la función de la conducta problemática ha sido el análisis funcional (*n* = 10). Sólo en un estudio se ha realizado una evaluación funcional directa (observaciones en el aula) e indirecta (entrevistas) para conocer dicha información (Carter & Wheeler, 2007). En un único estudio no se indica el proceso realizado para conocer la función de la conducta que manifiesta el participante (Rapp, 2004).

Operación motivadora

Con el fin de clasificar las OM investigadas en los distintos estudios, el primer y tercer autor clasificaron, independientemente, las distintas condiciones de presesión (ver tabla 1) teniendo en cuenta la tipología de OM propuesta por Carr et al. (2003). Es decir, las condiciones de presesión exploradas en los artículos fueron agrupadas según la categoría social, biológica o física. Los posibles desacuerdos que pudieran surgir, fueron discutidos hasta mutuo consenso.

Como se puede observar en la Tabla 2, un total de seis estudios han explorado la categoría de OM físicas centrándose en la posibilidad de tener (o no) acceso a ítems preferidos o tangibles (*n* = 5) o proporcionando una mejora/enriquecimiento del entorno (*n* = 1) (por ej. Rapp,

Tabla 1
Resumen de los artículos revisados

Referencia	Participantes		Diseño	Contexto	Problema de conducta	Función de la conducta	Tipología de OMa	Presesión			Resultados
	Edad y sexo	Discapacidad						Condiciones	Tiempo de la presesión	Tiempo sesión referente	
Carter y Wheeler (2007)	1 niño, 9 años	TDIb; DIc severa	Diseño ce reversión	Universidad y Escuela Educación Especial	Autolesión Agresión	Evitación	Físico	Acceso a ítem preferido Acceso a ítem preferido + señal auditivo	5′	7-18′	OAd OA
Chung y Canella-Malone (2010)	3 niñas y 1 niño, 11, 11, 16 y 14 años	Discapacidades múltiples; autismo; DI	Diseño multielemento	Escuela Educación Especial	Conducta estereotipada	Refuerzo automático	Social	No interacción Atención Bloqueo de respuesta Atención con bloqueo de respuesta	15′ 15′ 15′ 15′	5′ 5′ 5′ 5′	Algunas condiciones actúan como OA para algunos participantes y otros como OEe.
Lang et al. (2009)	1 niña, 8 años	Autismo	Diseño alternante	Escuela (NEf)	Conducta estereotipada; rabieta	Refuerzo automático	Biológico	Acceso a la estereotipia No acceso a la estereotipia	10′ 10′	10′ 10′	OA OE
Lang et al. (2010)	2 niños y 2 niñas, 4, 7, 4 y 5 años	Autismo	Diseño alternante	Escuela Educación Especial	Conducta estereotipada; rabieta; Conducta destructiva Agresión	Refuerzo automático	Biológico	Acceso a la estereotipia	11-42′	10′	OA
McComas et al. (2003)	4 niños, 11, 10, 11 y 12 años	Síndrome Down; ID moderada y severa; Discapacidad visual y auditiva; language; Autism.	Diseño multielemento	Escuela ordinaria	Agresión Conducta destructiva	Atención; evitación; funciones múltiples (atención y evitación)	Social	Atención No atención	10′ 10′	10′ 10′	La atención actúa como OA para el problema de conducta que se mantiene por atención pero no influencia la conducta que se mantiene por evitación.

Continúa página 9

Tabla 1 (Continuación)

McGinnis et al. (2010)	3 niños, 6 años	ID	Diseño multielemento	Centro clínico de análisis de la conducta	Agresión Conducta destructiva rabieta Autolesión	Atención	Social	Deprivación de atención	45′	15′	EO	
								Poco nivel de atención	45′	15′	OA	
								Alto nivel de atención saciedad	45′	15′	OA	
O'Reilly et al. (2007)	1 niño, 14 años	Autismo; discapacidad severa	Diseño multielemento	Escuela Educación Especial	Autolesión Agresión	Acceso a tangible	Físico	Acceso a tangible	15′	10′	OA	
								no acceso a tangible	2h	10′	EO	
O'Reilly et al. (2009)	2 niños, 8 y 5 años	Autismo	Diseño multielemento	Escuela Educación Especial	rabieta Conducta destructiva	Funciones múltiples (acceso a tangible; evitación); evitación	Físico	Acceso a tangible (saciedad)	8-35′	10′	OA	
O'Reilly et al. (2006)	1 niño, 14 años	Autismo	Diseño multielemento	Escuela Educación Especial	Autolesión Agresión	Acceso a tangible	Físico	Acceso al reforzamiento	10′	NE	Acceso restringido actua como OE	
								No acceso al reforzamiento	30′		Acceso restringido actua como EO	
								Acceso a la extinción	10′			
								No acceso a la extinción	30′			
O'Reilly et al. (2008)	1 niño, 16 años	ID; autismo	Diseño multielemento	Centro de día	Autolesión Agresión	Funciones múltiples (acceso a tangible; atención)	Físico	Acceso a tangible	15′	20′	OA	
								No acceso a tangible	15′	20′	EO	
Rapp (2004)	1 niño, 10 años	Síndrome Down; DI moderada	Diseño multielemento	Servicio residencial	Conducta estereotipada	Refuerzo automático	Biológico; Físico	Acceso previo a la estereotipia	30′	NE	OA	
								Enriquecimiento del entorno con música y guitarra			EO	
Roantree y Kennedy (2006)	1 niño, 10 años	DI severa	Diseño de reversión y de multielemento	NE (habitación)	Conducta estereotipada	Atención	Social	No atención	20′	5′	OA	
								Atención no contingente	20′	5′	EO	

2004). Por otro lado, algunos artículos (*n* = 4) se han centrado en la categoría social implicando el nivel de atención proporcionado a los participantes (por ej. McGinnis, Houchims-Juarez, McDaniel, & Kennedy, 2010). Finalmente, tres estudios se han centrado en la categoría biológica, la cual implica tener (o no) acceso a la conducta problemática (por ej., Rapp, 2004). Resulta necesario comentar que un artículo de estos (O'Reilly et al., 2008) ha observado el valor de dos tipologías de OM distintas (biológica y física).

Presesión

Con la excepción de dos artículos (Lang, O'Reilly, et al., 2010; O'Reilly et al., 2009) los estudios seleccionados (*n* = 10) han explorado más de una condición de presesión durante la intervención. La mayoría de estos artículos han observado el efecto de la OM a partir de dos (o más) condiciones. Por ejemplo, O'Reilly et al. (2007) estudiaron el valor de la OM para un alumno cuya conducta problemática respondía a la función de acceso a tangible. Para ello, crearon dos condiciones de presesión; en una se facilitaba acceso a tangible antes de la situación referente mientras que en la otra se privaba de dicho acceso. Una característica común entre este estudio y la mayoría de los seleccionados (*n* = 8) es que la OM ha sido estudiada a partir de dos condiciones de presesión opuestas (por ej. acceso y no acceso a tangible).

Resulta complicado extraer más datos referentes a las condiciones de presesión de la tTabla 1. Aún así, relacionar la función de la conducta con la condición de presesión y el efecto que tiene ésta sobre la conducta problemática, puede tener mucho interés teórico y práctico. Teniendo en cuenta que la mayoría de participantes han sido involucrados en más de una condición de presesión, la Tabla 3 muestra dicha relación por participante.

Esta tabla muestra que algunas funciones de conducta han sido más investigadas que otras. La función de refuerzo automático ha sido explorada a partir de distintas variables (por ej., Rapp, 2004). En concreto se ha explorado a partir de: (a) facilitar acceso (o no) al problema de conducta que manifiestan los participantes, (b) favorecer el entorno en el que se encuentran, y (c) proporcionar distintos niveles de atención. Las conductas problemáticas que se mantienen por atención han sido exploradas en su mayoría de acuerdo con el nivel de atención proporcionado a los participantes (por ej., McComas et al., 2003). Para esta función el

Tabla 2

Tipología de operación motivadora por estudios

Tipología de operación motivadora	Condiciones de la presesión
Físico	- Acceso/no acceso a ítems preferidos (*n* = 5
	- Enriquecimiento del entorno (*n* = 1)
Social	- Atención/no atención (*n* = 4)
Biológico	- Acceso/no acceso a estereotipia (*n* = 3)

Tabla 3

Relación entre la función de la conducta, el tipo de la presesión y el efecto de la presesión por participante

Función de la conducta	Tipo de presesión	Efecto de la presesión por participante
Evitación o escape	Acceso a ítem preferido	↓[a] ↓ ↓*[b]
	Acceso a ítem preferido + señal auditivo	↓
	Atención	=[c] = =
Refuerzo automático	Acceso al problema de conducta	↓ ↓ ↓ ↓
	No acceso al problema de conducta	↑[d]
	Enriquecimiento del entorno	↑
	No interacción	↑ ↑ ↓ ↓
	Atención	↑ ↑ ↓ ↓
	Bloqueo de respuesta	= ↓ ↓ ↓
	Atención con bloqueo de respuesta	↓ = = ↑
Atención	No atención	↓ ↑ ↑ ↑
	Atención no contingente	↑
	Poco nivel de atención	↓ ↓ ↓
	Alto nivel de atención	↓ ↓ ↓
	Atención	↓ ↓*
	Acceso a tangible	↓*
	No acceso a tangible	↑*
Acceso a tangible	Acceso a tangible	↓ ↓* ↓*
	No acceso	↑ ↑*
	Acceso restringido	↑

a Efecto de abolición.
b La conducta de éste participante responde a múltiples funciones.
c Sin efecto.
d Efecto establecedor.

efecto que puede causar tener acceso a tangible es explorado por un participante (O'Reilly et al., 2008). Referente a la función de evitación o escape, las conductas problemáticas se han explorado a partir de las condiciones de presesión focalizadas en acceso a tangible (por ej., Carter & Wheeler, 2007) y nivel de atención proporcionado (por ej., McComas et al., 2003). Finalmente, la función de acceso a tangible ha sido analizada en los estudios seleccionados a partir de proporcionar (o no) acceso a tangible (por ej., O'Reilly et al., 2006).

Si se retoma la Tabla 1, el tiempo empleado durante las condiciones de presesión oscila entre 5 y 45 minutos. Sólo en un caso la condición llega a durar dos horas (O'Reilly et al., 2007). En este caso se trata de evaluar el efecto que tiene la condición de no acceso a tangible para un participante. Además, y con el objetivo de poder valorar el efecto que tienen dichas condiciones sobre la conducta problemática, el tiempo de la situación referente oscila entre los 5 y 20 minutos.

Resultados (efecto establecedor o de abolición)

La mayoría de las condiciones de presesión han tenido un efecto (establecedor o de abolición) sobre el problema de conducta que manifiestan los participantes de los estudios seleccionados. Sólo en algunos casos las condiciones de presesión no han tenido ningún efecto sobre la conducta problemática (por ej., McComas et al., 2003). Si se observa el efecto que tiene una condición de presesión sobre la conducta problemática, se puede ver que este efecto puede ser previsible. Por ejemplo, en aquellos estudios cuyo problema de conducta responde a la función de atención (o acceso a tangible), es previsible que facilitar atención (o acceso a tangible) al participante antes de la situación referente reduzca el problema de conducta (por ej., O'Reilly et al., 2009). Es decir, la condición de la presesión tiene un efecto de abolición. Por el contrario, privar a los participantes de dicho acceso, hace aumentar la conducta problemática; actuando así como efecto establecedor (por ej., McGinnis et al., 2010). Aun así, sólo en uno de los participantes cuyo problema de conducta se mantiene por atención, no proporcionar acceso a atención hace disminuir la conducta (Roantree & Kennedy, 2006). Por otro lado, proporcionar acceso a tangible tiene un efecto de abolición para los problemas de conducta que se mantienen por evitación o escape, mientras que proporcionar atención parece no influenciar dichas conductas. Finalmente, aquellas conductas que se mantienen por refuerzo automático parecen ser reducidas sustancialmente cuando se facilita a los participantes una condición en la que tienen acceso a la conducta (por ej., Lang et al., 2009). Curiosamente, el efecto que tiene proporcionar (o no) algún grado de atención a los participantes tiene un efecto mixto (por ej., Chung & Canella-Malone, 2010). Para algunos de ellos la condición actúa como efecto establecedor mientras que para otros como efecto de abolición. Además, para tres participantes un tipo concreto de atención no influencia el valor de la conducta (Chung & Canella-Malone, 2010).

Discusión

Ciertamente, el concepto de operación motivadora está teniendo una importancia significativa en la evaluación y tratamiento de las conductas problemáticas. Las operaciones motivadoras son variables contextuales que alteran la probabilidad de ocurrencia de una determinada conducta ya sea potenciando el efecto evocativo de los estímulos discriminativos y/o el valor de refuerzo de los acontecimientos consecuentes (Laraway et al., 2003; O'Reilly et al., 2008). En los últimos años ha habido un creciente interés en la aplicación de las OM para el tratamiento de las conductas problemáticas (Luiselli, 2006). Asimismo, se empiezan a conocer los efectos de este tipo de intervenciones sobre las conductas problemáticas que presentan las personas con DI (Cale et al., 2009; Carr, Innis, Blakeley-Smith, & Vasdev, 2004).

El presente trabajo es una de las primeras revisiones que explora el efecto de las presesiones en las conductas problemáticas que presentan los niños y adolescentes con DI.

Como se ha comentado con anterioridad, las presesiones son variables contextuales que funcionan como OM. Así pues, el uso de esta

estrategia en el tratamiento de las conductas problemáticas debe incluirse en la categoría de la intervención sobre los antecedentes (Luiselli, 2006). Los resultados de este estudio sugieren que el uso de la presesión suele tener un claro efecto sobre la conducta problemática. Es decir, cuando se introduce una situación previa (un acontecimiento antecedente que funciona como OM) a la situación referente en la que se muestra la conducta problemática, se puede observar un efecto establecedor o de abolición sobre dicha conducta.

En los 12 estudios revisados se utilizan diferentes tipologías de presesión. En la mayoría de los casos, la presesión se centra en la posibilidad de tener (o no tener) acceso a un determinado acontecimiento. Este tipo de acontecimientos pueden ser de origen social (por ej. atención), físico (por ej. un tangible) o biológico (por ej. la propia conducta problemática). Es importante destacar que, independientemente a la tipología de la presesión, ésta acostumbra a tener un efecto establecedor o de abolición. Así pues, estos datos parecen indicar que la estrategia de la presesión evalúa el efecto real de la OM. No obstante, el efecto establecedor o de abolición no siempre es el mismo para todos los individuos. A veces la presesión actúa como OM establecedora para unos participantes y de abolición para otros. Este es el caso del estudio de Chung y Canella-Malone (2010), en el que recibir atención sirve de operación establecedora para dos niños y de abolición para otro.

De los 24 participantes, la mayoría presentan DI de tipo moderado o severo y autismo. A pesar de ser una población con alto riesgo de conductas problemáticas, sólo un estudio incluye personas con discapacidad múltiple y ninguno con DI de tipo profundo.

Todos los diseños de investigación utilizados en los artículos seleccionados hacen referencia al método experimental que permite evaluar los efectos de una variable independiente (Vollmer & Van Camp, 1998). Así, los diseños utilizados son el multielemento, el alternante y el de reversión.

La mayor parte de las evaluaciones e intervenciones tienen lugar en situaciones muy controladas como los centros de educación especial o las unidades o servicios especializados. Las conductas problemáticas que se incluyen en los trabajos revisados son la agresión, la conducta estereotipada, la autolesión, la conducta destructiva y las rabietas. Todas ellas consideradas por los profesionales y las familias como las conductas más desafiantes. El refuerzo automático, la atención, la evitación y el acceso a tangible son, por orden de prevalencia, las funciones conductuales que se abordan en los diferentes trabajos analizados. Esto significa que se tratan casi todas las funciones que puede tener la conducta problemática.

En general, la estructura de la presesión de los estudios seleccionados incluye la manipulación de más de una condición (el acceso o no acceso a determinados eventos) durante la intervención. En algunos casos, además, se controla sistemáticamente el tiempo de la presesión.

A partir de estos resultados se pueden extraer algunas conclusiones. En primer lugar, la estrategia de la presesión parece tener un efecto claro sobre la conducta problemática.

Este efecto puede ser establecedor o de abolición de acuerdo con la condición presente en la presesión. En segundo lugar, esta estrategia pone el acento en los acontecimientos antecedentes de la conducta problemática, permitiendo así plantear un tipo de intervención más ecológico, menos restrictivo e intrusivo. De nuevo, el énfasis en los eventos antecedentes supone un cambio importante en el tratamiento de las conductas problemáticas de las personas con DI, así como la posibilidad de utilizar procedimientos más educativos, preventivos y positivos (Dunlap & Carr, 2007; Font, 2001; Sailor, Dunlap, Sugai, & Horner, 2009). En tercer lugar, la importancia de relacionar las intervenciones con la función de la conducta problemática (Ciponi & Schock, 2007; Steege & Watson, 2009). En general, los resultados del presente estudio indican que el tratamiento mejora sustancialmente cuando existe una relación clara y definida entre las condiciones que se presentan en la presesión y la función de la conducta. Así pues, se puede deducir que las intervenciones que tienen en cuenta determinadas variables que funcionan como OM, parecen tener un efecto importante en la evaluación y tratamiento de las conductas problemáticas que presentan las personas con DI.

Este trabajo de revisión, no obstante, tiene algunas limitaciones. El reducido número de trabajos no posibilita hacer demasiadas generalizaciones y obliga a ser prudentes en el momento de interpretar los resultados. Por otra parte, centrarse en la población infantil y adolescente no ha permitido incluir los trabajos que se han llevado a cabo en personas adultas con DI. De todos modos, parece adecuado subrayar que disponer de una revisión de estas características y en edad escolar supone una aportación interesante y que puede ayudar al tratamiento de las conductas problemáticas en los centros educativos.

A pesar de estas limitaciones, se pueden enumerar algunas implicaciones prácticas e interrogantes que la investigación futura debería plantearse. En general, la evaluación y las intervenciones sobre las conductas problemáticas exigen un tiempo considerable por parte de los profesionales. La estrategia de la presesión requiere menor tiempo y esfuerzo en relación con otro tipo de tratamientos (Luiselli, 2006; McLaughlin & Carr, 2005). Además, la presesión supone una estrategia preventiva que evita la manifestación de la conducta problemática y, en consecuencia, el abordaje de situaciones complejas o de difícil manejo. Este tipo de intervención, considerando sus características estructurales, resulta más fácil de aplicar en contextos naturales o en situaciones sociales complejas. Finalmente, conviene subrayar la importancia práctica de combinar de forma adecuada las intervenciones centradas en los acontecimientos antecedentes y en la función de la conducta problemática.

Hay algunas cuestiones que en el futuro la investigación debería cuestionarse. En primer lugar, cómo organizar la presesión para que tenga el mayor impacto posible sobre la conducta problemática. Es necesario definir con más precisión las características estructurales (condiciones presentes, tiempo, etc.) y funcionales de esta estrategia. Por ejemplo, no está claro si el tiempo que dura la presesión puede influenciar el efecto establecedor o de abolición de la OM sobre el problema de conducta (McComas et al., 2003). Asimismo, parece ser que las propiedades

funcionales de la presesión, más que sus propiedades estructurales, producen un mayor efecto (O'Reilly et al., 2009). Otro aspecto relevante, y que ha recibido poca atención por parte de los investigadores, es la utilidad de diferenciar entre el efecto establecedor y de abolición y el efecto de alterar la conducta que caracteriza las propiedades de las OM (O'Reilly et al., 2007). Es decir, la investigación normalmente se ha centrado en explorar el efecto establecedor y de abolición de las OM (primera propiedad de OM). Aun así, actualmente se dispone de poca investigación orientada a demostrar el efecto evocador y reductor de las OM (segunda propiedad de las OM) (por ej., O'Reilly et al., 2006). Aunque este es realmente un tema complejo, tiene un gran interés teórico y práctico y, además, puede facilitar el desarrollo de nuevas y más eficaces estrategias de intervención. Se necesita, también, ampliar las intervenciones sobre los antecedentes a los niños y jóvenes que presentan la discapacidad intelectual más graves (discapacidad profunda y múltiple). Ciertamente, la calidad de vida de estas personas depende fundamentalmente de su bienestar físico y emocional (Petry, Maes, & Vlaskamp, 2009). Conocer la eficacia de las intervenciones en términos del tiempo en el que se mantiene la mejora, parece ser un tema de preocupación. Finalmente, sería importante que las investigaciones futuras centraran su interés en desarrollar esta estrategia en contextos y situaciones naturales y, de esta forma, poder ampliar y generalizar su aplicación.

A fin de cuentas, establecer nuevos enfoques y sistemas para la evaluación y tratamiento de las conductas problemáticas que manifiestan las personas con DI, constituye un reto para los profesionales que se dedican a su atención y educación. Pero básicamente, supone una oportunidad para promover una mejor calidad de vida para esta población.

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3. AIMS AND HYPOTHESES

The aims of the current study were:

- To adapt and validate the QABF (Matson & Vollmer, 1995) and the CAI (McAtee, Carr, & Schulte, 2004) to the Spanish population.
- To explore whether different types of antecedent variables can act as predictors of behavioral functions.

These aims were based on two initial working hypotheses:

- Based on the SMIRC model, can assessment tools permit the identification of the antecedents that influence the occurrence of a problem behavior and the consequences that reinforce said behavior?
- To what degree do environmental events act as predictive variables of behavioral function for the problem behaviors displayed by people with ID?

4. METHOD AND RESULTS

4.1. Third publication

4.2. Fourth publication

4.3. Antecedent events as predictive variables of behavioral function

4.1. Third publication

Simó-Pinatella, D., Alomar-Kurz, E., Font-Roura, J., Giné, C., Matson, J. L., & Cifré, I. (2013). Questions About Behavioral Function (QABF): Adaptation and validation of the Spanish version. *Research in Developmental Disabilities*, 34, 1248-1255. (doi:10.1016/j.ridd.2013.01.015)

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Questions About Behavioral Function (QABF): Adaptation and validation of the Spanish version

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ABSTRACT

People with intellectual disabilities (ID) often engage in problem behaviors, such as verbal or physical aggression, property destruction, or self-injury. These behaviors become a challenge for the families and for professionals. Functional behavioral assessment (FBA) is a method used to identify variables that influence or maintain challenging behaviors (CB) and aid in the development of intervention plans. Two major concerns of FBA are that it is time-consuming and requires specialized professionals to interpret data from the natural or experimental environment. Therefore, indirect FBA methods can be used as an alternative. An instrument with excellent psychometric properties that aims to identify the function of behavior is the Questions About Behavioral Function (QABF). This study presents the adaptation of the QABF in Spain. Data from 300 participants with ID and 328 behavioral problems were obtained. An exploratory factor analysis was conducted to identify the components of the QABF, and the test–retest reliability was assessed to evaluate the stability of the QABF over time.

1. Introduction

People with intellectual disabilities (ID) have certain characteristics and needs that require the presence of intense, frequent supports to ensure their meaningful participation in everyday life (Schalock et al., 2012). One of the most common characteristics is the presence of problem behavior, which usually becomes one of the main reasons for the exclusion of people with ID from activities and experiences (Font, 2001). In general, people with ID can engage in a wide range of problem behaviors, such as aggression, self-injury, stereotypes, tantrums and property destruction (Emerson & Einfeld, 2011; Horner, Carr, Strain, Todd, & Reed, 2002; Kiernan & Kiernan, 1994; Matson, Tureck, & Rieske, 2012). The prevalence of problem behavior has been a concern and the subject of research (Cormack, Brown, & Hastings, 2000; Emerson, 2001).

Without adequate treatment, these problem behaviors tend to remain over time (Matson et al., 2012). Approaches and systems derived from applied behavioral analysis are the most common methods for dealing with these behaviors (Bambara & Knoster, 2009; O'Neill et al., 1997; Sailor, Dunlap, Sugai, & Horner, 2009; Steege & Watson, 2009). However, the implementation of these approaches requires time, effort and specialized knowledge that is not always available (Matson et al., 2012).

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In recent years, the functional behavior assessment (FBA) has emerged in the field of applied behavioral analysis. An FBA is a set of assessments that result in the identification of environmental and personal conditions of the individual that predict, maintain and reinforce the problem behavior (Filter & Alvarez, 2012; Steege & Watson, 2009). Problem behavior does not occur randomly (Bambara & Knoster, 2009), but it is generally used to obtain favorable consequences (i.e., attention from peers) and/or avoid aversive or unpleasant consequences (Bambara & Knoster, 2009; Filter & Alvarez, 2012), such as a demand condition. The behavior occurs in an environment where multiple variables are in constant interaction with each other (Steege & Watson, 2009). Therefore, using an FBA, professionals can gather information to develop effective, function-based treatments (Kelley, LaRue, Roane, & Gadaire, 2011).

There are three ways to conduct an FBA: functional analysis, direct or descriptive FBA and indirect FBA (Cooper, Heron, & Heward, 2007). The functional analysis involves experimental manipulation of variables that are related to the behavior being studied (Matson, Bamburg, Cherry, & Paclawskyj, 1999; Nicholson, Konstantinidis, & Furniss, 2006; Rueda, 1997). Iwata, Dorsey, Slifer, Bauman, and Richman (1994) suggested the following four experimental conditions or situations: on demand, unstructured play, social disapproval, and being alone. Although functional analysis is one of the best strategies to determine what events are related to a specific behavior, functional analysis takes a great deal of time and requires specialized professionals (Miltenberg, 1998). Alternatively, through direct observation of the behavior in the natural environment, descriptive or direct FBA allows professionals to identify the events that are related to and that reinforce the behavior (Kelley et al., 2011; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2001; Steege & Watson, 2009). However, descriptive or direct FBA has a number of limitations, such as the amount of time that direct care staff may require to efficiently use this technique and the difficulty of correctly interpreting information from the environment (Miltenberg, 1998; Paclawskyj et al., 2001). Finally, indirect FBA includes scales, questionnaires and interviews to glean information from people who are familiar (i.e., direct care staff, families) with the person and the in challenging behavior (CB) (Cooper et al., 2007). As Kelley et al. (2011) indicated, although this method focuses on the opinion and record of the informer, it requires less professional expertise and allows for the quicker and easier generation of an initial hypothesis about the possible contextual relationships associated with the CB.

One of the most commonly studied instruments is the Questions About Behavior Function (QABF; Matson & Vollmer, 1995). The QABF is a questionnaire that was designed to identify functional variables that maintain problem behavior in people with ID. Although there are other scales that allow professionals and researchers to explore the function of behavior (i.e., Motivation Assessment Scale; Durand & Crimmins, 1988), several features of the QABF make it particularly relevant to the evaluation and treatment of these behaviors. First, numerous studies have explored the psychometric characteristics of the QABF (i.e., Embregts, Didden, Schreuder, Huitink, & Nieuwenhuijzen, 2009; Matson et al., 1999; Nicholson et al., 2006; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2000; Paclawskyj et al., 2001; Singh et al., 2009; Zaja, Moore, Van Ingen, & Rojahn, 2011). As a result, Matson et al. (2012) concluded that the QABF has excellent psychometric properties and is a good starting point when conducting an FBA. Second, the QABF allows for the identification and assessment of the function of a wide range of CB that are observed in people with ID. In other words, the QABF is a valid instrument for evaluating the function of disruptive behaviors, such as aggression, stereotypes, self-injury, property destruction and eating disorders (Matson et al., 1999; Matson et al., 2005; Matson & Wilkins, 2009). It is also considered to be a useful assessment tool for determining the nature of the variables that maintain maladaptive behavior in people with severe mental illness (Singh et al., 2009). Third, interventions based on the results of the QABF are more efficient than those that do not consider this information (Matson et al., 1999; Singh et al., 2009). There is sufficient evidence indicating that interventions based on the function of behavior achieve better results than those that do not (Ingram, Lewis-Palmen & Sugai, 2005; Newcomer & Lewis, 2004). Finally, and of great importance for the assessment and treatment of CB, the convergent validity of QABF should be noted. Although more research is needed, especially with large samples, when the degree of convergence between the functional analysis and the QABF are compared in assessing problem behavior in people with ID (Watkins & Rapp, 2013), research has shown that the QABF has a substantial agreement with experimental functional analysis (Paclawskyj et al., 2001; Watkins & Rapp, 2013). Therefore, this instrument can reliably be used to assess the function of problem behavior within a hierarchical model of functional analysis (Paclawskyj et al., 2001; Watkins & Rapp, 2013; Zaja et al., 2011).

Based on the above mentioned characteristics of the QABF, it is important for professionals working in the field of ID and problem behavior to be provided with an instrument such as the QABF. Treating CB continues to remain a challenging task for direct care staff (Font & Castells, 2009). Therefore, the present study aims to report the adaptation of the QABF in Spain and to, consequently, extend the literature on the QABF.

2. Methods

2.1. Participants

Forty-four people with ID participated in the pilot test, and a total of 53 behavioral problems were assessed. The mean age was 28.56 years (SD = 15.874, range of 6–65; 26 males (59.1%)).

The respondents during the pilot phase included 34 direct care staff members. Inclusion criteria required each staff member to have worked with the participant for at least 6 months. Therefore, the duration of the relationship between the professionals and participants was over 2 years for 33 participants (75%), between 1 and 2 years for six participants (13.6%), and between 6 and 12 months (11.4%) for five participants.

Table 1
Demographic characteristics of participants in the field test.

	Frequency	Percentage
Age		
6–11 years old	56	18.7
12–19 years old	58	19.3
20–29 years old	51	17
30–39 years old	50	16.7
40–49 years old	48	16
50–59 years old	27	9
Older than 60 years old	10	3.3
Level of ID		
Mind	82	27.3
Moderate	85	28.3
Severe	98	32.7
Profound	35	11.7
Attending service		
School	116	38.7
Residential facility	31	10.3
Occupational center	110	36.7
Orientation service for employment	21	7
Special work center	22	7.3
Living place		
Family home	187	62.3
Residential facility	113	37.7

A total of 300 people with ID participated in the normalization and standardization process, and 328 behavioral problems were assessed. Participants ranged in age between 6 and 74 years (mean = 28.67 years, SD = 15.863; 192 males). Target behaviors included physical aggression ($n = 55$), verbal aggression ($n = 18$), self-injury ($n = 28$), property destruction ($n = 16$), tantrums ($n = 54$), stereotypes ($n = 32$), disruptive behavior ($n = 49$), noncompliance ($n = 30$) and inappropriate verbal behavior ($n = 46$). Demographic information of the participants in the field test process is presented in Table 1.

During the field test, 183 direct care staff members participated. As was observed in the pilot test, each staff member had worked with the participant for at least 6 months. Therefore, the duration of the relationship between professionals and participants was over 2 years for 221 participants (73.7%), between 1 and 2 years for 44 participants (14.7%) and between 6 and 12 months for 35 participants (11.7%).

2.2. Instrument

The QABF (Matson & Vollmer, 1995) was designed to identify the function of problem behavior in people with ID. It consists of 25 items divided into five subscales: attention, escape, sensory, physical and tangible. The questions are scored using a Likert frequency scale (0 = never, 1 = rarely, 2 = sometimes, and 3 = often) based on how likely it is that each item is associated with a problem behavior. Furthermore, a response option is added if the situation or item is not applicable to the behavior assessed. The QABF is administered in interview format and requires approximately 15 min (Matson et al., 2003).

The QABF as a whole has a coefficient alpha of .601 (Paclawskyj et al., 2000), but several studies have found this coefficient to be higher than .72 for each subscale (i.e., Embregts et al., 2009; Nicholson et al., 2006; Paclawskyj et al., 2000). The five-factor solution accounted for 73.9% of the total item variance and represented the five hypothesized behavioral functions. The test–retest reliability has also been evaluated (Paclawskyj et al., 2000), and high Spearman and Cohen's kappa values have been obtained (ranging from .646 to 1.0 and .642 to 1.0, respectively). The convergent validity comparing functional analysis with the QABF results has also been studied (Paclawskyj et al., 2001; Watkins & Rapp, 2013).

2.3. Procedure

2.3.1. Translation, experts' assessment and revision

To have a Spanish translation of the QABF that completely corresponds to the original version, we followed the procedure suggested by Tasse and Craig (1999). Thus, an initial committee (an official translator, as well as the first and third authors) translated the instrument independently from English to Spanish. Then, using the two translations, the first author developed a new translation. This translation was sent to a second committee, which evaluated it based on the original version and the translations provided by the first committee. The comments and possible amendments of the second committee were sent to the first and third authors for assessment. All comments were analyzed until a consensus between researchers was reached. Although reverse translation alone is not enough to demonstrate equivalence between languages (Solano-Flores, Contreras, & Backhoff, 2006), we decided to perform reverse translation to gain an additional indicator of the quality of the translation. The results showed that the final translation reflected the content of the original questionnaire.

Once the preliminary version of the QABF was ready, it was reviewed by six experts (researchers and professionals) to identify elements not applicable to the Spanish culture. All comments were analyzed and discussed by authors until unanimous agreement was achieved. A few modifications of the scale were made, such as adding or changing an example.

2.3.2. Pilot test and revision

Managers of different services (i.e., special schools, special work centers, residential facilities, etc.) were contacted by email and phone to explain the details of the study. Inclusion criteria for the participants were also explained to the managers as follows: older than 6 years, having ID, and exhibiting problem behavior. If the managers agreed to participate, they were asked to create a list of possible participants that met the inclusion criteria. Furthermore, informed consent obtained was from the families of the participants.

When the family's informed consent form was completed and returned to the specific service, the first author administered the QABF to the professionals, who were aware of the behavior being assessed. The only inclusion criterion for professionals was that they were required to have known the participant for at least 6 months. Before administering the QABF, the first author explained the goals of the research to the professionals and asked them to complete an informed consent form.

The QABF was answered in interview format. To evaluate possible difficulties with comprehending the QABF, after the QABF was completed, the informant was asked about any difficulties that they had experienced with the language and whether any questions were difficult to answer. However, all professionals agreed that the language and questions were appropriated.

An analysis of the item-subscale correlation matrix was performed to identify low-discrimination items (see Section 3). All items had an item-subscale correlation greater than .40. However, those identified with low-discrimination items ($r < .60$) were reviewed.

2.3.3. Field test

We used the same procedure for contacting different services and administrating the QABF that was used in the pilot test phase. In three centers, a psychologist administered the QABF. In these cases, the psychologist was trained by the first author about the QABF and problem behavior. Furthermore, several participants were assessed by the first author and psychologist together to identify possible questions that might arise. Constant phone contact was also provided for further questions.

To assess the test–retest reliability, managers of different services were asked if some of the professionals could complete the QABF approximately 1 and 3 weeks later. Due to the time and resource limitations of most of the services, data concerning only 40 problem behaviors were collected and analyzed.

2.3.4. Statistical analyses

An internal consistency coefficient (Cronbach's alpha) for the entire QABF, as well as for its subscales, was calculated. An exploratory factor analysis (EFA), Varimax rotation, using IBM SPSS Statistics 20, was then performed to identify the components of the QABF. Authors decided to conduct an EFA rather than a confirmatory factor analysis to ensure that the same number of factors than the original version of the QABF was obtained besides possible cultural differences. Finally, to assess the stability of the individual QABF items over time, Spearman rank-order correlation coefficients and Cohen's kappa were calculated.

3. Results

The alpha coefficient from the data obtained during the pilot test study was computed for the individual subscales (attention: .899; escape: .852; non-social: .878; physical: .966; tangible: .924), and the item-subscale correlation matrix was used to identify low-discrimination items. Except for items 6 and 17, which had correlations of .58 and .45, respectively, all items had an excellent correlation (greater than .80). Therefore, because of these high correlations, we decided to maintain these items, but we revised the way in which they were written for the final version of the QABF.

For the field test, the QABF was administered to 300 participants, and 328 problem behaviors were identified. The Cronbach's alpha coefficient was .756 for the test as a whole but was higher for each subscale (attention: .923; escape: .863; non-social: .853; physical: .942; tangible: .883). The item-total correlation matrix was used to identify low-discrimination items. Similar to the pilot phase, all items had an excellent correlation with their subscale ($r > .60$), but for four items, the correlation was less than .60 (item 6 = .397; item 10 = .568; item 13 = .514; item 17 = .343).

To confirm the factor structure of the QABF, an EFA was conducted. Principal Axis Factoring with Varimax rotation yielded six factors with eigen values of 5.342, 4.407, 3.304, 2.871, 2.175, and 1.015. These factors explained 76.5% of the variance shared by the test items. Factor structure and item loadings are provided in Table 2.

Based on Table 2, it can be observed that the first and third factors (physical and tangible function, respectively) showed high loadings for all five items from their QABF subscale. For the second, fourth and fifth factors (attention, escape and non-social, respectively), four items showed a high loading, whereas one item for each subscale was loading in the sixth component (item 6 for the second factor, item 17 for the fourth factor, and item 13 for the fifth factor). Therefore, the correlation among items in the sixth factor was explored to determine if there was a significant correlation among them. Because there was no significant correlation between these items, a new EFA excluding these items (item 6, item 13 and item

Table 2
Factor loadings of QABF items across factors.

QABF item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
24 – ¿Parece que la conducta indica que no se encuentra bien (por ej. dolor de barriga, etc.)?	.925					
14 – Muestra la conducta cuando se siente físicamente mal (por ej. artritis, hambre, calor, etc.).	.914					
19 – Muestra la conducta porque está incómodo/a físicamente.	.906					
4 – Muestra la conducta porque siente dolor (por ej. dolor de cabeza, dolor de muela, etc.).	.883					
9 – Muestra la conducta con más frecuencia cuando está enfermo/a (por ej. con fiebre, con la menstruación, etc.).	.861					
11 – Muestra la conducta para llamar la atención hacia él/ella.		.944				
1 – Muestra la conducta para atraer la atención.		.940				
21 – Cuando muestra la conducta, ¿parece que diga "ven a verme" o "mírame"?		.930				
16 – Muestra la conducta para intentar conseguir alguna reacción por nuestra parte.		.908				
25 – Cuando muestra la conducta, ¿parece que diga "dame esto (por ej. juguete, objeto personal, comida, cosa, etc.)"?			.907			
15- Muestra la conducta cuando usted tiene alguna cosa que él/ella quiere.			.904			
5 – Muestra la conducta para acceder a cosas que le gustan (por ej. juguetes, objetos personales, comida, bebida, etc.).			.810			
20 – Muestra la conducta cuando un compañero/a tiene alguna cosa que él/ella quiere.			.805			
10 – Muestra la conducta cuando se le quita alguna cosa.			.658			
2 – Muestra la conducta para evitar situaciones de trabajo o aprendizaje (por ej. hacer una tarea o una actividad, etc.).				.889		
7 – Muestra la conducta cuando se le pide que haga alguna cosa (por ej. vestirse, limpiarse los dientes, trabajar, etc.).				.881		
12 – Muestra la conducta cuando no quiere hacer alguna cosa.				.871		
22 – Cuando muestra la conducta, ¿parece que diga "déjame en paz" o "deja de pedirme que haga esto"?				.789		
23 – ¿Parece que le gusta mostrar la conducta incluso cuando no hay nadie a su alrededor?					.858	
8 – Muestra la conducta incluso si cree que no hay nadie en la habitación/aula.					.798	
3 – Muestra la conducta (por ej. autolesión, etc.) como una manera de "autoestimulación".					.775	
18 – Muestra la conducta reiteradamente sin hacer caso de lo que pasa a su alrededor.					.764	
13 – Muestra la conducta porque no hay ninguna otra cosa que hacer (por ej. estar aburrido/a, etc.).					.656	–.517
17 – Muestra la conducta para conseguir quedarse solo/a.				.385		.680
6 – Muestra la conducta porque le gusta que le riñan.		.500				–.500

Note. Factor 1 = physical; factor 2 = attention; factor 3 = tangible; factor 4 = escape; factor 5 = non-social.
Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization.
(a) Rotation converged after 6 iterations and (b) empty cells indicate scores under .3.

Table 3
Factor loadings of QABF items (excluding items 6, 13 and 17) across factors.

QABF item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Item 24	.925				
Item 14	.914				
Item 19	.906				
Item 4	.884				
Item 9	.860				
Item 11		.952			
Item 1		.947			
Item 21		.933			
Item 16		.918			
Item 25			.907		
Item 15			.904		
Item 5			.814		
Item 20			.802		
Item 10			.656		
Item 2				.891	
Item 7				.888	
Item 12				.874	
Item 22				.807	
Item 23					.893
Item 8					.829
Item 18					.783
Item 3					.761

Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization.
(a) Rotation converged after 5 iterations and (b) empty cells indicate scores under .3.

17) was conducted. Principal Axis Factoring with Varimax rotation yielded five factors with values of 5.216, 4.340, 3.067, 2.848, and 1.794. These factors accounted for 78.5% of the variance shared by the test items. Table 3 presents the factor structure and item loadings.

To assess the test–retest reliability, 40 problem behaviors were assessed twice. The time from the first administration to the second administration ranged from 7 to 20 days (mean = 12.025 days). The test–retest reliability was assessed using the Spearman correlation coefficient and Cohen's kappa coefficient. Values from the Spearman correlation ranged from .649 to 1.0 (mean = .887, all tests $p < .01$), with 77.5% exceeding a minimum of 80% (Rojahn & Schroeder, 1991). The available kappa values ($n = 37$) were also computed and ranged from .409 to 1.0 (mean = .719), with 59.5% exceeding a minimum value of .7 (Sattler, 1992).

4. Discussion

The goal of this study was to adapt the QABF to the Spanish population. The QABF was designed to identify the functional variables that maintain problem behavior in people with ID. From 300 participants, a total of 328 behavioral problems were assessed.

Overall, our results were in agreement with those of other studies in terms of internal consistency, construct validity and test–retest reliability. For example, Paclawskyj et al. (2000) assessed internal consistency using a sample of 243 participants. The coefficient alpha for each subscale ranged from .900 to .928 and was .601 for the QABF as a whole. Furthermore, their EFA produced a five factor solution, which matched with the five hypothesized subscales or functions, and accounted for 76.1% of the variance shared by the test items. Nicholson et al. (2006) also explored the internal consistency and construct validity of the QABF using a sample of 40 participants, but they only assessed 118 behaviors. Their values of Cronbach's alpha ranged from .785 to .922 for each subscale. The EFA yielded six factors, accounting for 73% of the variance. The five hypothesized functions were clearly identified, but one item in the non-social function had a low loading in its subscale and was the only item that had a high loading in factor 6. More recently, Singh et al. (2009) conducted an EFA as part of their study of 304 participants. Similar to the study conducted by Paclawskyj et al. (2000), the EFA yielded five factors and accounted for 73.9% of the total item variance. The test–retest reliability has also been assessed using data from 34 participants (Paclawskyj et al., 2000). Spearman rank-order correlations ranged from .646 to 1.0, the total percent agreement ranged from 69.6 to 95.7%, and the available Cohen's kappa values ranged from .642 to 1.0.

In the present study, the coefficient alpha from the five subscales ranged from .853 to .942. The first EFA yielded six factors, and it identified three components that had high loadings in the sixth factor. Because a non-correlation was found between factors, a second EFA that excluded these items was conducted. The second EFA identified the five hypothesized factors or subscales (attention, escape, sensory, physical and tangible) and accounted for 78.5% of the variance. The Spearman and Cohen's kappa values ranged from .649 to 1.0 and .409 to 1.0, respectively. According to Paclawskyj et al. (2000), these results indicate that the QABF has good stability over time. Therefore, the QABF is an adequate instrument that can be used with the Spanish population to assess the function of problem behavior in people with ID.

An important limitation of this study concerns the selection of the sample. Although we attempted to obtain as representative a sample as possible, the participant's services were not randomly selected. Rather, they decided if they wanted to participate. A strength of this study was the size of the sample and the number of behaviors assessed. For the Spanish population, 300 participants seems to be a good sample and is similar to those of other studies conducted with QABF (Applegate, Matson, & Cherry, 1999; Matson et al., 1999; Paclawskyj et al., 2000; Singh et al., 2009). The present study and its results provide further evidence of the validity of the QABF for assessing the function of problem behavior.

Due to limitations of the direct FBA, or functional analysis, such as the need for time and resources (Paclawskyj et al., 2001), many efforts have been undertaken over the past few decades to obtain indirect FBA tools with good psychometric properties. In this context, the QABF has been identified as a good starting point for professionals when conducting an FBA (Matson et al., 2012).

More research is needed to improve the Spanish version of the QABF. The convergent validity should be explored, especially with a large sample (Watkins & Rapp, 2013). Several studies with diverse populations have demonstrated the convergent validity of the QABF (Paclawskyj et al., 2001; Watkins & Rapp, 2013). Although it has been suggested that the validity of functional assessment measures is the most important property (Zaja et al., 2011), exploring the reliability is also necessary. Therefore, more reliability studies of the Spanish QABF are needed to examine its stability over time and over several informants.

Further research should also examine which function corresponds to the various CBs. This information may be useful for professionals when designing interventions (Dawson, Matson, & Cherry, 1998; Wasano, Borreo, & Kohn, 2009).

Finally, it would be interesting to explore the existing relationship between the QABF and other functional assessment instruments, specifically the Contextual Assessment Inventory (CAI; McAtee, Carr, & Schulte, 2004). The use of both instruments is important for obtaining more information when designing intervention plans (Embregts et al., 2009) and for identifying the exact relationship between the behavioral functions identified by the QABF and the four contextual categories that the CAI suggests (social/cultural, task/activity, physical and biological). Understanding problem behavior with regard to its function rather than its form, as well as studying the contextual variables that influence the problem behavior with regard to its behavioral function, may have a great impact on research focused on behavior analysis and the development of intervention plans.

5. Conclusions

In summary, this study presents the results of the validation of the QABF in the Spanish population. The results of this study indicate that the QABF has good psychometric properties. These findings are similar to those of other studies examining the properties of this tool. It can be concluded that the QABF is an effective, efficient instrument for assessing the function of CB in people with ID. The Spanish version will improve the functional assessment, as well as the intervention plans, for this population.

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4.2. Fourth publication

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ANÁLISIS DE LOS EVENTOS CONTEXTUALES QUE INFLUENCIAN LAS CONDUCTAS PROBLEMÁTICAS: EL INVENTARIO DE EVALUACIÓN DEL CONTEXTO

ANALYSIS OF CONTEXTUAL EVANTS THAT INFLUENCE PROBLEM BEHAVIOR: THE CONTEXTUAL ASSESSMENT INVENTORY

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Resumen:

Las conductas problemáticas que presentan las personas con discapacidad intelectual (DI) influyen negativamente en su calidad de vida. Los principios derivados del análisis conductual aplicado subrayan la relación existente entre dichas conductas y el entorno donde se desarrollan; las conductas problemáticas están influenciadas por unos antecedentes y reforzadas por unos consecuentes. El presente estudio presenta la adaptación y validación a la población española del "Inventario de Evaluación del Contexto" (IEC), un instrumento de evaluación funcional indirecta que permite identificar aquellas variables contextuales que mantienen una relación con la conducta problemática. El IEC se ha administrado a 183 profesionales que han evaluado un total de 328 conductas problemáticas. Los resultados obtenidos señalan este instrumento como fiable y de alta consistencia interna. Además, se identifican aquellas variables contextuales de mayor relación con la ocurrencia de las conductas problemáticas. Finalmente, los resultados del artículo se discuten en relación a sus implicaciones con la práctica profesional y en la futura investigación a fin de obtener estrategias de evaluación válidas para la población con DI.

Palabras clave: conductas problemáticas, eventos contextuales, evaluación funcional, discapacidad intelectual, Inventario de Evaluación del Contexto

Abstract:

Problem behaviors displayed by people with intellectual disabilities (ID) have a negative effect on their quality of life. The principles of the operant theory emphasize the relationship between these behaviors and the environment where they take place; problem behaviors are influenced by some antecedents and reinforced by consequents. This study presents the adaptation and validation of the "Contextual Assessment Inventory" (CAI) to the Spanish population; an indirect functional assessment tool that aims to identify those antecedents that are functionally related to problem behavior. The CAI was administered to 183 professionals who assessed a total of 328 problem behaviors. Results indicated that the Spanish version of the CAI has acceptable reliability and high internal consistency. Furthermore, those contextual variables more related to the occurrence of problem behaviors are identify. Finally, the paper discusses the results according to their implications for professional practice and future research for the development of valid assessment strategies in this population.

Keywords: problem behavior, contextual events, functional assessment, intellectual disability, Contextual Assessment Inventory

Introducción

Las conductas problemáticas que presentan los alumnos con discapacidad intelectual (DI), tales como agresiones físicas o verbales, estereotipias o rabietas entre otras, no siempre son de fácil compresión (Langthorne, McGill, y O'Reilly, 2007). La ocurrencia de dichas conductas alteran el clima del aula o del entorno dónde se encuentran y, como consecuencia, el profesional debe dedicar tiempo y recursos para dar una respuesta ajustada (Moreno, 2011). A pesar de que su evaluación y tratamiento suponen un reto para los profesionales que los atienden (Font y Castells, 2009), en las últimas décadas, el análisis conductual aplicado[1] ha contribuido sustancialmente en el campo de la educación y la discapacidad (Greshman et al., 2004) proporcionando modelos teóricos a partir de los cuales comprender mejor las conductas problemáticas y desarrollar planes de intervención.

Durante años, tanto en la investigación como en la práctica diaria se ha utilizado para su comprensión y tratamiento el modelo A-C-C (antecedente-conducta-consecuencia) de evaluación, también conocido en la literatura como el *three term contingency* (Cooper, Heron, y Heward, 2007). Este modelo examina aquellas variables del entorno que provocan y refuerzan las conductas problemáticas (Steege y Watson, 2009), entendiendo que la ocurrencia de la conducta problemática está influenciada por unos antecedentes (estímulos discriminativos, ED) y reforzada por unos eventos (consecuentes) que suceden inmediatamente después de la conducta. No obstante, la investigación más reciente incorpora otra tipología de antecedentes (eventos situacionales[2], ES). Este tipo de eventos que no están asociados a la inmediatez de la conducta pueden tener también un impacto sobre el *three term contingency* (Filter y Alvarez, 2011). Steege y Watson (2009) con la finalidad de incorporar este tipo de variables proponen un nuevo modelo denominado EMIRC (en inglés, *SMIRC*) que

permite una comprensión más amplia de la naturaleza de las conductas problemáticas y, en consecuencia, elaborar un análisis más exhaustivo de la conducta (Kubick y Mcloughlin, 2010). El modelo EMIRC subraya la importancia que tienen los antecedentes en la manifestación de la conducta problemática y, muy especialmente, el papel de los ES. Los ES son un tipo de antecedentes que no tienen una relación temporal inmediata con la conducta problemática, pero influencian tanto a los ED como al individuo, a la propia conducta y a los consecuentes de la misma (Steege y Watson, 2009). Por lo tanto, la efectividad de un estímulo que provoca una conducta (ED), la propia conducta y el efecto reforzante de los consecuentes de la misma, dependen también de los ES (Cooper et al., 2007).

El desarrollo de estos modelos teóricos así como la evidencia empírica que ha propiciado su puesta en práctica ha facilitado el establecimiento de nuevas estrategias de intervención para las conductas problemáticas. En general, estas estrategias se caracterizan por su carácter esencialmente preventivo y proactivo. Entre ellas, destaca la modificación de los antecedentes (Bambara y Knoster, 2009; Smith, 2011). Es decir, cambiar, alterar o eliminar aquellos eventos o estímulos del entorno que suceden antes de la conducta problemática y propician su ocurrencia (Filter y Alvarez, 2011). Bambara y Knoster (2009) señalan que la utilización de esta estrategia tiene dos beneficios claros. Por un lado, se reduce rápidamente la conducta problemática ya que se elimina aquello que la desencadena. De esta forma, se pueden reducir situaciones problemáticas o frustrantes para las personas y se proporciona la oportunidad de enseñar habilidades alternativas y construir entornos y condiciones reforzantes tanto para la persona como para el profesional. Por otro, la modificación de los antecedentes evita problemas y consecuencias negativas que normalmente han sido asociadas a intervenciones reactivas; se reducen las intervenciones que suceden después de la

ocurrencia de la conducta problemática y que habitualmente se han centrado en el castigo (Snell, 2010).

Como se ha indicado, la literatura señala dos tipos de antecedentes: los ED y los ES. Los ED son aquellos que preceden la ocurrencia de la conducta problemática y señalan la probabilidad de que se mantenga el refuerzo posterior a la conducta (Steege y Watson, 2009). En consecuencia, es más probable que la conducta se manifieste cuando el antecedente (ED) está presente en un futuro (Carr, Ladd, y Schulte, 2008). Del mismo modo, los ES se refieren a aquellos elementos del entorno que alteran la efectividad de cualquier estímulo que actúe como reforzador y la frecuencia de la conducta (Cooper et al., 2007).

A pesar de que tanto los ED como los ES son antecedentes que motivan la ocurrencia de la conducta problemática (Steege y Watson, 2009), saberlos reconocer y diferenciar es un aspecto clave en el momento de establecer programas de intervención.

La evaluación funcional de la conducta (EFC) se ha convertido en un método, con amplia evidencia empírica, que permite registrar estos antecedentes y a partir de este conocimiento elaborar programas de intervención. Concretamente, encontramos tres maneras de realizar una EFC: EFC directa, EFC indirecta y el análisis funcional. El análisis funcional implica una manipulación experimental de aquellas variables que están relacionadas con la conducta objeto de estudio (Nicholson, Konstantinidi, y Furniss, 2006) mientras que la EFC directa permite una identificación objetiva de aquellos eventos que rodean y refuerzan la conducta (Paclawskyj, Matson, Rush, Smalls, y Vollmer, 2001) utilizando la observación directa. Finalmente, la EFC indirecta identifica los mismos eventos (Cooper et al., 2007) utilizando escalas, cuestionarios o entrevistas que se administran a informantes familiarizados con la persona y la conducta problemática (Riffel, 2011). A pesar de que la principal

desventaja de la EFC indirecta es que depende de la opinión y el recuerdo del informador, requiere de menos tiempo, menos experiencia por parte de los profesionales y permite, de forma rápida y simple, obtener una primera visión de las posibles relaciones contextuales asociadas a la conducta evaluada (Kelly, LaRue, Roane, y Gadaire, 2011).

Un instrumento de EFC indirecta que permite determinar las variables de antecedentes (ED y ES) que pueden estar asociados con la ocurrencia de la conducta problemática es el "Inventario de Evaluación del Contexto" (IEC) (*Contextual Assessment Inventory;* McAtee, Carr, y Schulte 2004). A pesar de que son pocos los estudios que han utilizado el IEC para explorar dicha asociación, los resultados sugieren que hay una relación entre los eventos contextuales y las conductas estudiadas (Embrergts, Didden, Huitink, y Schreuder, 2009). McAtee et al. (2004) elaboraron el IEC para identificar las variables que estaban relacionadas con las conductas problemáticas de 20 adultos con DI. En su estudio, los eventos con un mayor porcentaje para propiciar la ocurrencia de la conducta problemática eran "estar esperando", "tener hambre o sed", "no tener atendidas sus demandas", "estar enfermo", "tener los compañeros demasiado cerca o demasiado lejos", y "estar cansado". Por otro lado, Embregts et al. (2009) utilizaron una adaptación del IEC para explorar las variables contextuales que influenciaban las conductas agresivas de 87 personas con DI. Los resultados de su estudio mostraron que las variables sociales culturales y las relacionadas con las tareas o actividades eran las que propiciaban más la manifestación de las conductas problemáticas. En particular, antecedentes como "ser corregido durante una tarea", "actitudes negativas de los profesionales", "tareas difíciles" y "cambios en la rutina" entre otros fueron determinados como los más significativos.

Disponer de un instrumento de esta naturaleza, puede proporcionar información significativa en las primeras fases de la EFC. En concreto, pretende reconocer aquellos eventos del entorno relacionados con la conducta problemática con el fin de elaborar las primeras hipótesis que guíen el plan de intervención posterior. El objetivo de este estudio es presentar la adaptación y validación del IEC a la población española[3]. Además, se exploran aquellos eventos del entorno que parecen tener mayor relación con la ocurrencia de las conductas problemáticas.

Método

Participantes

Se establecieron tres criterios de inclusión para los participantes: (a) ser mayor de 6 años, (b) tener DI, y (c) manifestar alguna conducta problemática.

Un total de 300 personas con DI participaron en el proceso de validación. Las edades de los participantes estaban comprendidas entre los 6 y 74 años (media = 28,67 años, SD = 15,863; 192 hombres). Setenta y dos personas (24%) fueron diagnosticados con un grado de discapacidad del 33-64%, mientras que para 105 participantes (35%) era del 65-74% y para 123 (41%) era de más del 75%. La mayoría de los participantes residían en la vivienda familiar (n=187; 62.3%) mientras que 113 vivían en servicios residenciales (37.7%).

Considerando que el IEC debe ser contestado pensando en una única conducta problemática, en total se evaluaron 328 conductas. La tipología de dichas conductas se presenta en la Tabla 1.

Insertar Tabla 1

Para contestar los cuestionarios de los 300 participantes, participaron 183 profesionales de atención directa. Teniendo en cuenta que para participar en el estudio los profesionales debían haber conocido a la persona a evaluar durante al menos 6 meses, la

relación resultante entre profesionales y participantes era de más de 2 años por un total de 221 participantes (73,7%), entre 1 y 2 años para 44 participantes (14,7%) y entre 6 y 12 meses para 35 participantes (11,7%).

Instrumento

El IEC, desarrollado por McAtee et al. (2004), pretende ser usado en el momento inicial de evaluación funcional de la conducta, con el fin de identificar aquellas variables contextuales (ED y ES) que influencian la ocurrencia de las conductas problemáticas que manifiestan las personas con DI. Este instrumento está constituido por 80 preguntas, diferenciadas en cuatro categorías (y sus respectivas subcategorías): variables sociales/culturales (interacciones negativas y decepciones), naturaleza de la tarea (factores relacionados con la tarea o la actividad y rutina), variables físicas (entorno incómodo y cambios en el entorno) y variables biológicas (medicación, enfermedad y factores fisiológicos). Este instrumento se puntúa mediante una escala de frecuencia Likert entendiendo que 1=nunca y 5=siempre. Además, se añaden 13 preguntas abiertas en las que se debe especificar otros posibles eventos que propician la conducta problemática evaluada. Se estima que la duración para contestar el cuestionario es de unos 25 minutos.

El estudio de McAtee et al. (2004) indica una alta consistencia interna en su totalidad (.95) y en todas sus categorías; .91, .91, .78 y .57 (social/cutural, naturaleza de la tarea, variables físicas y variables biológicas respectivamente). Los resultados de un estudio más reciente (Embregts et al., 2009), verifican la consistencia interna del IEC en su totalidad (.95) y en sus categorías (rango= .75-.93). La fiabilidad test-retest y entre observadores del IEC también ha sido evaluada. A pesar de que los resultados de la fiabilidad entre observadores han sido pobres en la mayoría de los ítems, el IEC

presenta una fiabilidad aceptable a lo largo del tiempo (McAtee et al., 2004). Finalmente, se ha comprobado la validez de criterio con 17 usuarios (Carr, et al., 2008).

Procedimiento

Con el fin de obtener una versión del IEC que responda en su totalidad a la versión original y, que a su vez, esté adaptada a la población española se siguió el procedimiento de adaptación propuesto por Tasse y Craig (1999). De este modo se tradujo primero al español y después se realizó una traducción inversa (Solano-Flores, Contreras, y Backhoff, 2006), se exploró la validez de constructo (juicio de experto con académicos y profesionales de atención directa) y fue sometido a una prueba piloto (44 participantes y 53 conductas problemáticas) para hacer una primera estimación de su validez y fiabilidad (Simó-Pinatella, Alomar-Kurz, Font-Roura, y Giné, 2012). El resultado de esta prueba piloto sugirió a los autores eliminar dos ítems ("está en la furgoneta o en el coche"; "tiene una fase maníaca de trastorno bipolar") de la versión original (r<.1), unificar dos ítems ("pasa periodos largos entre cigarrillos"; "pasa periodos largos sin cafeína") en uno único y añadir dos ítems nuevos ("hay presencia de determinadas personas"; "se le da medicación"). Al finalizar este proceso, la versión del IEC para su validación al español consta de 79 ítems i 13 preguntas abiertas (anexo 1). Para la recogida de datos, se contactó con directores de distintos servicios de atención a personas con DI por email y por teléfono con el fin de explicar los objetivos del estudio y los criterios de selección de los participantes. Si aceptaban participar, se les pedía seleccionar a aquellos participantes que cumplían con los criterios de inclusión indicados, contactar con sus familias y proponer los profesionales de atención directa que contestarían los cuestionarios. Como se ha mencionado, el único criterio de inclusión de los profesionales fue que hubieran conocido al participante (y su conducta) por un periodo no inferior a seis meses.

Los responsables contactaron con las familias por carta para informar del estudio y pedir consentimiento para que un profesional del centro donde era atendido su familiar con DI respondiera unas preguntas pensando en la conducta problemática que dicha persona manifestaba. De este modo, se les entregó una carta informativa y una autorización que debían firmar y que garantizaba que todos los datos obtenidos serían tratados con confidencialidad.

Una vez recibidos los consentimientos de las familias, el primer autor administró el IEC a los profesionales. Solo en tres ocasiones el psicólogo del centro fue el encargado de administrar el IEC. En estos casos, se proporcionó especial formación sobre el IEC y sobre la concepción de la conducta problemática al psicólogo del centro. Además, se evaluaron algunas conductas conjuntamente con el fin de aclarar posibles dudas del IEC y se les facilitó constante seguimiento por si surgían nuevas dudas

El IEC fue administrado en formato entrevista. Para ello, antes de empezar, el primer autor recordó los objetivos de la investigación al profesional y se le pidió firmar una carta de autorización en la que se garantizaba la confidencialidad de los datos facilitados. Para completar con éxito el IEC se ayudaba al informador a definir la conducta problemática a evaluar. Acto seguido, se informaba tanto de la estructura del cuestionario así como de las distintas posibilidades de respuesta.

Para evaluar la fidelidad test-retest, se pidió a los responsables de cada institución si algunos profesionales podían completar el IEC de nuevo al cabo de 1 o 3 semanas aproximadamente. En total, se evaluó la fiabilidad test-retest de 30 conductas.

Análisis del IEC

Para realizar los análisis estadísticos de este estudio se utilizó el programa informático IBM SPSS Statistics 20. En cuanto a las propiedades psicométricas de la escala se evaluó la fiabilidad de la escala (consistencia interna y test-retest) y la correlación del

ítem con el total de la escala. En cuanto a la exploración de las variables relacionadas con las ocurrencias de las conductas problemáticas, se cuantificaron dichos eventos y se calculó su porcentaje.

Resultados

Resultados psicométricos del IEC

Los resultados del estudio muestran que el IEC tiene una alta consistencia interna tanto en su totalidad como en cada una de las escalas. Concretamente, el Alpha de Cronbach obtenida resultó .94 mientras que para sus categorías fue de .88, .88, .79 y .74 (social/cultural, naturaleza de la tarea, entorno físico y biológicas, respectivamente).

En cuanto al análisis de ítems, se calculó la correlación de Pearson entre cada uno de los ítems y el total del IEC. Los resultados muestran una correlación aceptable (r >.15) exceptuando dos ítems de la categoría "Factores biológicos" (ítem 87 = .03; ítem 90 =.12). Aun así, la correlación de éstos aumenta cuando el ítem es correlacionado con su categoría (ítem 87 = .19; ítem 90 = .16).

Para evaluar la estabilidad a lo largo del tiempo del IEC, se administraron 30 cuestionarios de nuevo. El tiempo entre la primera y segunda administración fue de entre 7 y 20 días (media= 10.03 días). Siguiendo el procedimiento de McAtee et al. (2004) se evaluó la fiabilidad test-retest utilizando la correlación de Pearson. Se obtuvieron valores de correlación en un rango de .652 a .876 (media=.779; p<.01).

Variables contextuales

Explorar las subcategorías del IEC permite reconocer aquellos eventos del entorno (ED y ES) que tienen relación con la conducta problemática. En general todas las categorías (y sus subcategorías) que presenta el IEC tienen relación con la ocurrencia de las conductas problemáticas. Las subcategorías "interacciones negativas", "decepciones", "factores relacionados" y "rutina" reciben las mayores puntuaciones, indicando que

tienen más probabilidades de estar asociadas con las conductas problemáticas estudiadas. Por otro lado, las subcategorías del entorno físico ("entorno no confortable" y "cambios en el entorno") y de los factores biológicos ("medicación", "enfermedad" y "estados fisiológicos") reciben las puntuaciones más bajas y, por lo tanto, están menos asociadas a la ocurrencia de dichas conductas.

Insertar Tabla 2

Finalmente, se han seleccionado aquellos cinco ítems con mayor puntuación por cada categoría del IEC. En general, los resultados de la Tabla 2 sugieren que las conductas evaluadas mantienen mayor relación con las variables sociales/culturales y los eventos relacionados con la naturaleza de la tarea. Por lo contrario, determinados eventos sociales/culturales (ítem 19 = 5.79%; ítem 30 =6.4%), de la naturaleza de la tarea/actividad (ítem 42 = 8.23%), entorno físico (ítem 64 = 6.71%; ítem 65 = 4.88%) y algunos factores biológicos (por ej., ítem 79% = 5.49%; ítem 80 = 7.01%; ítem 86 = 43.88%) parecen tener una menor relación con las conductas problemáticas evaluadas.

Discusión

Con el propósito de adaptar y validar el IEC a la población española e identificar aquellos eventos del entorno relacionados con la ocurrencia de las conductas problemáticas, se administró el IEC a 300 personas con DI (evaluando un total de 328 conductas problemáticas).

En general, los resultados psicométricos obtenidos indican que el IEC tiene una alta consistencia interna, validez de constructo y una aceptable estabilidad a lo largo del tiempo. Estos resultados son parecidos a otros estudios realizados con este instrumento (Embregts et al., 2009; McAtee et al., 2004). En el presente estudio el coeficiente de alpha para cada una de las categorías se encontró dentro del rango de .74 a .88 con una Alpha de Crombach del IEC en su totalidad de .94. En cuanto a la fiabilidad test-retest,

los resultados muestran una consistencia aceptable a lo largo del tiempo (rango .652 - .876) con un tiempo medio de casi 10 días entre la primera y la segunda administración. Por otro lado, en cuanto a la identificación de aquellos eventos del entorno (ED y ES) que están en relación con la manifestación de las conductas problemáticas, los resultados indican que las variables sociales/culturales y las de la naturaleza de la tarea están altamente correlacionadas con las conductas evaluadas. Por lo contrario, y con resultados similares al estudio de Embregts et al. (2009), las variables referentes al entorno físico y factores biológicos, parecen tener menor relación con dichas conductas. Una limitación del presente estudio hace referencia a la selección de la muestra. A pesar de que se intentó conseguir una muestra lo más representativa posible, la selección de los centros participantes no fue aleatoria, sino que fueron ellos los que decidieron participar o no en el estudio. No obstante, el número de muestra obtenido para realizar este estudio es significativo ya que resulta superior a los estudios realizados con el IEC (Carr et al., 2008; Embregts et al., 2009; McAtee et al., 2004).

El IEC es un instrumento válido para identificar los contextos que están (y no están) relacionados con las conductas problemáticas (Carr et al., 2008; Embregts et al., 2009). Además, se define como un instrumento eficaz y comprensible para los profesionales que tiene el objetivo de facilitar el procedimiento de EFC, pero no reemplazarlo (McAtee et al., 2004). Es decir, teniendo en cuenta las características del IEC, se aconseja utilizarlo no solo como filtración inicial sino triangulando la información obtenida con la que pueden proporcionar otras estrategias. Siempre que se disponga de los recursos necesarios, se recomienda alternarlo con instrumentos de EFC directa, como los registros de observación (Alter, Conroy, Mancil, y Haydon, 2008), o con el análisis funcional (Nicholson et al., 2006).

Uno de los objetivos de la EFC es obtener una mayor comprensión de la naturaleza de la conducta problemática y desarrollar intervenciones que contemplen el contexto de la persona (Bambara y Knoster, 2009) centrándose en los antecedentes de la conducta (McGill, Hughes, Teer, y Rye, 2012). De este modo, como ya se ha mencionado, una estrategia de intervención es modificando dichos antecedentes. Es decir, evitar o alterar los ED y los ES identificados. El IEC puede constituirse como un instrumento altamente eficaz en el logro de esta tarea. Gracias al uso de este tipo de instrumentos, los esfuerzos de los profesionales no se centran en los efectos que puedan tener dichas conductas, sino en la prevención de aquellos contextos que pueden propiciar las mismas. Determinar estas variables contextuales (ED y ES), es el primer paso para la prevención de dichas conductas (Embregts et al., 2009).

Finalmente, los resultados obtenidos proporcionan distintas implicaciones para la investigación. En este sentido, es necesario realizar más análisis que permitan dar una mayor fiabilidad al IEC. Por ejemplo, evaluar su validez convergente a través del análisis funcional o la observación directa (McAtee et al., 2004).

Además, es necesario seguir avanzando en la elaboración o adaptación y validación de instrumentos que nos permitan entender no solo el porqué de las conductas problemáticas, sino también cuales son aquellas variables que mantienen su ocurrencia. En este sentido, seria de utilidad disponer de sistemas de evaluación que permitieran identificar los efectos de variables contextuales consecutivas múltiples (Carr et al., 2008). Teniendo en cuenta que el IEC identifica las variables de antecedentes que propician individualmente las conductas problemáticas, la elaboración de estrategias de evaluación multivariantes puede ayudar a una mayor comprensión de la complejidad de las conductas problemáticas.

Agradecimientos

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Notas

[1] Según Emerson (2001), el análisis conductual aplicado se centra en entender las relaciones funcionales de la conducta. En cuanto a las conductas problemáticas, se considera que la ocurrencia de estas formas de comportamiento están, en parte, influenciadas y mantenidas por las consecuencias del entorno. Es decir, son conductas que se han aprendido a partir de la interacción de la persona con su entorno físico y social.

[2] Los conceptos operaciones motivadoras (Laraway, Snycerski, Michael, y Poling, 2003) y eventos situacionales (Morris y Midgleey, 1990) se han utilizado de manera indistina en la investigación (Kennedy y Meyer, 1998). De acuerdo con la terminología utilizada en el instrumento que se presenta en este estudio, los autores utilizan el concepto eventos situacionales a lo largo del artículo.

[3] Este estudio se ha realizado por los autores en el marco del "Grup de Recerca Discapacitat i Qualitat de Vida: Aspectes Educatius". FPCEE Blanquerna. Universitat Ramon Llull .

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Tabla 1

Tipología de conductas problemáticas

	Frecuencia *(n)*	Porcentaje (%)
Agresiones físicas	55	16.76
Agresiones verbales	18	5.48
Autolesión	28	8.53
Destrucción de la propiedad	16	4.87
Rabietas	54	16.46
Estereotipias	32	9.75
Conducta disruptiva	49	14.93
No seguir las órdenes o instrucciones	30	9.14
Conducta verbal inapropiada	46	14.02

Tabla 2

Porcentaje de ítems con puntuación de 4 o 5

	Frecuencia *(n)*	Porcentaje (%)
Social/Cultural		
Ítem 1	195	59.45
Ítem 2	172	52.44
Ítem 5	169	51.52
Ítem 21	184	56.10
Ítem 29	180	54.88
Naturaleza de la tarea		
Ítem 39	131	39.94
Ítem 40	113	34.45
Ítem 49	143	43.6
Ítem 53	115	35.06
Ítem 58	105	32.01
Entorno físico		
Ítem 62	67	20.43
Ítem 63	50	15.24
Ítem 66	94	28.66
Ítem 69	89	27.13
Ítem 70	91	27.74
Factores biológicos		
Ítem 76	62	18.9
Ítem 78	78	23.78
Ítem 82	81	24.7
Ítem 83	72	21.95
Ítem 85	72	21.95

Anexo 1

Instrumento adaptado y validado a la población española en el marco del "Grup de Recerca Discapacitat i Qualitat de Vida: Aspectes Educatius". FPCEE Blanquerna. Universitat Ramon Llull

Inventario de Evaluación del Contexto

Nombre: _____ Evaluador: _____ Fecha: _____

¿Cuánto tiempo hace que conoce a la persona que está evaluando? _____

Describa los principales tipos de conductas problemáticas que presenta esta persona.
Por favor, intente ser lo más específico y concreto posible (por ejemplo: *agresiones*- golpes o puntapiés a otros; *autolesiones*- se muerde; *destrucción de la propiedad*- rasgar la ropa: *rabietas*- chilla y grita):

_____

_____

A continuación se enumeran una serie de posibles eventos situacionales y estímulos discriminativos.
Para cada uno de los siguientes ítems valore con qué probabilidad la persona que está evaluando presenta la conducta problemática.

Es probable que la persona manifieste la conducta problemática _____ (especificar conducta) cuando…	Nunca		A veces		Siempre
***Social/Cultural**: Los siguientes ítems describen aspectos del entorno social y cultural que pueden influir en la conducta.* <u>Interacciones Negativas</u>					
1. Ha tenido un desacuerdo o discusión verbal con la familia, profesionales o compañeros. Especificar: _____	1	2	3	4	5
2. Ha sido castigado o reñido recientemente por la conducta. Especificar: _____	1	2	3	4	5
3. Recientemente se le ha corregido durante una tarea.	1	2	3	4	5
4. Se le pide que haga algo rápido o a todo correr.	1	2	3	4	5
5. Tiene demasiada o muy poca atención por parte de los profesionales. Especificar: _____	1	2	3	4	5
6. Los profesionales muestran sus emociones (por ej. habla demasiado alto, emoción demasiado negativa, etc.). Especificar: _____	1	2	3	4	5
7. El tono de voz de los profesionales es, por ejemplo, agudo, severo, etc. Especificar: _____	1	2	3	4	5

						(Continuación)
Es probable que la persona manifieste la conducta problemática _____ (especificar conducta) cuando…	Nunca		A veces		Siempre	
8. Tiene dificultad para entender las instrucciones de los profesionales.	1	2	3	4	5	
9. Profesionales "que no le gustan" están presentes.	1	2	3	4	5	
10. Personal nuevo está presente.	1	2	3	4	5	
11. Hay presencia de determinadas personas. Especificar: _____	1	2	3	4	5	
12. Tiene dificultad continua para comunicar deseos o necesidades.	1	2	3	4	5	
13. Tiene demasiada o muy poca atención por parte de los compañeros. Especificar: _____	1	2	3	4	5	
14. Un compañero que no le gusta está presente.	1	2	3	4	5	
15. Hay demasiada gente a su alrededor.	1	2	3	4	5	
16. Una persona desconocida está presente.	1	2	3	4	5	
17. Familiares, profesionales o compañeros están físicamente demasiado cerca o demasiado lejos. Especificar: _____	1	2	3	4	5	
18. El tamaño del grupo es, por ejemplo, grande, pequeño, etc. Especificar: _____	1	2	3	4	5	
19. Se le da medicación	1	2	3	4	5	
20. Recientemente se le ha inmovilizado físicamente.	1	2	3	4	5	
21. Tiene un mal día en el servicio de actividad de día o en el trabajo.	1	2	3	4	5	
22. El espacio está asociado a interacciones negativas (por ej. comedor, gimnasio, consulta del dentista, etc.). Especificar: _____	1	2	3	4	5	
23. Compañeros enfadados o que molestan están cerca de él.	1	2	3	4	5	
24. Tiene ansiedad ante la proximidad de actividades vacacionales.	1	2	3	4	5	
25. ¿Existe algún otro tipo de interacciones negativas que sean eventos situacionales o estímulos discriminativos para esta persona? _____	1	2	3	4	5	
<u>Decepciones o desengaños</u>						
26. Ha sido informado de algo que le decepciona (por ej. visita cultural que no se producirá, visitas que fallan en venir, etc.). Especificar: _____	1	2	3	4	5	

(Continuación)					
Es probable que la persona manifieste la conducta problemática _____ (especificar conducta) cuando…	Nunca		A veces		Siempre
27. El profesional preferido está ausente.	1	2	3	4	5
28. Hay poco personal para satisfacer las necesidades de la persona.	1	2	3	4	5
29. No consigue tener atendidas sus demandas.	1	2	3	4	5
30. Está ausente un amigo.	1	2	3	4	5
31. No consigue un refuerzo o premio.	1	2	3	4	5
32. Se le ha dado comida que no le gusta. Especificar: _____	1	2	3	4	5
33. No tiene comida en momentos deseados. Especificar: _____	1	2	3	4	5
34. Está preocupado por la salud de la familia o de un amigo.	1	2	3	4	5
35. Finaliza una actividad preferida. Especificar: _____	1	2	3	4	5
36. ¿Existe algún otro tipo de decepciones o desengaños que sean eventos situacionales o estímulos discriminativos para esta persona? _____ _____	1	2	3	4	5
37. Por favor, enumere cualquier otro factor social/cultural que piense que puede ser un evento situacional o un estímulo discriminativo para la persona con la que trabaja: _____ _____	1	2	3	4	5
Naturaleza de la tarea o de la actividad: *Los siguientes ítems describen aspectos de la actividad en curso que pueden influir en la conducta.* **Factores relacionados con tareas o labores**					
38. Hay pocas opciones para elegir.	1	2	3	4	5
39. Las tareas son aburridas o no le gustan.	1	2	3	4	5
40. Las tareas son difíciles.	1	2	3	4	5
41. Las tareas son nuevas.	1	2	3	4	5
42. El ritmo de la enseñanza es lento.	1	2	3	4	5
43. El ritmo de la enseñanza es demasiado rápido.	1	2	3	4	5
44. Comete un gran número de errores.	1	2	3	4	5
45. Las tareas son repetitivas.	1	2	3	4	5
46. El entorno es demasiado tranquilo o demasiado estimulante. Especificar:_____	1	2	3	4	5

(Continuación)					
Es probable que la persona manifieste la conducta problemática _____ (especificar conducta) cuando…	Nunca		A veces		Siempre
47. El entorno proporciona poco o ningún refuerzo. Especificar: _____	1	2	3	4	5
48. La duración de la actividad es, por ejemplo, bien demasiado larga o bien demasiado corta, etc. Especificar: _____	1	2	3	4	5
49. Tiene que esperar (por ej. en la fila, sala de espera, etc.). Especificar: _____	1	2	3	4	5
50. Tiene cita médica o está en entornos médicos.	1	2	3	4	5
51. ¿Existen algún otro factor relacionado con las tareas o labores que sean eventos situacionales o estímulos discriminativos para esta persona? _____ _____	1	2	3	4	5
<u>Rutina diaria</u>					
52. El horario es rígido o falta de horario. Especificar: _____	1	2	3	4	5
53. Hay cambios en la rutina/cancelaciones. Especificar: _____	1	2	3	4	5
54. Se le informa por adelantado de que una actividad programada tendrá lugar.	1	2	3	4	5
55. Hay ausencia de aviso previo de que una actividad tendrá lugar.	1	2	3	4	5
56. Está aburrido o no hace ninguna actividad.	1	2	3	4	5
57. Se dan las transiciones entre actividades. Especificar: _____	1	2	3	4	5
58. Hay imposibilidad de abandonar (por ej. silla, aula, hospital, etc.). Especificar: _____	1	2	3	4	5
59. Realiza la ruta para ir a la escuela o al trabajo (por ej. muchas paradas, tráfico denso, duración del viaje, etc.). Especificar: _____	1	2	3	4	5
60. ¿Existe algún otro factor de la rutina diaria que sea evento situacional o estímulo discriminativo para esta persona? _____ _____	1	2	3	4	5

(Continuación)					
Es probable que la persona manifieste la conducta problemática _____ *(especificar conducta) cuando…*	Nunca		A veces		Siempre
61. Por favor, describa cualquier otro aspecto de la tarea o de la actividad en curso que pueda ser evento situacional o estímulo discriminativo: _____ _____	1	2	3	4	5
Entorno físico: Los siguientes ítems describen aspectos del entorno físico que pueden influir en la conducta. Entorno no confortable					
62. El lugar/ubicación es incómoda (por ej. casa, trabajo, aula, etc.). Especifica: _____	1	2	3	4	5
63. La temperatura ambiental es demasiado caliente o demasiado fría.	1	2	3	4	5
64. El asiento es incómodo.	1	2	3	4	5
65. La iluminación es muy fuerte o muy tenue. Especificar: _____	1	2	3	4	5
66. El ambiente es ruidoso.	1	2	3	4	5
67. ¿Existe algún otro tipo de entorno incomodo que sea evento situacional o estímulo discriminativo para esta persona? _____ _____	1	2	3	4	5
Cambios en el entorno					
68. Las condiciones meteorológicas son desagradables (por ej. lluvia, calor, nieve, etc.). Especificar: _____	1	2	3	4	5
69. Está en relación al momento del día (por ej. amanecer, después de comer, anochecer, etc.). Especificar: _____	1	2	3	4	5
70. Se han perdido/roto objetos personales.	1	2	3	4	5
71. El lugar es desconocido.	1	2	3	4	5
72. Se da un cambio de estación.	1	2	3	4	5
73. ¿Existen otros cambios en el entorno que sean eventos situacionales o estímulos discriminativos para esta persona? _____ _____	1	2	3	4	5

(Continuación)					
Es probable que la persona manifieste la conducta problemática _____ (especificar conducta) cuando…	Nunca		A veces		Siempre
74. Por favor, describa cualquier otro aspecto del entorno físico que pueda ser un evento situacional o un estímulo discriminativo para la persona con la que trabaja: _____ _____	1	2	3	4	5
Factores biológicos: *Los siguientes ítems hacen referencia al estado de salud y a la condición física del individuo que pueden influir en la conducta.* <u>Medicación</u>					
75. La medicación tiene efectos secundarios. Especificar: _____	1	2	3	4	5
76. Hay cambios en la medicación. Especificar: _____	1	2	3	4	5
77. ¿Existe alguna cosa más sobre la medicación que sea un evento situacional o un antecedente para esta persona? _____ _____	1	2	3	4	5
<u>Enfermedad</u>					
78. Padece una enfermedad/dolor agudo (por ej. otitis, estreñimiento, dolor de espalda, etc.). Especificar: _____	1	2	3	4	5
79. Padece una enfermedad de larga duración o crónica (por ej. diabetes, etc.). Especificar: _____	1	2	3	4	5
80. Tiene periodos de alucinaciones frecuentes.	1	2	3	4	5
81. ¿Existe alguna otra enfermedad que sea un evento situacional o un antecedente para esta persona? _____ _____	1	2	3	4	5
<u>Estados fisiológicos</u>					
82. Se siente cansado. Especificar: _____	1	2	3	4	5
83. Tiene hambre o sed. Especificar: _____	1	2	3	4	5
84. Está a dieta. Especificar: _____	1	2	3	4	5

(Continuación)					
Es probable que la persona manifieste la conducta problemática _____ (especificar conducta) cuando…	Nunca		A veces		Siempre
85. Se le da más o menos comida de la que desea. Especificar: _____	1	2	3	4	5
86. Bebe café, té, o una bebida con cafeína. Especificar: _____	1	2	3	4	5
87. Tiene molestias menstruales.	1	2	3	4	5
88. Sufre fatiga o molestias por el ejercicio reciente.	1	2	3	4	5
89. Padece frustración sexual.	1	2	3	4	5
90. Pasa períodos largos entre cigarrillos o sin cafeína.	1	2	3	4	5
91. ¿Existen otros estados fisiológicos que sean eventos situacionales o estímulos discriminativos para esta persona? _____ _____	1	2	3	4	5
92. Por favor, describa cualquier otro factor biológico que pueda ser un evento situacional o estímulo discriminativo para la persona con la que trabaja: _____ _____	1	2	3	4	5

4.3. Antecedent events as predictive variables of behavioral function

Data were obtained from 328 problem behaviors displayed by 300 participants. The exploration of the relationship between antecedent variables and behavioral function was performed using data from the Spanish version of the QABF and the CAI.

These indirect FBAs have their own categories. The QABF is divided into five behavioral functions (attention, escape, non-social, physical and tangible) and the CAI is organized into four categories (plus subcategories): social/cultural (negative interactions and disappointments), nature of task or activity (factors related to tasks or chores and daily routines), physical environment (uncomfortable environment and changes in the environment) and biological (medication, illness and physiological states).

Table 1. Correlation between QABF and CAI

	Social/cultural	Nature of task or activity	Physical environment	Biological
Attention	.391**	.163**		.115*
Escape	.366**	.364**	.202**	.234**
Non-social	-.208**			
Physical			.230**	.423**
Access to tangible	.342**	.148**	.182**	.264**

* *P*<.05, ** *P*<.01

Using data from the validated Spanish version of both instruments, a significant correlation was found between some behavioral functions and antecedent categories. As Table 1 shows, a significant correlation was found for all behavioral functions with at least one antecedent category. Higher correlations were found between physically maintained behavior and *biological antecedents* (r=.423) and attention behaviors and *social/cultural variables* (r=.391). High correlations were also found between escape maintained behavior and *social/cultural variables* and *nature of task or activity variables* (r=.366; .364; respectively), and between tangible maintained behavior and *social/cultural variables* (r=.342). Finally, non-social behavior was negatively correlated with *social/cultural variables* (r=.-.208) (All *P*s<.01).

Table 2. Multiple regression predictors of behavioral function

Predictors	Beta	Adj R2	R2
(a) Attention			
Social / Cultural	.599***		
Nature of task or activity	-.214**		
Biological	-.103		
		.180	.188
(b) Escape			
Social / Cultural	.214**		
Nature of task or activity	.241**		
Physical environment	-.094		
Biological	.057		
		.150	.160
(c) Non-social			
Social / Cultural	-.208***		
		.040	.043
(d) Physical			
Physical environment	-.031		
Biological	.441***		
		.174	.179
(e) Access to tangible			
Social / Cultural	.425***		
Nature of task or activity	-.231**		
Physical environment	.008		
Biological	.143*		
		.140	.151

* $P<.05$, ** $P<.01$, *** $P<.001$

Once the significant correlations were identified, a multiple regression analysis was subsequently conducted to explore whether the CAI categories could predict behavioral function. Thus, the CAI categories were the independent variables and the behavioral functions were the dependent variables. The analysis showed that various predictors accounted for a significant proportion of the variance in the CAI categories of attention ($r=.433$, F[3,324]= 24,937, $P<.001$), escape ($r=.400$, F[4,323]=15,397, $P<.001$), non-social ($r=.208$, F[1,326]= 14,735, $P<.001$), physical ($r=.424$, F[2,325]= 35,531, $P<.001$) and access to tangible ($r=.388$, F[4,323]=14,330, $P<.001$) maintained behavior (Table 2). The s*ocial/cultural variables* were significant predictors for all behavioral functions except physical maintained behavior and were the best predictors of attention maintained behavior. The most significant predictors of physical maintained behavior were *biological variables*. Variables related to the *nature of task or activity* were also identified as significant predictors of attention, escape and access to tangible maintained behavior.

5. GENERAL DISCUSSION

The present study aimed (a) to adapt and validate the QABF (Matson & Vollmer, 1995) and the CAI (McAtee et al., 2004) to the Spanish population, and (b) to explore whether a functional relationship existed between behavioral functions and different types of antecedent variables.

As noted above, the Spanish versions of the QABF and the CAI are applicable to the Spanish population. Both questionnaires were administered to a total of 300 participants, and data from 328 behaviors was obtained.

The results from the QABF study (Simó-Pinatella, Alomar-Kurz, Font-Roura, Giné et al., 2013) showed a high internal consistency; the coefficient alpha for the QABF as a whole was .756 and was higher for the five subscales: .923, .863, .853, .942, and .883 (attention, escape, non-social, physical and tangible, respectively). An exploratory factor analysis was conducted to identify the five hypothesized functions. After eliminating those three QABF items that did not totally respond to its behavioral function, a Principal Axis Factoring with Varimax rotation yielded the five factors with eigen values of 5.216, 4.340, 3.067, 2.848, and 1.794. The test-retest reliability of the QABF was also assessed using data from 40 problem behaviors. The results from the reliability test indicate that that the QABF is stable over time.

The results from the CAI study (Simó-Pinatella, Alomar-Kurz, Font-Roura, & Giné, 2013) also indicate a high internal consistency. Specifically, the coefficient alpha for the CAI as a whole was .94 and was slightly lower for each of the four categories (social/cultural: .88; nature of task or activity: .88; physical environment: .79; biological: .74). Stability over time was also assessed for the CAI using data from 30 problem behaviors. The results indicate that the CAI has acceptable test-retest reliability.

Overall, in terms of psychometric properties, the results obtained from these studies generally agreed with the results from other studies that conducted using the QABF (i.e., Nicholson, Konstantinidi, & Fureniss, 2006; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2000; Sing et al., 2009) and the CAI (i.e., Embregts, Didden, Huitink, & Schreuder, 2009; McAtee et al., 2004). Therefore, it can be concluded that both instruments have good psychometric properties and can be used on the Spanish population to assess the function of problem behavior (Matson, Tureck, & Rieske, 2012; Matson & Vollmer, 1995) and to identify those events (S^D and MO) that are related to problem behavior (Carr et al., 2008; McAtee et al., 2004). Both questionnaires are

identified as valid and comprehensive instruments to be used by professionals during the FBA process.

As has been previously mentioned, the QABF allows professionals to determine behavioral functions, and the CAI identifies the antecedent variables that influence the occurrence of problem behavior. The use of both indirect FBAs is an important method for professionals to obtain the information needed to develop comprehensive intervention plans (Embregts et al., 2009). Nevertheless, one question that may arise in research is whether both instruments are related to each other (Simó-Pinatella, Alomar-Kurz, Font-Roura, Giné et al., 2013). That is, are different types of antecedent variables more related to specific behavioral functions? If so, could specific types of antecedents be considered predictive variables for specific behavioral function? Increasing the knowledge about this topic may help professionals and researchers to work on more preventive perspectives.

Before attempting to answer these questions using the results of multiple regression analysis, it is useful to refer to the review studies that were presented in the theoretical framework section (Simó-Pinatella et al., 2011; Simó-Pinatella, Font-Roura et al., 2013).

Interesting relationships can be observed between the type of MO and behavioral function. After reviewing the articles that included MOs in the assessment and treatment of problem behavior by children with ID (Simó-Pinatella, Font-Roura et al., 2013), the authors identified four categories of MO: *social context variables, activity or nature of the task, characteristics of the environment* and *personal context*. The authors showed that specific MO categories were more studied according to the specific behavioral functions with which they were associated. That is, for problem behaviors that were attention maintained, the MOs that were specially assessed were those that related to the *social context* (i.e., Ringdahl, Winborn, Andelman, & Kitsukawa, 2002; Roantree & Kennedy, 2006), such as including attention from others (i.e., Chung & Canella-Malone, 2010), whereas for problem behaviors that were escape maintained, MOs 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. Similarly, when the behavioral function that maintained the behavior was access to tangible, MOs from the category *characteristics of the environment* were most frequently studied (i.e., O'Reilly et al., 2009), such as environmental enrichment (i.e., Rapp, 2005) or access to preferred items (i.e., Lomas, Fisher, & Kelly, 2010).

Finally, when automatic reinforcement was present, MOs from the categories of *social context* (i.e., Chung & Cannella-Malone, 2010), *characteristics of the environment* (i.e., Lanovaz, Fletcher, & Rapp, 2009) and *personal context* (i.e., Lang et al., 2009) were the most frequently studied.

The authors (Simó-Pinatella et al., 2011; Simó-Pinatella, Font-Roura et al., 2013) also suggested that the effects of MOs 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 objects, providing a pre-session condition in which the participant has access to the object should decrease the frequency of problem behavior (abolishing operation) after the pre-session condition, whereas no access to the object during the pre-session condition would increase the frequency of the problem behavior after the pre-session (establishing operation) (i.e., Carter & Wheeler, 2007; O'Reilly et al., 2007). However, it should be noted that a specific MO may act as an establishing operation for one person and an abolishing operation for another (i.e., Chung & Cannella-Malone, 2010).

The findings from these review studies suggest that some antecedent variables may be more related to specific behavioral functions. The behavioral functions (QABF) and antecedent variables (CAI) were correlated to provide evidence for this assumption.

The results of the initial correlation between QABF components and CAI categories indicated significant correlations between some behavioral functions and CAI environmental categories. For example, a high correlation was found between *social/cultural variables* and attention, escape and tangible maintained behaviors (.391; .366; .342; respectively, all *P*s>0.1). Similarly, *nature of task or activity variables* were highly correlated with escape maintained behavior (.364; p>.01) and *biological variables* was highly correlated with physical maintained behavior (.423; p>.01).

Once the correlations were identified, a multiple regression analysis was subsequently conducted to explore whether some of the antecedent variables could predict specific behavioral functions. The results from the regression showed that the *social/cultural* and *nature of task or activity variables* were the best predictors of the majority of behavioral functions (except for non-social and physical maintained behavior). *Social/cultural variables* were the best predictors of non-social maintained behavior and *biological variables* were the best predictors of physical maintained behavior.

Although some of the antecedent variables appeared to be more related to specific behavioral functions, the findings from this study agree with previous results (i.e.,

Embregts et al., 2009; Simó-Pinatella, Alomar-Kurz, Font-Roura & Giné, 2013) that *social/cultural variables* were the best overall predictors of problem behavior.

The results from these studies confirm that the SMIRC model has empirical support. That is, these results support the dynamism of problem behavior (Watson et al., 2011). Problem behavior should not be understood solely within a linear framework in which the behavior is preceded by an antecedent and then followed by a reinforcer, but should be considered within a larger scope. Contextual variables not only influence the occurrence of problem behavior but may also be correlated with each other (Steege & Watson, 2009). In other words, some antecedent variables can have an effect to reinforcers.

Nevertheless, in addition to the limitations mentioned in the four publications presented such as selection of the sample for the validation of the indirect FBA instruments, two main limitations should additionally be noted when interpreting the findings from this study. First, very little of the literature includes the SMIRC model (i.e., Kubick & Mcloughlin, 2010; Steege &Watson, 2009; Watson et al., 2011) in the understanding of problem behavior. Although an increasing amount of literature notes the role of MOs in the assessment and intervention of problem behavior (i.e., Cooper et al., 2007; Kennedy & Meyer, 1998; Smith, 2011; Steege & Watson, 2009), more empirical evidence is needed to generalize this model, especially in large samples. Second, differentiating MOs from S^Ds is very complex. That is, to clearly see when an antecedent condition may be acting as a MO or as a S^D (or vice versa). Although recent studies (i.e., Langthorne & McGill, 2009) have attempted to clarify the differences among these concepts from a practical point of view, differentiation is still difficult.

Despite these limitations, the overall results from these studies have clear implications for practitioners and researchers.

Five implications for practitioners can be identified. First, when treating with people with ID who display problem behavior, it is imperative to understand both the problem behavior according to its function rather than its form (Bambara & Knoster, 2009; Preciado & Sugai, 2007; Simó-Pinatella, Font-Roura et al., 2013; Steege & Watson, 2009) and that the occurrence of problem behaviors is related to environmental variables (Carr et al., 2008; McGill et al., 2005). The results from several studies stated that problem behaviors were significantly reduced when the treatments were based on the behavioral function (i.e., Brosnan & Healy, 2011; Campbell, 2003; Simó-Pinatella et al., 2011). Furthermore, interventions that consider the role of antecedents (MO and

S^D) have a clear effect on the assessment and treatment of problem behavior for people with ID (i.e., Lang et al., 2010; Simó-Pinatella et al., 2011). For example, variables from the categories of *social/cultural* and *nature of task or activity* play an important role in the occurrence of problem behavior (Simó-Pinatella, Alomar-Kurz, Font-Roura, & Giné, 2013). Second, it is necessary to conduct an FBA before performing an intervention (Steege & Watson, 2009). The FBA has emerged as a useful strategy for professionals because it provides information about the function of the behavior and those environmental variables that influence its occurrence (Kelley et al., 2011; Riffel, 2011; Steege & Watson, 2009). Knowledge from the FBA allows professionals to develop effective and preventive intervention plans (Cooper et al., 2007). Third, indirect FBAs such as the Spanish version of the instruments presented in this study may help professionals to understand the behavior assessed. Specifically, information about the function of the behavior and its antecedent variables (S^D and MO) can be identified. Professionals will be able to use this knowledge to establish hypotheses that will guide the development of the intervention plan (Smith, 2011). Nevertheless, it is recommended to use indirect FBA in conjunction with other assessment methods (Bambra & Knoster, 2009; Kelley et al., 2011) such as direct observation (Alter, Conroy, Mancil, & Haydon, 2008) or functional analysis (Nicholson et al., 2006). Fourth, strategies that focus on the alteration or modification of the antecedents (S^D or MO) should be promoted in everyday practice. These strategies have clear effects (either establishing or abolishing) on the occurrence of problem behavior (Simó-Pinatella, Font-Roura et al., 2013). These strategies represent a more educational way to treat problem behavior because they permit the use of more positive, educative and preventive procedures (Dunlap & Fox, 2007). The use of a specific pre-session context as a strategy that modifies the environment is one example of designing preventive procedures that geared towards avoiding the manifestations of problem behavior, especially more complex and difficult behaviors. Moreover, these strategies require less effort and are less time consuming by the professionals. Finally, the identification of a relationship between specific types of antecedent variables and specific behavioral functions could be very useful for professionals. This knowledge could help the professionals to design more preventive systems.

These implications indicate that institutions should use more preventive, proactive and educative perspectives when treating the problem behaviors presented by people with ID (Sailor, Dunlap, Sugai, & Horner, 2009).

Results from the present study also suggest implications for research. First, more consistent use of existing definitions and types of MOs are needed. Improved consistency may reduce misunderstandings among researchers and practitioners regarding how the problem behavior was assessed and how to understand the intervention results. Furthermore, more research is needed to empirically demonstrate the *value-altering* and *behavior altering effects* of MOs. Second, more research is needed on how to treat problem behaviors in ordinary settings. Most of the interventions that explore the effects of MOs are conducted in special settings, such as residential facilities (i.e., Rapp, 2004) or special schools (i.e., McComas, Hoch, Paone, & El-Roy, 2000). Very few studies have been conducted in ordinary settings. Third, the structural organization of antecedent interventions such as pre-session conditions should be explored. The two latter implications indicate that it is important to question how these interventions are adapted to more ordinary or inclusive settings. Fourth, more research is required to improve the validity of indirect FBA instruments. It is important to not only improve the Spanish version of the QABF and CAI, but to also develop or adapt assessment tools that allow professionals to identify the variables that cause or maintain problem behavior. These instruments should consider multiple contextual variables (Carr et al., 2008) or assessment strategies that specifically identify the antecedents that most closely relate to behavioral function. Thus, it is necessary to obtain assessment tools that are compatible with the demands of the environments in which people with ID reside (for example, ordinary or mainstream schools) and that accurately identify antecedents (S^D and MO) and reinforcers to develop intervention plans that completely serve the people's needs.

6. CONCLUSIONS

This dissertation presents the results of the validation of the QABF and the CAI on the Spanish population and evaluates the existing relationship between behavioral function and contextual variables. The most important ideas from this study can be summarized as follows:

1. The SMIRC model has empirical support. The results from the present study indicate that antecedent variables are related to not only the behavior but its reinforcers.
2. Some contextual variables appear to relate to specific behavioral functions. *Social/cultural variables* have been identified as having the greatest influence on problem behavior.
3. The FBA is an important and necessary process for assessing and treating problem behavior displayed by people with ID.
4. The Spanish versions of both indirect FBAs, the QABF and the CAI, possess good psychometric characteristics and results were consistent with previous studies.
5. Treatment of problem behavior must not involve reactive strategies. Instead, more efforts are needed to develop preventive systems.

7. SUMMARY (ENGLISH VERSION)

FIRST PUBLICATION

Simó-Pinatella, D., Font-Roura, J., Planella-Morató, J., McGill, P., Alomar-Kurz, E., & Giné, C. (2013). Types of motivating operations in interventions with problem behavior: A systematic review. *Behavior Modification, 37,* 1-36.

AIM: To explore the concept of MOs by conducting a systematic review of those studies that have carried out a functional assessment of problem behavior and a subsequent MO-based intervention using school age children. A possible relationship between the different types of MOs and behavioral function was also examined.

METHOD: The literature review was conducted using the following electronic databases: PsycINFO, Education Resources Information Center, Science Direct, Blackwell, SAGE and Medline. The review was limited to publications within the last 10 years (January 2000 to December 2010). Based on the inclusion and exclusion criteria, a total of 31 articles were included in this study.

RESULTS: Overall, modifications or alterations to the MOs influenced the occurrence of behaviors (either an increase or decrease in frequency). The MOs could be classified as follows: social context, activity or nature of the task, characteristics of the environment or personal context variables. According to this classification, the variables related to social context, the characteristics of the environment and the personal context were used in the literature the most frequently.
The specific types of MOs that were studied depended on their associated behavioral function.

CONCLUSIONS: It is important to emphasize (a) the relationship between the type of MO and behavioral function and (b) the need to establish more differences between MOs and S^D. These conclusions may allow professionals to develop more preventive and effective interventions.

SECOND PUBLICATION

Simó-Pinatella, D., Alomar-Kurz, E., Font-Roura, J., Giné, C., Planella-Morató, J., & McGill, P. (2011). Las presesiones como estratégia para tratar las conductas problemáticas de los alumnos con discapacidad intelectual: una revisión. [Pre-session as a strategy to treat problem behavior displayed by people with ID: A review] *Análisis y Modificación de Conducta, 37,* 145-162.

AIM: Using the results from a previous paper (Simó-Pinatella, Font-Roura et al., 2013), this study identified and explored those empirical studies that have used the strategy of pre-session to address problem behaviors presented by school-age children with ID.

METHOD: The literature review was conducted using the following electronic databases: PsycINFO, Education Resources Information Center, Science Direct, Blackwell, SAGE and Medline. The review was limited to publications within the last 10 years (January 2000 to December 2010). Based on the inclusion and exclusion criteria, a total of 12 articles were included in this study.

RESULTS: Most of the pre-session conditions included offering the participants the possibility of gaining access (or not) to an event that acted as an MO for a problem behavior. In most of the articles, the MO had an establishing or abolishing effect on problem behavior. The results indicated that the behaviors assessed improved when a clear relationship between the pre-session condition and the behavioral function was found.

CONCLUSIONS: This study's conclusions emphasized the need to treat problem behavior using strategies that focus on the modification of antecedents; that is, using preventive strategies. It is necessary to develop the pre-sessions' structural and functional characteristics and to develop more preventive practices in more ordinary or inclusive settings.

THIRD PUBLICATION

Simó-Pinatella, D., Alomar-Kurz, E., Font-Roura, J., Giné, C., Matson, J. L., & Cifré, I. (2013). Questions About Behavioral Function (QABF): Adaptation and validation of the Spanish version. *Research in Developmental Disabilities*, 34, 1248-1255. (doi:10.1016/j.ridd.2013.01.015)

AIM: To adapt and validate the *"Questions About Behavioral Function (QABF)"* to the Spanish population.

METHOD: The following steps were conducted to adapt the QABF to the Spanish population: (a) translation of the QABF from English to Spanish, (b) an expert assessment, (c) a pilot test, and (d) a field test. Data were collected from 300 participants, some of whom presented more than one behavior. A total of 328 behaviors were assessed. Forty behaviors were assessed over a period ranging from one to three weeks to explore behavioral reliability over time.

RESULTS: The results indicate that the Spanish version of the QABF displayed high internal consistency as a whole (.756) and a higher internal consistency in its subscales (behavioral functions): .923, .863, .853, .942, and .883 (attention, escape, sensory, physical, and tangible, respectively). The results from the exploratory factor analysis confirmed the five hypothesized behavioral functions. Moreover, the results from a test-retest analysis indicated high stability over time.

CONCLUSIONS: The Spanish version of QABF appeared valid for professionals. The information obtained from this questionnaire may help professionals to identify the functions of the problem behaviors assessed in people with ID. Nevertheless, more analyses are needed to improve the functional assessment process (such as studying the convergent validity of the QABF). The QABF should be used in conjunction with other instruments, such as indirect or direct functional assessment strategies.

FOURTH PUBLICATION

Simó-Pinatella, D., Alomar-Kurz, E., Font-Roura, J., and Giné, C. (2013). Análisis de los eventos contextuales que influencian las conductas problemáticas: El inventario de evaluación del contexto. [Analysis of the contextual events that influence problem behavior: The Contextual Assessment Inventory]. Manuscript submitted for publication.

AIM: To adapt and validate the *"Context Assessment Inventory (CAI)"* to the Spanish population. To identify the environmental events most closely related to the occurrence of problem behavior.

METHOD: The following steps were conducted to adapt the CAI to the Spanish population: (a) translation of the CAI from English to Spanish, (b) an expert assessment, (c) a pilot test, and (d) a field test. Data were collected from 300 participants, some of whom presented more than one behavior. A total of 328 behaviors were assessed. Thirty behaviors were assessed over a period of time ranging from one to three weeks to explore behavioral reliability over time. The antecedents that were most closely related to the occurrence of behavioral problems were identified by participants' score on the questionnaires.

RESULTS: The results indicated that the Spanish version of the CAI has a high internal consistency both as a whole (.94) and within its categories: .88, .88, 79, and .74 (social/cultural, nature of task or activity, physical variables and biological variables, respectively). Moreover, results of a test-retest analysis indicate an acceptable stability over time. Finally, social/cultural and nature of task or activity variables were most closely related to the occurrence of problem behavior.

CONCLUSIONS: Although more studies are needed to explore the psychometric properties of the CAI, the Spanish version appears valid and reliable for professionals. This instrument permits professionals to identify the antecedent variables that influence the occurrence of problem behavior. However, to the CAI should be used in conjunction with other functional assessment strategies to obtain the relevant and necessary information for developing intervention plans.

8. SUMMARY (CATALAN VERSION)

PRIMERA PUBLICACIÓ

Simó-Pinatella, D., Font-Roura, J., Planella-Morató, J., McGill, P., Alomar-Kurz, E., & Giné, C., (2013). Types of motivating operations in interventions with problem behavior: A systematic review. *Behavior Modification, 37,* 1-36.

OBJECTIU: Explorar el concepte d'operacions motivadores (OM) duent a terme una revisió sistemàtica d'aquells estudis que han realitzat una avaluació funcional de la conducta problemàtica i una intervenció posterior centrant-se en les OM amb infants amb discapacitat intel·lectual en edat escolar. Tanmateix, s'examina la possible relació existent entre les diferents tipologies OM i les funcions de la conducta.

MÈTODE: La revisió de la literatura es va dur a terme utilitzant les següents bases de dades electròniques: PsychInfo, Education Resources Information Center, Science Direct, Blackwell, SAGE i Medline. La revisió es va centrar en els darrers 10 anys (del gener del 2000 al desembre de 2010). Després de considerar els criteris d'inclusió i exclusió, es van incloure un total de 31 articles.

RESULTATS: En general, s'observa que les modificacions o alteracions en les OM que influencien l'ocurrència de la conducta tenen un impacte en la pròpia conducta (ja sigui augmentant o reduint la seva freqüència). Les OM es poden classificar segons si són variables del context social, de l'activitat o naturalesa de la tasca, característiques de l'entorn o context personal. D'acord amb aquesta classificació, les variables referents al context social, a les característiques de l'entorn i al context personal són les més utilitzades en els articles inclosos. A més, determinades tipologies d'OM són més estudiades tenint present la funció de la conducta.

CONCLUSIONS: És important no només subratllar la relació entre les diferents tipologies d'OM i la funció de la conducta, sinó també la necessitat d'establir majors diferències entre les OM i els estímuls discriminatius. Aquestes indicacions poden permetre als professionals elaborar plans d'intervenció més ecològics i efectius.

SEGONA PUBLICACIÓ

Simó-Pinatella, D., Alomar-Kurz, E., Font-Roura, J., Giné, C., Planella-Morató, J. y McGill, P. (2011). Las presesiones como estratégia para tratar las conductas problemáticas de los alumnos con discapacidad intelectual: una revisión. *Análisis y Modificación de Conducta, 37,* 145-162.

OBJECTIU: A partir d'un treball previ (Simó-Pinatella, Font-Roura et al., 2013), el present estudi pretén identificar i explorar aquells estudis empírics que han utilitzat l'estratègia de la pre-sessió per tractar les conductes problemàtiques que manifesten infants amb discapacitat intel·lectual en edat escolar.

MÈTODE: La revisió de la literatura es va dur a terme utilitzant les següents bases de dades electròniques: PsychInfo, Education Resources Information Center, Science Direct, Blackwell, SAGE i Medline. La revisió es va centrar en els darrers 10 anys (del gener del 2000 al desembre de 2010). Després de considerar els criteris d'inclusió i exclusió, es van incloure un total de 12 articles.

RESULTATS: La majoria de pre-sessions ofereixen la possibilitat de tenir o no accés a un determinat esdeveniment que actua com a OM per la conducta problemàtica avaluada. En la majoria dels articles, l'OM actua com a efecte establidor o abolidor per la conducta problemàtica. Els resultats indiquen que les conductes avaluades milloren quan hi ha una relació clara entre la pre-sessió i la funció de la conducta problemàtica.

CONCLUSIONS: Les conclusions que es desprenen d'aquest article emfatitzen la necessitat de treballar les conductes problemàtiques utilitzant estratègies centrades en la modificació dels antecedents, és a dir, utilitzant estratègies preventives. També es destaca la importància de treballar les característiques estructurals i funcionals de les pre-sessions, així com de disposar de pràctiques centrades en la modificació d'antecedents a entorns més ordinaris i inclusius.

TERCERA PUBLICACIÓ

Simó-Pinatella, D., Alomar-Kurz, E., Font-Roura, J., Giné, C., Matson, J. L., i Cifré, I. (2013). Questions About Behavioral Function (QABF): Adaptation and validation of the Spanish version. *Research in Developmental Disabilities*, 34, 1248-1255. (doi:10.1016/j.ridd.2013.01.015)

OBJECTIU: Adaptar i validar el "Questions About Behavioral Function (QABF)" a la població espanyola.

MÈTODE: Per poder fer l'adaptació del QABF a la població espanyola es van dur a terme els següents passos: (a) traducció del QABF al castellà, (b) judici d'experts, (c) prova pilot i (d) treball de camp. Al final, es van obtenir dades de 300 participants. Considerant que per alguns participants es va avaluar més d'una conducta, en total es van analitzar 328 conductes problemàtiques. A més, un total de 40 conductes van ser avaluades entre un període d' una i tres setmanes per tal d'explorar la fiabilitat al llarg del temps.

RESULTATS: Els resultats indiquen que la versió espanyola del QABF té una alta consistència interna en la seva totalitat (.756) i, especialment, en les seves subescales (funcions de la conducta): .923; .863; .853; .942; .883 (atenció, evitació, sensorial, malestar físic, i tangible, respectivament). Els resultats obtinguts de l'anàlisi factorial exploratori confirmen les cinc funcions de la conducta prèviament plantejades. Alhora, els resultats psicomètrics de la prova test-retest indiquen una alta fiabilitat al llarg del temps.

CONCLUSIONS: La versió espanyola del QABF sembla ser vàlida per la seva aplicació per als professionals. La informació obtinguda a partir d'aquest instrument permet identificar la funció de la conducta problemàtica avaluada en persones amb discapacitat intel·lectual. No obstant, i amb l'objectiu de millorar l'avaluació funcional de la conducta, són necessaris més anàlisis del QABF (com per exemple, estudiar la seva validesa convergent). Es recomana utilitzar el QABF en el moment de l'avaluació funcional de la conducta juntament amb altres instruments, ja siguin d'avaluació indirecte com directe.

QUARTA PUBLICACIÓ

Simó-Pinatella, D., Alomar-Kurz, E., Font-Roura, J., and Giné, C. (2013). Análisis de los eventos contextuales que influencian las conductas problemáticas: El inventario de evaluación del contexto. Artículo en revisión.

OBJECTIU: Adaptar i validar el "Context Assessment Inventory (CAI)" a la població espanyola. També, es pretén identificar aquells elements de l'entorn que propicien més l'ocurrència de les conductes problemàtiques.

MÈTODE: Per poder fer l'adaptació del CAI a la població espanyola es van dur a terme els següents passos: (a) traducció del CAI al castellà, (b) judici d'experts, (c) prova pilot i (d) treball de camp. Al final, es van obtenir dades de 300 participants. Considerant que per alguns participants es van avaluar més d'una conducta, en total es van analitzar 328 conductes problemàtiques. A més, un total de 30 conductes van ser avaluades entre un període d'una i tres setmanes per tal d'explorar la fiabilitat al llarg del temps. La identificació dels antecedents que més influeixen l'ocurrència de la conducta problemàtica es va fer calculant el percentatge d'aquells ítems que havien rebut una major puntuació.

RESULTATS: Els resultats indiquen que la versió espanyola del CAI té una alta consistència interna en la seva totalitat (.94) i en les seves categories: .88; .88; 79; i .74 (social/cultural, naturalesa de la tasca, variables físiques i variables biològiques, respectivament). Alhora, els resultats psicomètrics de la prova test-retest indiquen una acceptable fiabilitat al llarg del temps. Finalment, les variables social/cultural i naturalesa de la tasca o de l'activitat són les que reben puntuacions més altes en relació a l'ocurrència de la conducta problemàtica.

CONCLUSIONS: Tot i que es necessiten més estudis per explorar les propietats psicomètriques del CAI, la seva versió espanyola sembla ser vàlida per la seva aplicació. La informació que se n'obté permet identificar aquelles variables d'antecedents que poden influenciar l'ocurrència de la conducta problemàtica. No obstant, es recomana utilitzar aquest instrument juntament amb altres estratègies

d’avaluació funcional de la conducta per tal d’obtenir la informació necessària per elaborar plans d’intervenció.

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al Centre FACULTAT DE PSICOLOGIA, CIÈNCIES DE L'EDUCACIÓ I L'ESPORT. BLANQUERNA de la Universitat Ramon Llull

davant el Tribunal format pels Doctors sotasignants, havent obtingut la qualificació:

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