A Systematic Review of Behavioral Interventions for Elementary School Children with Social, Emotional and Behavioral Difficulties: Contributions from Single-Case Research Studies

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Abstract: Challenges arising from the classroom behavioral management of students with social, emotional and behavioral difficulties are a concern for educational professionals. The purpose of this study is to review common elements of behavior interventions for the disruptive behaviors of children with social, emotional and behavioral difficulties. A systematic review was conducted through an electronic search of studies (from 2000 to 2017) on ERIC, Web of Science, FRANCIS, and MEDLINE databases. The inclusion criteria involved: (i) an intervention improving behaviors at school of children with disruptive behaviors; (ii) elementary school children with the majority of the sample or average age between 6-11 years old; (iii) at least one measurable outcome focusing on social/emotional/behavioral outcomes; (iv) single-case designs. Of the 5339 articles that were identified in the initial screening, 27 met the criteria to be included in the review. Common characteristics of successful interventions are discussed to make recommendations for future implementation.

Keywords: *Disruptive behaviors, social, emotional and behavioral difficulties, intervention, systematic review.*

Introduction

Social, emotional, and behavioural difficulties (SEBDs) have a prevalence of 2%-16% in the scholastic population, and the international literature reveals that there is a growing concern about the impact of these difficulties in classrooms (Cefai et al., 2008; Cooper & Cefai, 2013; Organisation for Economic Co-operation and Development [OECD], 2019). SEBDs are chronic, and include disturbing and/or disruptive behaviour such as persistent rule breaking, bullying of others or being a victim of bullying, social isolation, and refusal to engage in or failure to complete learning tasks (Cooper & Cefai, 2013), and generally interfere with the social functioning of the individual and with that of his/her significant others, reducing academic engagement, and negatively affecting classroom climate. These behaviours range from infrequent but extreme problems to less severe ones, but occur at high frequencies (Clunies-Ross et al., 2008).

Behaviour problems within a classroom increase the stress levels of both teachers and students, disrupt the flow of lessons, impede learning objectives and the processes of learning, and negatively affect school climate (Parsonson, 2012). Students with SEBDs also tend to internalise problems such as anxiety and/or withdrawal, which in turn places

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them at risk of academic failure and dropout (Arici-Ozcan et al., 2019; Gunter et al., 2002; Riney & Bullock, 2012). Challenges in the classroom behavioural management of students with SEBD are usually a great concern for educational professionals; these challenges impact both the student and the classroom as a whole (Chafouleas et al., 2010; Clunies-Ross et al., 2008).

In defining *intervention strategies*, it is important to consider both the individual student's behavioural expressions and their consequences on overall classroom dynamics, including the effects on teachers, which must be addressed to effectively meet the challenge of educating students with SEBDs (Gunter et al., 2002). Educators are confronted daily with the choice of appropriate strategies to ensure the best learning experience. They can choose from a great number of interventions, and this choice has important implications. The risk of compromising teaching and learning effectiveness motivates teachers and other professionals to seek effective behaviour management strategies (Sugai & Horner, 2002). Several studies have reported the need to equip teachers with proper training in practical and proven classroom management strategies that are supported by evidence (Clunies-Ross et al., 2008; Sadik, 2017; Trussell et al., 2016). Interventions on disruptive behaviours range from the use of preventive classroom management strategies to the implementation of individualised interventions for specific problem behaviours. The entire range has been recognised as important in educational psychology (Emmer & Stough, 2001). Teachers need to acquire new instructional and behaviour management skills and incorporate these skills into their teaching repertoire to support informed decisions and implement the best strategies to reduce disruptive and challenging behaviours in the classroom (Di Gennaro et al., 2007; Simonsen et al., 2008). The positive impact of providing teachers with training on students' behaviour and the general classroom climate (including the wellbeing of teachers) is widely acknowledged (Hieneman et al., 2005; Panacek & Dunlap, 2003).

The common approaches used to tackle behaviours of concern at school are focused primarily on behavioural and academic interventions (Mooney et al., 2003; Stage & Quiroz, 1997). According to DuPaul and Weyandt (2006), behavioural interventions for students with challenging/disruptive/problematic behaviours include antecedent-based strategies, consequence-based strategies, and self-management approaches. The optimal behavioural protocol includes components of all three approaches, aiming to anticipate and limit the effects of disruptive behaviours (proactive intervention) and encourage and support appropriate/alternative behaviours among students (reactive intervention). Briefly, antecedent strategies involve behaviour management procedures that reduce the likelihood of problematic behaviours occurring, whereas contingency management strategies encourage and support appropriate behaviours and/or manage disruptive behaviours when they occur.

Environmental changes such as increasing structure and predictability, reducing distractions, creating routines, establishing goals, and offering rewards represent interventions that may help to prevent inappropriate behaviours that generally have an escalation when treated only with reprimands and referrals (Scott et al., 2007). Moreover, because of their aggressive style and propensity towards opposing the rules, children with SEBDs often establish negative relationships and thus may seem outwardly sociable and outgoing. The literature demonstrates that social skills training programmes (Charlesbois et al., 2003; Maddern et al., 2004) for students with SEBDs, who often experience difficulties with teachers and peers, may help increase low self-esteem that arises from repeated frustrations, failures, and unsatisfactory interpersonal relationships. In the classroom, the teacher can encourage the integration of the child with SEBDs while tutoring small groups or in cooperative learning where the child has an active social part; this can begin the process of removing the negative label that has been given to the child.

The amount of research on interventions for disruptive behaviour in the classroom for students with SEBDs, succinctly sampled above, requires systematisation to allow individual decision-makers to unbiasedly assess primary research and to consequently make the most appropriate educational decisions, a common goal for systematic reviews (Lasserson et al., 2019). Evans et al. (2004) conducted a systematic review of research from the period 1975-1999, in order to evaluate the effectiveness of different strategies to support children with emotional and behavioural difficulties in mainstream classrooms within primary schools. The 27 studies that they identified included randomised controlled trials and reversal design experiments. Later, Cooper and Jacobs (2011) conducted an extensive review of international literature on educational models for children with SEBDs that demonstrated evidence-based outcomes for children. These authors analysed multiple dimensions (e.g. interventions in the classroom, whole-school approaches, working with parents, and multi-agency intervention), and collected studies using different methods (e.g. randomised clinical trials, prospective 'naturalistic studies' without control/comparison groups, retrospective studies, and case studies), although focusing, where possible, on randomised clinical trials.

Single-subject research, a rigorous scientific methodology, has been carried out to establish evidence-based practices (Horner et al., 2005), and has been the focus of systematic reviews in such areas as social communication skills for children with autism (Hansen et al., 2014) and training programmes for parents of children with autism spectrum disorders (Patterson et al., 2011).

Methodology

Research Goal

Interventions for disruptive behaviour in the classroom can be grouped into two levels: (1) interventions implemented at the individual level, in which the unit of analysis is set at the student targeted for intervention, and (2) *classroom-based interventions*, in which the unit of analysis corresponds to the classroom as a whole. This study aimed to determine the common elements of individual-level behaviour interventions for disruptive behaviours of children with social, emotional, and behavioural difficulties through a systematic review of *single-case research studies*.

Search Strategy

The search for this study was performed from October 2017 through November 2017, in multiple databases that index literature from the fields of health, psychology, and education: ERIC, Web of Science, FRANCIS, and MEDLINE. A wide range of terms for SEBDs were combined with terms for 'classroom strategies' and 'intervention studies' (Table 1).

Table 1. Study search terminology.

Social, emotional and behavioral difficulties (SEBD)
Social problems
Emotional problems
Behavior problems
Disruptive behaviors
Behavior management
Classroom strategies
Classroom methods
Classroom interventions
Classroom management
Teaching strategies
Teaching methods
Intervention

Selection Criteria

Table 2 displays the inclusion and exclusion criteria for the studies. The population of interest in this review was school-aged children who receive their primary and elementary education in general classrooms and display SEBDs. Due to the cultural differences in educational systems between countries, the age range was limited, and the majority of the sample or average age was between 6 and 11 years. Students with SEBDs or learning disabilities were included, but students with cognitive or severe disabilities such as intellectual disability or autism and mental health problems were not considered.

Articles published as full texts in peer review journals between 2000 and 2017 and in the English language were included. A previous systematic review published by Evans et al. (2004) had already researched the literature published in 1999 or earlier. Systematic or literature reviews, case studies, abstracts, conference papers, theses, books, and other grey literature were excluded, in accordance with the study design criteria, which only included intervention-based studies with single-subject designs.

Regarding the intervention, the only criterion established was the description of the intervention. Since the goal of this systematic review was to understand and synthesise the common characteristics of effective disruptive behaviour interventions for children with SEBD, no more criteria were set.

To ensure that all the important information was addressed, included studies assessed at least one dependent variable measured as a directly observable behaviour related to problematic classroom performance.

Table 2. Study selection criteria.

Inclusion criteria	Exclusion criteria
Sample	
Students demonstrating behavioral problems, including those with high incidence disabilities such as learning and behavioral issues.	Studies including students with cognitive or severe disabilities such as intellectual disability or autism.
Elementary school children and youth with the majority of the sample or average age between 6-11 years old	Studies involving children who are taught in self-contained classrooms
Settings	
School or classroom setting in which typical classroom instruction is conducted.	Studies focusing on non-classroom settings such as the cafeteria or recess
Outcome	
Authors explicitly described a dependent variable as a directly observable behavior related to problematic classroom performance such as poor social interactions, low academic engagement, or disruptive behaviors.	Studies not reporting outcomes for children
Design	
Single case experimental designs	Systematic or literature reviews Case study
Publication Type	
Articles published as full texts in peer review journals	Abstracts, conference papers, theses, books, and other grey literature
Published in the English language between 2000-2017	

Data Abstraction and Classification Process

After the identification of potentially eligible papers through the database search, three researchers conducted a review of the papers based on titles and abstracts, after a random distribution of papers per each one. For the eligibility assessment, the papers were independently analysed and the study characteristics were extracted with a data extraction tool for data on authors, sample characteristics and selection criteria, design, description of the intervention, behaviours targeted, types of strategies, measurement tools, results, and limitations of the studies. Before this procedure, researchers performed an independent analysis of five studies. The coding scheme was discussed by researchers. Disagreements between reviewers were resolved by consensus. In more difficult cases, a review by an independent researcher was required to ensure that consensus was obtained.

Figure 1 displays the references yielded during the database search and the subsequent stages of the review.
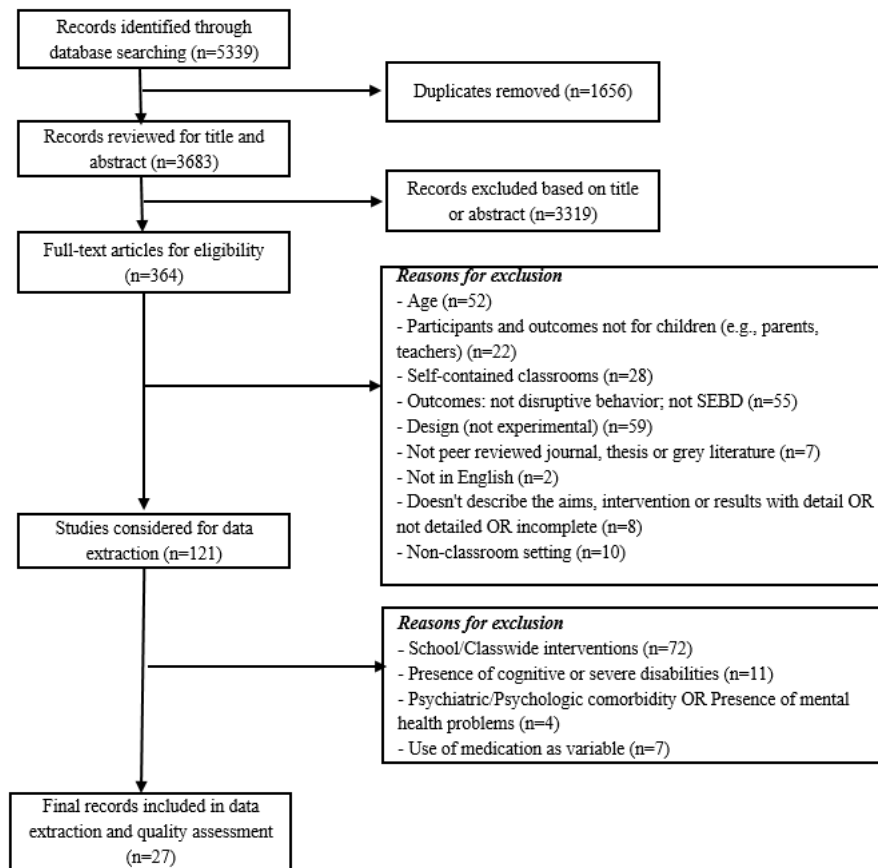
Figure 1. Overview of search procedures with reasons for exclusion of studies.

There were 5339 records identified in the initial search. A total of 1656 duplicates were removed. After a review of the titles and abstracts and applying the inclusion criteria, 364 records remained for full-text review. Full articles were then retrieved and evaluated for relevance. Most studies removed during the full-text analysis did not cover the age range defined for this study, did not analyse disruptive behaviours as a dependent variable or outcome measure of the study, did not focus on individual interventions, or did not include experimental design studies.

Findings / Results

A total of 27 studies reporting the effects of varying interventions to improve students' behaviour in the classroom were included in the review. Table 3 provides an overview of the study characteristics, including sample characteristics and selection criteria, design, description of the interventions, types of strategies, behaviours targeted, results, and limitations of the studies.

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Table 3. Overview of the study characteristics.

Reference	Participants description	Selection criteria	Study design	Intervention	Behaviors targeted	Types of strategies	Measurement tools	Results	Limitations
Allday et al., 2012	7 (6 males) 5-12 years old 3 with EBD; 4 at risk for EBD	Teacher nomination	Multiple Baseline across subjects and settings	Teachers' training on Behavior Specific Praise	Students' on-tasks behaviors Teachers' BSP correction statements)	Praise Correction statement	Direct classroom observations of students' and teachers' behaviors ICT: ABC Data Pro app on an iPod touch^R to register behaviors Social Validity Measure	Teachers: increase of behavior-specific praise and decrease of correction statements Students: improvement of on-task behaviors	Social facilitation bias Lack of maintenance data Lack of investigation on students' behavioral functioning prior to the intervention Type of activities completed during the observation period
Baba & Tanaka-Matsumi, 2011	1 (male) 1st grade Difficulties with whole-class teacher demands	Teacher nomination	Single case experimental study A-B-A-B	Antecedent-based FBA Individual support and verbal praise	Inattentive behaviors On-task behavior	Individual support (repeating & explaining class teacher demands) Verbal praise	Direct classroom observation of on-task behaviors ICT: audio recorder	On-task rates increased by 30% compared to the baseline 1 phase During follow-up, on-task rate remained 10% to 20% above the baseline phases	Small sample size
Bunch-Crump & Lo, 2017	4 (males) 9-11 years old Disruptive behaviors	Teacher nomination Social Skills Improvement System (SSIS, Gresham & Elliott, 2008)	Multiple baseline across participants B-A-B	Check-in/check-out (CICO, Crone et al., 2003) Function-based self-monitoring (FBSM)	Disruptive behaviors Academic engagement	Verbal praise; goal setting; feedback; prompts to improve behavior; rewards; self-monitoring	Direct classroom observation of disruptive behavior and academic engagement ICT: Mobile app: I-Connect self-monitoring Implementation fidelity	Reduction in disruptive behavior and increased academic engagement for three of four participants Slight positive, differential effect between CICO and additive FBSM strategy	Lack of maintenance data Uncontrolled situations may interfere with the results Reactivity to the experimenter's observation Limited data collection for the return to FBSM phase
Campbell & Anderson, 2008	2 (males) 10-years old Problem Behaviors	Teacher nomination	ABCBC reversal design BCBC reversal design	CICO (Crone et al., 2003)	Problem behavior	Verbal praise; goal setting; feedback; prompts to improve behavior; rewards	Direct classroom observation Functional Assessment Checklist for Teacher & Staff (March et al., 2000) Implementation fidelity	No significant effects during CICO Reduction in problem behavior following the function-based adaptation	Small sample size
Campbell & Anderson, 2011	4 (males) One 2nd grader and three 5th graders Two with ADHD	Teacher nomination Two to five office discipline referrals	Reversal design	CICO (Crone et al., 2003)	Problem behavior Academic engagement	Verbal praise; goal setting; feedback; prompts to improve behavior; rewards	Functional Assessment Checklist for Teachers and Staff (Anderson & Borgmeier, 2007) Direct classroom observation Implementation fidelity Social validity questionnaire	Decrease in problem behavior and gains in academic engagement CICO was effective for students with behavior maintained by adult attention/ ineffective for students with behavior maintained by escape of academic tasks Feasible and useful intervention for teachers	Lack of fidelity of implementation

Table 3. Continued

Reference	Participants description	Selection criteria	Study design	Intervention	Behaviors targeted	Types of strategies	Measurement tools	Results	Limitations
Carter & Horner, 2009	3 (males) 5- 7 years old Disruption, noncompliance, and off-task behavior	Teacher nomination Referrals for behavior support SSRS-T (Gresham & Elliott, 1990)	Nonconcurrent single-subject multiple-baseline	First Step to Success (Walker et al., 1997) First Step combined with specific adaptations based on the functional behavioral assessment	Problem behavior Academic engagement	Reward	Direct classroom observation Parents and teachers: Social Skills and Problem Behavior scales of the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) Implementation fidelity	Decrease in problem behavior Increase in academic engagement with the introduction of function-based supports to the First Step program	No attention to interaction effects No data during the intervention phase Low fidelity of implementation No control of the isolated effect of function-based interventions
Cook et al., 2014	3 (males) 4th to 5th graders students Disruptive behaviors	Teacher nomination Systematic Screening Behavior Disorders (Walker & Severson,1992) FBA	Single-case experimental design ABAB withdrawal	Class Pass Intervention (CPI) Students: training on using the class passes Teachers: training on how to use prompting procedures to initiate the participants to use a class pass	Disruptive behavior Academic engaged time	Negative and positive reinforcement - provide students with the ability to request breaks in a socially desirable manner by using a class pass	Functional Assessment Observation Form (O'Neill et al., 1997) Behavioral Observation of Students in School (BOSS; Shapiro, 2004) Implementation fidelity Social validity questionnaire (teachers and children)	Reduce in disruptive behavior Increase in academic engagement Effects of the CPI maintained at a two-week follow-up probe Consumers found it to be acceptable	Use of descriptive methods to conduct the FBA No control of the isolated effect of interventions
De Martini– Scully et al., 2000	2 (females) 8 years old Disruptive behaviors	Teacher nomination	Multiple baseline/reversal single subject design across individuals	Packaged intervention grounded on the "Precision request program"	Disruptive behaviors	Antecedent strategies (public posting of classroom rules); positive reinforcement (mastery motivators, token economy), reductive technique of response cost	Direct classroom observation Achenbach Child Behavior Checklist (Achenbach, 1991) – parents Implementation fidelity Social validity	Reduction of disruptive behavior Treatment: teachers' strong satisfaction; students' general acceptance	No control of the isolated effect of interventions Reactivity to the experimenter's observation
Gresham et al., 2006	4 (2 males) 1st and 2nd graders students (6-7 years old) At risk for EBD	Teacher nomination	A-B-A-B design	Social Skills Training (SST) for teaching replacement behaviors: remediating acquisition deficits in high-risk students	Disruptive behaviors; alone time; negative social interactions; social skills; academic competence	Skill instructions; Coaching; Modelling; Role play; Behavioral rehearsals; follow through practice; differential reinforcement	Social Skills Rating System-Teacher (Gresham & Elliott, 1990) Critical Events Index (Walker & Severson, 1990) Direct observation measures Implementation fidelity	Positive playground changes for three students Effective changes PND Higher 'doses' of SST achieved positive outcomes	Small sample size Reactivity to the experimenter Data collectors not blind to the experimental conditions Lack of functional behavior assessment
Hansen et al., 2014	1 (male) 4th grade - disruptive and off-task behavior	Teacher nomination	Single-case multi-element design – reversal design	Experimental conditions: (1) adult attention condition; (2) escape condition; (3) control condition	On-task behavior Disruptive behaviors	Goals setting; Ignoring disruptive behavior; breaks provision; reward; self-monitoring	Direct classroom observations Functional Assessment Checklist: Teachers and Staff (FACTS; March et al., 2000) Behavioral Functional Analysis Procedural Fidelity	Low and variable on-task behavior during baseline The attention intervention was the only one that consistently improved on-task behaviors and reduced disruptive behaviors	Brief FBA The isolated effect of self-monitoring was not tested Only one child involved

Table 3. Continued

Reference	Participants description	Selection criteria	Study design	Intervention	Behaviors targeted	Types of strategies	Measurement tools	Results	Limitations
Janney et al., 2013	3 (males) 1st-3rd grades At risk for EBD and often engaged in off-task behaviors	Teacher nomination Discipline referrals	ABC and reversal phase (A-B-A-B-C-B)	Function-based intervention Decision Model (Decision Model; Umbreit et al., 2007)	On-task behavior	Antecedent adjustments, reinforcement and extinction procedures	Student Assisted Functional Assessment Interview (Kern et al., 1994). Direct classroom observation Teacher: Functional Assessment and Motivation Interview (Janney, 2008) Social validity (teachers and students)	Full intervention improved levels of on-task behavior On removal of the extinction procedure, on-task behavior dropped to lower levels Reinstatement of the full intervention improved on-task levels Acceptability ratings were highest for full intervention	Small sample size and convenience sampling Need to use functional analysis in addition to the use of descriptive analysis to determine function of behavior Low fidelity of implementation No information about intervention elements promoting sustained use at high levels of integrity
Kilgus et al., 2016	2 (males) 9-10 years old - disruptive behavior	Teacher nomination	Alternating single- case experimental study	CICO CICO+TE (Task escape)	Academic engagement (AE) Disruptive behavior (DB)	Praise, reminds about behavioral expectations, token system, neutral feedback if expectation not followed; minimized attention for disruptive behavior	Functional Assessment Checklist for Teachers and Staff (FACTS; March et al., 2000). A-B-C recording methodology Direct classroom observation Social Validity	Moderate to high effect in promoting academic engagement/ decreasing disruptive behavior Acceptable and feasible intervention for teachers	Variability in AE and DB during baseline Rapid alternation of interventions No randomization of intervention order Short implementation of CICO+TE
Lambert et al., 2006	9 (4 males) 9-10 years old Disruptive behaviors	Teacher nomination	ABAB design	Single-student responding Write-on response cards	Disruptive behavior Hand Raise Academic response Correct response	Praise Wait time for appropriate behavior	Direct classroom observation Consumer satisfaction questionnaire	Reductions in disruptive behavior and increases in academic responding during the response card condition compared to single-student responding	Some observational intervals may have been miscoded due to the data collection procedure Small sample size
Lien-Thorne et al., 2005	3 (2 males) 7-9 years old At risk for emotional and behavioral disorders ADHD	Teacher nomination Discipline referrals	Multiple-baseline across participants	The first Step to Success Program (Walker et al., 1997) – 3 components of intervention: screening for behavior disorder; school intervention; homebased intervention	Academic engagement Student inappropriate behavior (mal)adaptive and aggressive behaviors	Instruction and role play of appropriate behavior; coaching and feedback; use of visual cues for behaviors; contingent rewards	Direct classroom observation Systematic Screening for behavior Disorders (SSBD, Walker & Severson, 1990) ICT: video recorder	Increased on-task performance and decreased inappropriate behaviors	Small number of participants Not all participants completed all phases
Ling et al., 2011	1 (male) 8 years old High rates of off-task behavior.	Teacher nomination	ABAB withdrawal design	Interdependent group contingency	Student engagement Peer engagement Student off-task behavior Peer off-task behavior	Rewards for good behavior (smiley face); verbal prompts to follow the rules; asking students to move to a new place on the carpet, using precorrection prior to transitioning	Behavioral Observation of Students in Schools (BOSS) (Shapiro, 2004) ICT: BOSS recorder; Motivaider Social Validity (Teacher and student questionnaire)	The target student and peer engagement significantly increased during both intervention phases Off-tasks behaviors of the target student decreased after intervention	Unknown if the intervention has positive lasting effects throughout the day Rewards weren't discussed with students Small sample size No follow-up data
Lo et al., 2011	7 (males) 8-12 years old Social skills deficits and high levels of challenging behaviors	Teachers nomination Informal observation	Multiple probe across intervention groups	Peer-mediated SSI program Tutor/tutee training Social skill instruction (SSI)	Classroom-related social skills and aggression-resolution social skills Inappropriate classroom-related behavior	Explaining; modelling; coaching; performance feedback; corrective feedback for inappropriate behaviors	Classroom observation (probes with different scenarios) Consumer Satisfaction Questionnaires	Improvements on classroom-related social skills No improvements on aggression-resolution skills Inappropriate classroom behaviors decreased for 6 children, maintained for 3 children Peer-mediated SSI was adequate for teachers	No observational data for aggression-resolution behaviors Brief observational period for the classroom-related behavior Unclear if classroom-teachers were consistent in classroom management strategies

Table 3. Continued

Reference	Participants description	Selection criteria	Study design	Intervention	Behaviors targeted	Types of strategies	Measurement tools	Results	Limitations
Miller et al., 2015	3 (2 Male) 2nd to 6th graders Disruptive behavior	Teacher nominations Referrals for ODD	A-B-A-B withdrawal	CICO DBRC and feedback Mystery motivator	Problem behaviors Academic engagement	Feedback, praise for appropriate behaviors, self-monitoring	Functional Assessment Informant Record for Teachers (FAIR-T; Edwards, 2002) Intervention Rating Profile–15 (IRP-15).	Reduction of problem behavior and increase of academic engagement Mystery Motivator successfully maintained behavioral performance for 2 of the 3 students	Limited sample No maintenance data Variability of student behavior during baseline and withdrawal
Mong et al., 2011	4 (2 males) 8-9 years old Problem behavior	Teacher nomination Five referrals in a month	Multiple-baseline across-participants design	CICO	Problem behaviors Mathematics performance	Verbal praise; goals setting; corrective feedback; rewards	Functional Assessment Informant Record for Teachers (FAIR-T; Edwards, 2002) Direct classroom observation Office discipline referrals Daily progress report Treatment integrity	Decrease in problem behaviors Increase in DCPM (digits correct per minute)	Specific characteristics of students CICO's effects on mathematics could be due to maturation alone Pairing students in dyads w/ only 2 phases: threats to internal validity Data collapsed into a weekly score limits the evaluation of individual data
Moore et al., 2001	3 (males) 8 years old Off-task behavior in class	Teacher nomination	Within-subjects multiple baseline across subjects	Self-management intervention	On-task behavior Academic productivity	Goal setting; self-recording	Direct classroom observations ICT: audio recorder	Increase in on-task levels and work quality Gains maintained over time, generalized to other settings Socially valid and cost effective procedure for teachers	Not available
Moore et al., 2005	1 (male) 6 years old Inappropriate classroom behavior	Teacher nomination	Alternating-treatments design	Instructional adaptation intervention (reduction in task duration)	Off-task behavior	Reduction in task duration	Direct classroom observations Functional behavioral assessment – A-B-C analysis Functional Analysis Interview form (O'Neill et al., 1990) Curriculum-based assessment Treatment acceptability	Decrease of escape-maintained off-task behavior during independent work Attention-maintained off-task behavior wasn't affected Teachers considered the intervention easy to implement	Single-participant study with a limited data set Limited sample of observations available for calculating interobserver agreement
Regan & Howe, 2017	1(male) 6 years old SEBD difficulties	Teacher nomination	Single-case within-participant design	Video Self-Modelling (VSM)	Target behavioral incidents	Video self-modelling (VSM)	Direct classroom observations ICT: Video self-modelling	Higher frequencies of target behaviors following the intervention	No maintenance data Problems in the reliability and validity of the data set No control of the isolated effect of interventions
Restori et al., 2007	8 (males) 5th grade students Significant behavioral problems (at risk for EBD)	Teacher nomination FBA Social Skills Rating System – Teacher (SSRS-T; Gresham & Elliott, 1990)	A-B-A-B single-case	Function-based student intervention	Academic engagement Disruptive behavior	Self-monitoring for 2 students with attention-seeking behaviors; task-modification for 2 students with task-avoidance k Differential reinforcement of other behaviors (DRO) for 3 students and DRO with preferred activity for 1 student	Structured observations (A-B-C data) Social Skills Rating System – Teacher (SSRS-T; Gresham & Elliott, 1990)	Antecedent-based treatment strategies (i.e., self-monitoring and task-modification) were more effective than consequent-based treatment strategies (i.e., differential reinforcement)	Small sample size Limited data set The hypothesized function of behavior was not validated

Table 3. Continued

Reference	Participants description	Selection criteria	Study design	Intervention	Behaviors targeted	Types of strategies	Measurement tools	Results	Limitations
Trussell et al., 2016	3 (males) 7 to 9 years	Significant rating on Problem Behavior of the SSRS (Gresham & Elliot, 1990) 5 to 10 Office discipline referrals	Multiple baseline across settings	Function-based Student Interventions - individually designed Teacher training on targeted universal teacher practices (instructional talk, wait time, prompt, positive to negative feedback)	Problem behaviors Universal teachers' practices	Contingent attention and positive feedback for the replacement k; withhold attention until the desired k; opportunities to take breaks and participate in preferred activities; prompts to remind; attention for on-task behaviors	Functional Assessment Interview (O'Neill et al., 1997) Structured observations (A-B-C data) (Bijou, Peterson, & Ault, 1968) ICT: Software System for Coding – Multiple Option Observation System for Experimental Studies, MOOSES (Tapp et al., 1995)	Rates of problem behaviors decrease based on the function of behavior	Unclear the hypothesized function of behavior Small sample size
Umbreit et al., 2004	1 (male) 10 years old Off-task behavior	Teacher nomination	A-B-A-B Reversal	Function-based intervention Intervention – student was provided with higher challenging tasks in both math and reading	Off-task behaviors	Praise; sticks for good behavior	Teacher: Preliminary Functional Assessment Survey (Dunlap et al., 1991) Student: Assisted Functional Assessment Interview (Kern et al., 1994) A-B-C Structured observations Social validity (teacher and student)	Altering the level of task difficulty was highly effective in increasing on-task behavior	Small sample size Vague method for establishing instructional level Data collectors not blind to the experimental conditions
Vance et al., 2012	3 (1 male) 10-11 years old Problem behaviors	Teacher nomination	Nonconcurrent multiple baseline across subjects	Differential reinforcement of other behavior (DRO) Self-monitoring intervention	Active disruptive behavior On-task behavior	DRO; social attention contingent on the non-occurrence of task behavior; self-monitoring; reward; praise	Direct classroom observations Functional Assessment Interview (O'Neill et al., 1997). Academic assessments	Both non-function based interventions decreased problem behavior Increase of time spent on-task and decrease of time spent on disruptive behavior	Lack of control of the hypothesized functional reinforce (peers' attention) DRO procedure was run solely by the first author
Wilkinson, 2005	2 (males) 9-11 years old EBD specified by local agency ADHD ODD	Teacher nomination Teacher's Report Form of Child Behavior Checklist (CBCL–TRF: Achenbach & Rescorla, 2001)	Nonconcurrent multiple baseline across subjects	Conjoint behavioral consultation (CBC)	Social problems; Attention problems; Aggressive behavior; Externalizing behavior; On-task & compliant behavior	Goal setting; self-recording of target behaviors; Contingent reinforcement	Observational rating scale CBCL–TRF (Achenbach & Rescorla, 2001) Treatment acceptability (teachers and parents)	Significant increase in teacher ratings of behavioral control (on-task and compliant behavior) for both students Treatment effects maintained at a 4-week follow-up Parents and teachers viewed CBC as acceptable and effective	Nonconcurrent design Small sample size Lack of observation reliability measures Limited no. of observation ratings sessions during consultation process
Wu et al., 2010	2 (males) 3rd grade At risk for EBD	Ratings on Personality and Behavior Scale (Lin et al., 1992) & Peer sociometric rating	Single subject multiple baseline	Social Skills Training Curriculum	On-task behavior Appropriate conflict resolution Cooperation	Goal setting; modelling; rehearsal; role-playing, reinforcement; feedback; homework	Direct classroom observations ICT: video recorder Social validity	Performance improvement in all three social skills during the intervention condition Sustained use of social skills during maintenance and follow-up Participants identified the positive effects of the SST program	Interference of observation recording method on results Absence of systematic measurements to evaluate transfer effects from training sessions to natural classroom settings Measurement reactivity or observer expectancies

Participants Characteristics

Analysis of the studies carried out between 2000 and the present showed that most studies included between one and four participants (n=23, 79.3%). One study included 20 participants, another study included 66 participants, and 4 studies included between 7 and 9 participants. There was a clear predominance of male participants in the studies. Among the 28 studies with information about the participants' genders (n=153 participants), 84.3% (n=129) of the participants were male.

Despite the emphasis on identifying studies focused on students with disruptive behaviours, there was variation in the descriptions of the students' conditions. Students were described as displaying problematic behaviours (n=7), displaying disruptive behaviours (n=11), being at risk for EBD (n=6), and displaying off-task behaviours (3). Only one study used verified emotional and/or behavioural disorder as a selection criterion (Wilkinson, 2005). Instead, most students were selected from general education classrooms based on teachers' nominations for demonstrating high levels of inappropriate classroom behaviour (e.g. Cook et al., 2014; Hansen et al., 2014). In addition to teachers' nominations, eight studies (29.6%) used specific instruments, such as the Social Skills Rating System (Gresham & Elliot, 1990) and the Personality and Behaviour Scale (Lin et al., 1992), to select participants (e.g. Brunch-Crump & Lo, 2017; Gresham et al., 2016). Three studies (11.1%) added the performance of functional behaviour assessments to identify potential participants (e.g. Cook et al., 2014). In five studies (18.5%), eligibility for inclusion in the study was also determined by the number of discipline referrals of students to the school director and/or psychologist (e.g. Campbell & Anderson, 2011; Lien-Thorne et al., 2005; Trussell et al., 2016).

Most of the studies did not report information related to participants' clinical or psychological diagnoses. In fact, only four studies reported that students presented a diagnosis of attention and deficit and hyperactivity disorder (e.g. Campbell & Anderson, 2011). With regards to special education services provision, among the 21 studies that reported this information (n=150 participants), 28% (n=42) of participants received this support due to behavioural problems.

Study Design

One of the inclusion criteria of this systematic review was an experimental single-subject research design. Among the studies included, 11 used multiple-baseline designs (e.g. Allday et al., 2012), 11 used reversal designs (e.g. Campbell & Anderson, 2008), 2 used alternating treatment designs (Kilgus et al., 2016; Moore et al., 2001), 1 used an A-B design (Regan & Howe, 2017), and 2 studies combined reversal and multiple-baseline designs (Cook et al., 2014; De Martini-Scully et al., 2000). Seven of the eight studies that used screening tools in their sample selection included a pre-post-test measure of students' problem behaviour; that is, the data collected with these tools formed a pre-baseline, which was compared with data at the end of the intervention (e.g. Carter & Horner, 2009; De Martini-Scully et al., 2000).

Targeted Behaviours and Outcome Measures

Disruptive, challenging, or problem behaviours were the primary dependent variable in the studies (n=17; 63%). A variety of behaviours were targeted. Most studies treated problem behaviours as a broad category (e.g. Carter & Horner, 2013; Cook et al., 2014). In these cases, problem behaviours were often operationally defined as behaviours not related to the academic tasks and that interfere with the teacher's instruction or the learning of other students. Two studies focused on specific problem behaviours, such as noncompliance, disruption, negative verbal or physical interactions, and not staying in one's seat (Campbell & Anderson, 2008; Miller et al., 2015). Off-task behaviour was considered as the primary dependent variable (n=11; e.g. Allday et al., 2012; Janney et al., 2013), but also as a specific form of problem behaviour (n=1; e.g. Miller et al., 2015). Off-task behaviours were often operationally defined as engaging in any motor activity or audible vocalisation not permitted by the classroom rules or not related to the assigned work or activity.

Academic factors, such as engagement, achievement, competence, and productivity, were the main secondary dependent variables of the studies (n=11; 40.7%; e.g. Campbell & Anderson, 2011; Gresham et al., 2006; Moore et al., 2001). Social skills was also included as a secondary variable in three studies (Gresham et al., 2006; Lo et al., 2011; Wu et al., 2010). Finally, in three studies, the teachers' skills with regards to implementing specific intervention strategies was included as a dependent variable (e.g. Allday et al., 2012; Trussell et al., 2016).

In terms of the evaluation of intervention effects, a wide variety of measures were used. The 27 studies focused on measuring problem behaviours using observation. Most observational data were collected using time-sampling record methods. Thirteen studies used partial-interval recording techniques (e.g. Mong et al., 2011; Nolan & Filter, 2012; Wu et al., 2012), six used momentary time sampling (e.g. Allday et al., 2012; Moore et al., 2001), and two used whole-interval recording techniques (Campbell & Anderson, 2008; Janney et al., 2013). Furthermore, one study used the rating record technique (e.g. Wilkinson, 2005), and the remaining studies did not explicitly report information on the data record method.

Intervention effects were often estimated using more than one measurement instrument (n=20, 74.1%). In addition to observational methods, rating scales related to problem behaviours that were administered to teachers, such as the

Functional Assessment Checklist (March et al., 2009), the Behaviour Intervention Rating Scale (Von Brock & Elliott, 1987), the Impairment Rating Scale (Fabiano et al., 2006), the Social Skills Rating System (Gresham & Elliott, 1990), and the Systematic Screening for Behavior Disorders (Walker & Severson, 1992), were also used. Parents participated in the evaluation of students' behaviours in two studies (Carter & Horner, 2009; De Martini-Scully et al., 2000).

Nine of the studies that met the inclusion criteria included Information and Communication Technologies in the form of apps or audio/video recorders that allowed teachers (e.g. Allday et al., 2012) and students (Moore et al., 2001) to track and assess progress in the targeted behaviours of the intervention.

Interventions, Strategies and Effects

The authors of all 27 studies considered their interventions to be generally successful. Thus, all the interventions and strategies described in those studies will constitute the focus of this section.

The independent variables of interest were disruptive behaviour interventions. These varied in function-based level, type of intervention, behavioural techniques, and implementation strategies. Fourteen studies (51.9%) included function-based interventions to address problem behaviours. Functional analysis was used as the framework for conducting these studies, which included an analysis of the antecedent. In most cases, function-based interventions were used in combination with other methods. For example, Brunch et al. (2017) implemented the Check-In Check-Out (CICO) intervention combined with a function-based self-monitoring strategy. Carter and Horner (2009) implemented the First Step to Success Program, combined with specific adaptations developed from the functional behavioural assessment. Thirteen studies (48.1%) used non-function-based interventions. Vance et al. (2012) used two non-function-based interventions: differential reinforcement of other behaviour and self-monitoring.

The reviewed studies also differed according to the type of intervention. Interventions consisted of both structured existing programmes and interventions that had been specifically developed for the study. Thirteen studies (48.1%) carried out existing interventions, such as the Check-in/Check-out (CICO; Crone et al., 2003), the First Step to Success (Walker et al., 1997), the Class Pass Intervention (Cook et al., 2014), and the Social Skills Training Curriculum (Wu et al., 2010), with some modification. The CICO programme was implemented in five studies (18.5%). The 14 studies with interventions that had been specifically developed for the study (e.g. Hansen et al., 2014; Lambert et al., 2006) focused on the use of specific behavioural techniques, such as 'behaviour-specific praise' (Allday et al., 2012), or group contingency (Ling et al., 2011). Beyond behavioural intervention strategies, three studies also implemented training in social skills to improve students' behavioural problems (Gresham et al., 2006; Lo et al., 2011; Wu et al., 2010).

In addition to function-based level and type of intervention, a range of behavioural techniques were used across the studies. These included antecedent- and consequence-based strategies. Antecedent-based strategies were used in 23 studies (85.2%). These strategies were as follows: (a) antecedent adjustments (i.e. public posting/reminding of classroom rules) (n=5, 18.5%; De Martini-Scully et al., 2000; Janney et al., 2013); (b) provision of instruction in, modelling of, or role-play of appropriate behaviours (n=8, 29.6%; Baba & Tanaka-Matsumi, 2011; Cook et al., 2014; Gresham et al., 2006; Lien-Thorne et al., 2005). Antecedent-based strategies also included setting behavioural goals with participants (n=8, 29.6%; Campbell & Anderson, 2008, 2011) and self-monitoring (n=8, 29.6%; Hansen et al., 2014; Moore et al., 2001). Strategies such as the reduction in task duration (Moore et al., 2005) and the provision of opportunities to ask for or take breaks (n=3; 11.1%; Cook et al., 2014; Hansen et al., 2014; Trussell et al., 2016) were also used, although less frequently.

Consequence-based strategies were used in 24 studies (88.9%). Consequence-based strategies included different types of positive reinforcement and feedback on students' performance, such as praise for appropriate behaviours (n=12; 44.4%; e.g. Miller et al., 2015); rewards through a token system or opportunities to participate in preferred activities (n=7, 25.9%; e.g. De Martini-Scully et al., 2000; Restori et al., 2007), or a less systematic reward system (n=7; 25.9%). Corrective statements or prompts were also used in the studies (n=7; 25.9%). Three studies also included extinction procedures, such as ignoring disruptive behaviours (11.1%; Hansen et al., 2014; Janney et al. 2013; Kilgus et al., 2016).

In four studies (14.8%), the implementation of interventions on students' disruptive behaviour in the classroom was combined with teacher training aimed at improving their ability to implement behavioural and pedagogical strategies such as behaviour-specific praise (Allday et al., 2012) and universal teacher practices (Trussell et al., 2016).

Overall, the reviewed studies reported favourable results. Both function- and non-function-based methods were found to effectively reduce the occurrence of problem behaviours. Of the 13 studies that implemented existing interventions, 5 (38.5%) reported a slightly positive differential effect between these interventions and additive function-based intervention (e.g. Bunch-Crump & Lo, 2017; Campbell & Anderson, 2008; Carter et al., 2009). One study reported differences in the effects of antecedent- and consequent-based intervention strategies, with the former being more effective at reducing disruptive behaviours (Restori et al., 2007).

Fidelity and Social Validity of Interventions

The fidelity of the intervention was measured in 20 studies (74.1%) to monitor whether the intervention was implemented as planned (e.g. Hansen et al., 2014; Trussell et al., 2016). Ensuring the integrity of interventions varied in terms of the procedures adopted. In the majority of the studies, the fidelity of implementation was evaluated using a checklist with items pertaining to key features of the intervention (e.g. Campbell et al., 2008; Carter & Horner, 2009). The list was completed by one of the authors. The purpose of these checklists was either to observe teachers' practices during the implementation of the intervention (Trussell et al., 2016) or to assess students' progress in key areas of the intervention (Campbell & Anderson, 2008; Mong et al., 2011). In the other studies, treatment integrity was guaranteed using detailed protocols, in which teachers were asked to indicate whether each component was fully or partially implemented (De Martini-Scully et al., 2000; Wilkinson, 2005). The inclusion of a measure of fidelity check among individuals subjected to intervention or among teachers responsible for intervention assumes higher importance in the case of single-case designs.

The social validity of the intervention was measured in 15 studies (55.6%) through consumer satisfaction and treatment acceptability questionnaires. Although the social validity measures in some studies included the evaluation of intervention goals (e.g. Wu et al., 2011), the majority did not specifically measure the social significance of techniques used to decrease disruptive behaviours (e.g. Ling et al., 2011; Moore et al., 2005). Furthermore, treatment acceptability was assessed from both the teacher's and student's perspectives in 5 of the 16 studies with social validity measures (Cook et al., 2014; De Martini-Scully et al., 2000; Janney et al., 2013; Ling et al., 2011; Umbreit et al., 2004). One study also examined parents' perspectives (Wilkinson, 2005).

Limitations reported by the reviewed studies

All of the studies reported their limitations except one (Moore et al., 2001). A small sample size that could limit the generalizability of the results regarding the effects of the intervention was reported as a limitation by many of the studies (n=15; 55.6%). In addition, limited samples with regard to participants' characteristics (e.g. all participants were male, all participants were in elementary school, and all participants were from one class) were also identified as a limitation (e.g. Campbell & Anderson, 2008; Miller et al., 2015; Mong et al., 2011).

Limitations regarding methodological features were frequently reported. Sixteen studies (69.3%) reported the absence of a maintenance phase aimed at the measurement of the target behaviours and the intervention's long-term effectiveness (e.g. Cook et al., 2014; Regan & Howe, 2017). Extending the treatment and follow-up phases would have increased the robustness of the study design and strengthened confidence in the outcomes of the interventions. The failure to control the isolated effects of intervention components was reported as a limitation in five studies (18.5%).

Six studies reported the author's role as trainer or as primary data collector (22.2%) as a possible limitation because of the lack of control over reactivity effects (e.g. Vance et al., 2012; Wu et al., 2010).

Practical constraints that limited the number of observations were described in four studies (14.8%). These constraints made it difficult for authors to assess the various problem behaviours in different phases of the research design (Kilgus et al., 2016; Lo et al., 2011; Miller et al., 2015; Wilkinson, 2005).

Discussion

This systematic review aimed to synthesise the common elements of behaviour interventions for disruptive behaviours of children with SEBDs. Similar to the literature that describes the use of different terminology for SEBDs among students (Cooper & Cefai, 2013), this study also showed that a variety of terms are used to describe SEBDs. In most of the studies, students had not been officially diagnosed with SEBD; however, they exhibited significant behavioural problems and were considered at risk for emotional and behavioural disorders (Restori et al., 2007). Problem behaviours exhibited by students are particularly alarming, given the number of students who receive special education services. The impact of problem behaviours on long-term outcomes, such as continued poor academic performance, is an issue of concern (Mong et al., 2011).

Most of the reviewed studies used a combination of strategies to select participants, combining teacher nominations and/or team member observations and/or specific screening tools to identify problem behaviours (e.g. Brunch-Crump & Lo, 2017; Cook et al., 2014). Some studies included a pre-baseline phase in the design. This phase was described as crucial, either for the operational definition of the target problem behaviours or for the opportunity for participants to become familiar with the researcher. In this way, the authors aimed to reduce the reactivity and expectancy effects. In fact, reactivity or expectancy effects were mentioned as potential biases in six studies, in which the first author was the primary data collector.

The primary dependent variable of the reviewed studies was the problem behaviours of students. The results demonstrated that some studies considered a single, generic behaviour category, defined either as problem/disruptive behaviour or off-task behaviour, to be the target of the intervention. In other studies, the problem behaviour of students was treated as different discrete behaviours such as looking around, noncompliance, inappropriate talking,

not staying in one's seat, and inappropriate use of materials. This differentiation seems to be motivated by the extent to which the intervention was preceded by the functional analysis of each behaviour. Within this context, the literature suggests that interventions designed on the basis of the function of behaviour effectively decrease problem behaviours in general classrooms (e.g. Briere & Simonsen, 2011; Umbreit & Ferro, 2015). In fact, about half of the studies analysed in this review included function-based interventions with favourable results (Trussell et al., 2016). However, there are also several studies with non-function-based interventions (Vance et al., 2012), with positive results. In fewer numbers, studies with both types of interventions were not conclusive in distinguishing the effects of function-based and non-function-based interventions due to the characteristics of the research design, which did not control the possibility of isolated effects (Carter & Horner, 2009). The number of effective non-function-based interventions supports using preventive and general interventions first and then proceeding to a more individual intervention, based on the function of the problem behaviour of the student, which is described as being more intensive and time-consuming (Sugai & Horner, 2002).

Most behaviour interventions combined antecedent-based and consequent-based strategies. Effective antecedent-based interventions included antecedent adjustments, such as the active teaching of classroom rules, the explicit teaching of appropriate behaviours, self-monitoring, and the modification of task assignments, such as reducing the overall length of assignments and/or breaking them into smaller sub-units. Consequent-based strategies useful for individual intervention included positive reinforcement and feedback and, less frequently, corrective statements.

The academic engagement of students was the main secondary dependent variable in the reviewed studies. The analyses demonstrated that both the dependent variables of problem behaviours and academic targets were effectively modified by interventions. Similar results were found in a meta-analysis of single-subject designs, which did not find a significant effect of target type on intervention response (Vannest et al., 2010).

With the exception of one study, all the studies in the present review measured problem behaviours using observation. Some studies reported the use of technology to support teachers and students in tracking and assessing progress in the targeted behaviours. Although technology can facilitate description and understanding of patterns of problem behaviours and can be used to monitor progress of behavioural interventions (Cohen & Rozenblat, 2015), few studies have examined the use of technology in interventions to manage disruptive behaviours of students with SEBDs (Merlo et al., 2018).

The extent to which the intervention was implemented with integrity was measured in many studies. Indeed, gathering data about the efficacy of interventions is important in determining its success. Nevertheless, a measure of fidelity check is essential to evaluate the extent to which interventions are comprehensively and consistently delivered among students or implemented in accordance with the intention of the treatment purposes (Little et al., 2002). The need for a treatment integrity measure is reinforced by the specificities of the research design of individual behavioural interventions. The technique most often used in the studies examined in the present review was a procedural checklist. Fuchs and Fuchs (1989) recommend the use of a component analysis checklist, on which researchers checked off whether a list of the components of an intervention strategy was implemented during the period of intervention observed.

Most of the interventions for disruptive behaviours analysed in this study appear to be equally effective. This finding supports previous research (De Martini-Scully et al., 2000; Stage & Quiroz, 1997). Therefore, factors such as ease of implementation and immediacy of results can also be considered by teachers in their decision to use an intervention. Within this context, social validity measures collect information about the social significance, appropriateness, and effectiveness of an intervention (Wolf, 1978) and provide a cue about the likelihood that interventions will be implemented in the future. The extent to which teachers approved an intervention and perceived it to be effective in decreasing children's behaviour problems was widely verified in studies that collected social validity data. However, not all studies specifically measured the social significance of the interventions. However, social significance can be observed when teachers select the students to be included in the sample, demonstrating the need to decrease disruptive behaviours on the part of some students. Similarly, the involvement of teachers in long-term interventions (e.g. Campbell & Anderson, 2011) also demonstrated the perceived value of the intervention goals.

The final methodological limitation was the common failure to not use the maintenance phase to check the durability of the intervention results. Maintenance of an effect is often needed to uphold the findings of single-case experimental designs and make it possible to attribute changes in the dependent variable to the independent variable (Smith, 2012).

Conclusion

This review of disruptive behaviour interventions identified several aspects in need of further development and exploration. More rigorous research is needed to verify that the interventions are effective for decreasing the rates of problem behaviours of students. Potential challenges include (a) the inclusion of a maintenance phase in the methodological design, (b) the control of isolated effects of each intervention component, (c) the development of a protocol to guide the consistent delivery of interventions, (d) the evaluation of social validity with particular attention to the implementer's opinion about the feasibility of the procedures. In addition to these methodological aspects, a

more complete description of participants' characteristics is needed, one in which functional analysis is used in addition to descriptive analysis to determine the function of behaviour. For example, students whose behaviour functions are to escape or avoid something would react differently to an intervention compared with students whose behaviour is for receiving attention. Finally, very few studies have described the classroom setting, which has a strong influence on students' behaviour. Contextual factors, such as the conditions under which the intervention was implemented (e.g. the student's position in the class in the group; intervention delivered during instruction/small-group work/independent work), should also be examined. Information about these factors is essential for a more in-depth understanding of problem behaviour intervention results.

Limitations

The findings of this review should be considered considering a few limitations. First, although a significant effort was made to include all studies of interventions to improve behaviours of elementary school children with problem behaviours, there remains the possibility that relevant studies meeting the eligibility criteria were not identified. Second, the use of such a comprehensive study selection criterion as 'behavioural problems' may represent an imbalance in the target population under analysis. Third, the decision to limit the present review to interventions conducted at the individual level led to the exclusion of studies using a set of relevant behavioural interventions, which used the class as the unit of analysis. Fourth, this review focused on classrooms. It remains unclear whether the interventions could be implemented and would have similar effects in other school settings (e.g. the cafeteria or playground). Finally, future studies should use meta-analysis to increase the robustness of inferences for synthetizing evidenced-based practices with students with SEBD.

Acknowledgements

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