

This is the final accepted version of the following article:

Quail, K. R., & Ward, C. L. (2020). Nonviolent Discipline Options for Caregivers and Teachers: A Systematic Overview of the Evidence. *Trauma, Violence, & Abuse*, Copyright © 2020 sagepub.com/journals DOI: 10.1177/1524838020967340

Non-violent discipline options for caregivers and teachers: A systematic overview of the evidence

Abstract

Violence against children is a widespread problem with devastating consequences, and corporal punishment is a risk factor for more serious forms of physical abuse. One reason for the persistence of corporal punishment may be lack of awareness of positive disciplinary alternatives. Non-violent options offered to caregivers and teachers must be effective in addressing challenging behavior, or they may be rejected in favor of a return to physical punishment. There is an urgent need to determine which discipline options are evidence-supported and what that evidence says, so that robust alternatives to corporal punishment can be made available. The primary objective of this research was to find, and explore the state of the science on, individual non-violent interventions for challenging behavior, in so doing forming a “toolkit” for use by caregivers and teachers. A systematic overview of systematic reviews was conducted. Included systematic reviews were peer reviewed and published in English between 1999 and 2018. Screening, quality assessment using AMSTAR and data extraction were performed independently by two reviewers. 223 reviews were included, covering data from 3,921 primary studies. A wide range of evidence-supported interventions exist, many of which have been found effective with severely challenging behavior. Important positive outcomes shown suggest that use of these tools should be promoted not only for prevention of violence, but for optimum child development. More research is needed on use of these methods in home situations, and on de-escalation skills.

Key words

violence prevention; umbrella review; positive discipline; behavior; parenting; classroom management

Violence against children is a serious problem worldwide (UNICEF, 2017). Worse, the violence children experience is most often at the hands of people whom they should be able to trust, such as parents, teachers and other caregivers (Meinck, Cluver, Boyes, & Loening-Voysey, 2016; UNICEF, 2017). Most often this violence is meted out as punishment for misbehavior (Durrant & Ensom, 2017; Mbugua, Muriithi, Muthui, & Ogeda, 2015).

Not only is the experience of violence meted out by caregivers traumatic and damaging for children (Jedd et al., 2015; Karen, 1994), there is evidence that violence against children feeds violence in the wider society. A coercive approach, in which the adult tries to force a certain reaction from the child using threats, intimidation and punishment, has been found to foster aggression and conduct problems in children (Patterson, 1976, 1982; Patterson & Dishion, 1985). This may persist into adolescence and adulthood, in the form of delinquency, crime, intimate partner violence, and abuse of their own children (Gershoff, 2002; Gershoff, Sattler, & Ansari, 2017). As long as the response to children's challenging behavior is violent, there is the potential for an ongoing cycle of violence (Dodge, Bates, & Pettit, 1990). Considering that even mild forms of corporal punishment have been shown to have negative effects (Gershoff, 2013; Gershoff, Sattler, & Ansari, 2017), dealing with this problem is urgent.

Vital work is being done by child protection organizations in advocating for a ban on corporal punishment in all the contexts, but even where there are bans, many children still experience corporal punishment (Heekes, Kruger, Lester & Ward, 2020; Meinck et al., 2016). One reason corporal punishment is still used as "discipline", seems to be lack of understanding of what an alternative nonviolent approach would be (Mbugua et al., 2015). These findings together highlight the need for robust non-violent discipline options, clearly articulated and accessible to caregivers and teachers. These methods need to be effective, or people may feel justified in returning to corporal punishment, arguing that they have tried a positive approach, and found it ineffective.

On the other end of the scale, caregivers afraid to discipline, for fear of damaging their children, also need education about skills which are safe to use. Permissive parenting has been shown to have negative effects (Baumrind, 1966, 1967), with an overly indulgent parenting style tending to produce children who are lower in social skills, low in self-control and more aggressive and disrespectful to others. Later, as college students they are more likely to show academic entitlement, higher perceived stress and poorer mental health (Barton & Hirsch, 2016), and, as adults, are less able to resolve relationship problems constructively, and more likely to engage in hostile marital conflict (Topham, Larson, & Holman, 2005).

Baumrind (1966, 1967) identified that the parenting style with the best outcomes for child development was neither authoritarian (i.e. punitive, restrictive, repressive and coercive) nor permissive and indulgent, but one she termed 'authoritative'. This style is characterized by both responsiveness and appropriate demandingness.

Responsiveness describes characteristics such as parental warmth, affection, attunement and support of children's autonomy, while demandingness describes

necessary confrontation of misbehavior, firmness and non-coercive power assertion (Baumrind, 2013). Questions have been raised about whether these styles are ethnocentric and perhaps only predictive of these results in a Western context where individualism is valued (Chao, 1994), but more detailed review of cross-cultural studies has shown that, although differently expressed, these parenting styles exist and have similar effects in both collectivist and individualist cultures (Sorkhabi, 2005). Further, Baumrind did not rule out smacking as part of the authoritative approach (Baumrind, Larzelere, & Cowan, 2002), thus the concept needs to be updated to keep pace with developments in psychological science, human rights and ethics, which now clearly delineate smacking as harmful (Gershoff, 2002, 2013; Gershoff et al., 2017).

It seems regardless of culture, effective non-violent discipline would need to be both responsive and appropriately demanding. However, it is very difficult to obtain information on effective non-violent demandingness, or positive discipline skills (Embry & Biglan, 2008; Mbugua et al., 2015). Many parenting programs, although well intentioned, are not evidence-based (Wessels & Ward, 2015), give advice that has no evidence base (*Corralejo, Jensen, Greathouse, & Ward, 2018), or give advice that actually contradicts what research has found (*Corralejo et al., 2018). Information on discipline skills on the internet, in parenting books and classroom management literature is often inaccurate and misleading (*Alter & Haydon, 2017; *Corralejo et al., 2018; Drayton et al., 2014). There is advice against time-outs (Durrant & Stewart-Tufescu, 2017; Siegel & Payne Bryson, 2014a, 2014b) or praise and rewards (Kohn, 1999), when in fact these are evidence-supported skills which, used appropriately, have positive effects on behavior (Embry & Biglan, 2008; *Kaminski, Valle, Filene, & Boyle, 2008; *Owen, Slep, & Heyman, 2012). Thus, information available to the public on non-violent discipline seems to range from significantly inaccurate to helpful but limited in the range of skills described.

Evidence-based parenting and classroom behavior management programs can be identified and upscaled (Collins & Fetsch, 2012; Gardner & Leijten, 2017; Knerr, Gardner, & Cluver, 2013; Reinke, Stormont, Webster-Stratton, Newcomer, & Herman, 2012), but this approach has some significant limitations (Embry & Biglan, 2008). Aside from the high costs involved in upscaling, and the challenge of ensuring that programs are implemented with fidelity, there is the fact that most people will never attend such a program, due to factors such as cost or opportunity (Embry & Biglan, 2008). Embry and Biglan (2008) make the point that many problem behaviors could be alleviated by a teacher or caregiver using a single skill or method without having to undergo lengthy, expensive training. Aside from difficulties of access, concerns are being raised about flexibility and cross-cultural applicability of manualized evidence supported programs (Barth et al., 2012; Lyon, Lau, McCauley, Vander Stoep, & Chorpita, 2014). With a manualized evidence-based program approach, fidelity to the program may take a higher priority than fit with the unique needs of the client (Barth et al., 2012). This may be of particular concern where clients differ, culturally, from the group a manualized approach was tested with (Lyon et al., 2014), as may be the case if a parenting program from a more individualist context in Europe or America were imported into a more collectivist context in Africa or Asia (Triandis, 2018).

However, these differences are most likely unrelated to the effectiveness of individual skills, and there are several calls for an alternative approach, variously identified as “kernels” (Embry & Biglan, 2008) or a modular approach (Barth et al., 2012). With a database of individual skills, or “kernels” (Embry & Biglan, 2008), accessibility and fit with diverse client needs may be more achievable. Evidence-based tools could be made available for use in whatever combination best suited client needs (Barth et al., 2012), allowing caregivers and teachers to choose and use effective non-violent methods within the framework of their own values and cultural norms.

An example of a “kernels” approach can be found in the field of public health, where Michie and colleagues (2011; 2013) have created and refined a taxonomy of behavior change techniques to address problems such as low physical activity, unhealthy eating, smoking, alcohol abuse and sexually transmitted infections. The usefulness of the taxonomy is demonstrated in the number of recent studies and reviews that make use of its components and terms (e.g., *Epton, Currie, & Armitage, 2017; *Hynynen et al., 2016), and empirical data is thus building on each different technique. Similarly, a classroom toolkit for Jamaican preschools has been developed from Embry and Biglan’s (2008) “kernels”, providing teachers with culturally acceptable, non-violent behavior management options which can be selected according to teaching style and personal preference (Baker-Henningham, 2018).

In order to develop a toolkit approach to non-violent discipline, the evidence supporting each tool or method must be assessed. However, extensive search of the literature yielded no systematic review or overview on non-violent discipline methods. There are reviews which address effective components of evidence-based interventions (*Kaminski et al., 2008; Leijten, Gardner, Melendez-Torres, van Aar, et al., 2018). Other reviews cover a range of skills for a specific setting, condition or behavior problem e.g. classroom management skills (*Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008), interventions for children with autism (Heyvaert, Saenen, Campbell, Maes, & Onghena, 2014; *Wong et al., 2015) or interventions for non-compliance (*Leijten, Gardner, Melendez-Torres, Knerr, & Overbeek, 2018), school bullying (*Farrington & Ttofi, 2009) or truancy (*Sutphen, Ford, & Flaherty, 2010). Although these reviews contain relevant and useful information, they are specialized and therefore also limited.

Objectives

The primary objective of the current research was therefore to find, and explore the state of the science on, positive discipline options that could be used by caregivers or teachers, to reduce challenging behavior and increase appropriate behavior in children or adolescents. The following research questions were addressed: (1) Which non-violent discipline interventions can be considered evidence-supported? (2) What does the evidence on non-violent discipline interventions show about their use and effectiveness? (3) Where are there gaps in the research on non-violent discipline interventions?

Definitions

Positive discipline options or tools are defined here as discrete, non-violent interventions which can be used to address a child's resistance, lack of co-operation, problem behavior or dysregulation, or to teach and support appropriate behavior. *Tools* or *interventions* in this context describe individual practices such as distraction, modeling or time-out, rather than programs. Although a toolkit approach is similar to the kernels approach described by Embry and Biglan (2008), tools differ from kernels in that a kernel is defined as "a behavior-influence procedure... that is indivisible in the sense that removing any of its components would render it inert" (Embry & Biglan, 2008 p. 75), while a tool may still be divisible by component kernels. For example, classroom group contingencies usually contain several kernels such as rules, goal setting, rewards and praise, but are still simple enough to be used by teachers without manualized training, and thus a useful addition to the toolkit.

Whether or not the disciplinary intervention is aversive to the child is not the criterion for determining whether it is positive. Defining positive interventions as non-aversive is problematic (Horner, Dunlap, et al., 2005), since children may find certain containing or restorative actions aversive even though they are entirely appropriate, for instance, insistence that the child wear a seat belt if they wish to ride in the car, or prompting them to apologize to someone.

The term *caregiver* is often used to refer to the person who provides primary parenting responsibilities (e.g. Meinck et al., 2016). In this report, the definition is widened to include any others, such as relatives, nannies, or after-school care supervisors, who may be responsible for childcare and therefore discipline, for at least part of the day.

This paper refers throughout to children and adolescents but, in most cases, the word *child* is used as a shorthand to refer to both.

The term *evidence-supported* is used to refer to interventions for which evidence of effectiveness is found. Thresholds for the amount of evidence required to meet this classification are described in 3.4 below.

Method

To achieve the objectives described, information from a very large number of relevant primary studies needed to be found and assessed, and therefore a systematic overview method was chosen. Overviews are designed to create a "friendly front end" to available reviews, making evidence from multiple systematic reviews easily accessible in one document (Becker & Oxman, 2008, p. 608). There are a number of advantages which make the overview a particularly suitable method for the objectives described above: Overviews can cover a much broader field and answer much broader questions than a primary study or systematic review. They can integrate information on multiple interventions for a problem, where systematic reviews usually only focus on one. They can show gaps where more reviews are needed, and synthesize large amounts of

evidence. These attributes make overviews particularly useful for policy makers and others needing to make evidence-informed decisions (Becker & Oxman, 2008; Pollock, Fernandes, Becker, Featherstone, & Hartling, 2016; Thomson, Foisy, & Hartling, 2013; Wright & Walwyn, 2016). The protocol for this overview was based on the approach taken by the Cochrane Handbook for Systematic Reviews of Interventions (Becker & Oxman, 2008), and approved by a review committee in the Department of Psychology at the University of Cape Town. Ethics approval was not required, as overviews do not directly involve any participants.

A challenge inherent in the overview method is overlap of primary studies across included reviews (Becker & Oxman, 2008; Thomson et al., 2013). There are two recommended methods to avoid double-counting of data (Pollock et al., 2016; Thomson et al., 2013): One is to choose one review per intervention (for instance: the latest, the best quality or the most relevant to the overview question). Another way is to include all the reviews found for each intervention but report any overlap. Although more complicated and time-intensive, the latter method was more suitable for this overview. Review questions are usually more specialized than the overview question (e.g. interventions for children with attention deficit hyperactivity disorder (ADHD) vs for children in general), so that several were needed to cover each intervention.

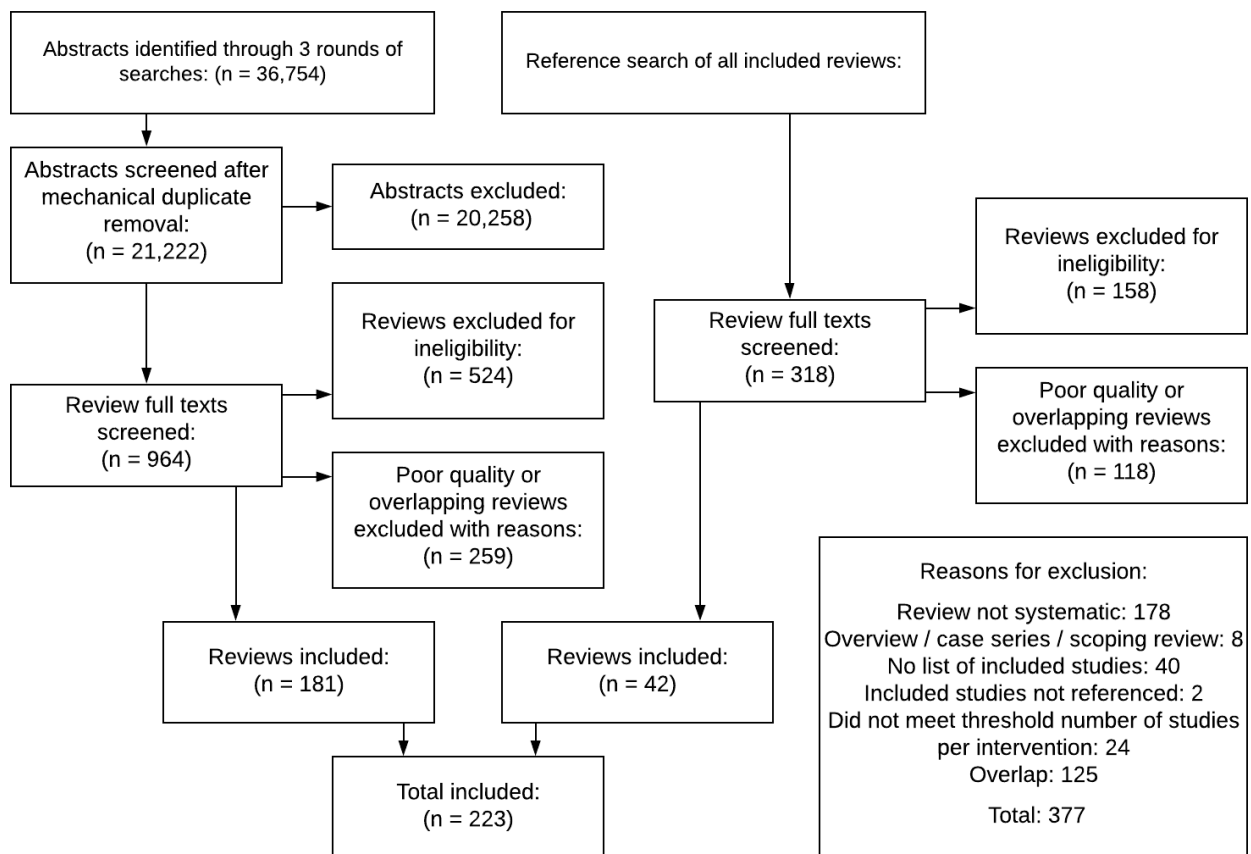
Search strategy

A detailed account of the search strategy and intensive search process, including search terms used, can be found online in [supplement 1](#). The difficulty in identifying interventions and finding effective search terms confirmed the urgent need for an overview of this nature. Working from a list of positive discipline options known to the authors, search terms for each of the interventions were tested and the literature yielded broadly surveyed. Both general search terms (e.g. discipline and behavior) and specific search terms (e.g. “time-out” or “praise”), were used. Relevant articles, abstracts and keyword lists were searched for alternative terms and further interventions. In addition to academic databases, relevant reviews (e.g., Embry & Biglan, 2008; *Kaminski et al., 2008; *Simonsen et al., 2008) were consulted and general Google searches conducted, to identify further interventions, behavior management terms and layman’s terms for these. Any new terms discovered were added and tested. Once searches were conducted, any new terms discovered in the process of abstract or full text screening were added to subsequent rounds of searches.

The following databases were searched: Academic Search Premier; Africa-Wide information; CINAHL; Communication and Mass Media Complete; ERIC; Health Source: Nursing / Academic Edition; Humanities International Complete; Master FILE Premier; MEDLINE; PsycARTICLES; PsycINFO; SocINDEX; Teacher Reference Centre; The Cochrane and Campbell libraries; Education Database. All searches were run independently by two reviewers, the last completed by 31 October 2018. All abstracts were independently screened using an inclusion checklist, which can be found online in [supplement 1](#). Results were then compared. Abstracts either clearly or possibly meeting inclusion criteria were agreed upon and their full texts downloaded and independently

screened. Differences of opinion on inclusion were resolved by discussion and consensus between the two reviewers, occasionally involving the second author. Reference lists of all included reviews were searched independently by the first author and an assistant reviewer. Full texts of reviews found in this way, were independently screened for inclusion. A PRISMA flow diagram showing the overview process is shown in Figure 1.

Figure 1: *PRISMA Flow Diagram*



Inclusion and exclusion criteria

Reviews were screened both for eligibility and quality. In terms of eligibility, inclusion criteria for reviews were that the review was in English, published in a peer reviewed journal in 1999 or later, presented evidence on at least one non-violent intervention, and described participants of reviewed studies as children, adolescents, juveniles, age 18 and under, or school-going. Where there was a mixture of adult and child participants, the results had to be differentiated, or age had to be tested and found not to moderate results. Reviews had to include behavioral outcomes, or outcomes clearly related to child behavior (e.g. impact of child behavior changes on caregivers). A full range of participants, with and without disabilities or medical conditions, was included. Target

behaviors could be negative (undesirable) or positive, such as on-task or prosocial behavior, and range from mild to extremely challenging, disturbed or criminal.

Exclusion criteria were: grey literature; violent or coercive interventions; purely architectural environmental interventions such as changes to building or playground structure; reviews with purely academic or non-behavioral outcomes, such as whether a participant improved spelling or reading level. Since the focus was on adult-child interactions, reviews of peer interventions, such as peer mediation and peer tutoring were excluded. The exception to this was adult involvement of peers in modelling a behavior, e.g. in video modelling.

Where overviews of reviews were found, the relevant constituent reviews were screened for inclusion, rather than extracting data from the overview. Reviews which did not contain any unique primary studies were excluded, which is a recommended practice for overviews (Lunny, Brennan, McDonald, & McKenzie, 2017).

In terms of quality, the inclusion criteria were that a review had to be systematic, i.e. describe the search strategy and inclusion criteria for the studies reviewed. Included primary studies had to be clearly referenced, so that overlap of studies between reviews could be determined. To be included, a review had to contribute at least 3 unique (non-overlapping between reviews) single case design (SCD) studies or 2 unique group design studies, on at least 1 intervention. In cases where a choice needed to be made between reviews to avoid overlap, the following considerations guided decisions: which review was of better quality, or, if they were of similar quality, which was the most recent; which review contributed the most information relevant to the research questions (e.g. if one looked at positive target behaviors, and one looked at positive and challenging target behaviors, the latter was chosen); which contributed the most studies (e.g. if one drew its conclusions from 10 studies and the other from 30, the latter was chosen). Multiple criteria such as these are necessary to avoid the problem inherent in the use of a single criterion (e.g. most recent), of unintended loss of information through exclusion of important systematic reviews (e.g. if the most recent was not the best quality) (Lunny et al., 2017).

If poor quality reviews met inclusion criteria and were not overlapping, they were included, a decision which can be constructive in cases where the only available evidence is poor, or where the aim is to give a more complete picture of the evidence on an intervention (Pollock, Fernandes, & Hartling, 2017). The list of included reviews can be found online in [supplement 2](#). The list of excluded reviews, with reasons for exclusion, can be found online in [supplement 3](#).

Data extraction and management

Data were independently extracted by the first author and an assistant reviewer according to the predetermined extraction protocol, using data extraction forms which can be found online in [supplement 4](#). Both reviewers checked that each review met inclusion criteria, extracted a list of interventions covered by the review, scored the

review for quality using the AMSTAR checklist, and extracted any relevant references from the reference list for screening. A consensus process was followed, with any areas of uncertainty resolved in discussion with the second author. The first author completed a more detailed extraction of all other information required, such as demographic information, target behaviors, outcomes, etc. Samples of completed data extraction forms were checked by the second author. Extracted data from each included review was summarized on the review characteristics table, which can be viewed online in [supplement 5](#).

A table showing the overlap of studies between the reviews can be found online in [supplement 6](#). For ease of reference, overlap is also clearly summarized per review in 3 columns of the review characteristics table ([supplement 5](#)). Overlap was coded as follows: “partial overlap” where 3 or more studies overlap with another review on the same intervention; “slight overlap” where 1 or 2 studies overlap on the same intervention; “no information overlap” where studies overlap, but not on the same intervention; or “none”, where there are no overlapping studies.

Scope mismatch between the overview and individual included reviews is a further challenge inherent in the overview method (Ballard & Montgomery, 2017). If an included review provided information irrelevant to the overview questions, only the relevant information was extracted. For example, if an included review provided data for adolescents and adults, only the data on adolescents was extracted; or if a review covered various interventions, only information on relevant interventions was extracted. Where possible, the relevant fraction of each review was reported on the review characteristics table ([supplement 5](#)), by showing the number of relevant studies in relation to the total number of studies in each review.

Data synthesis

Because of vast heterogeneity between reviews, and as is usual for an overview, extracted data are presented as a narrative synthesis using text and tables, without further statistical analysis (Hartling, Chisholm, Thomson, & Dryden, 2012; Thomson et al., 2013). One advantage of this is that it removes the danger that overlap between reviews would confound statistical results. Since overlap is clearly reported and summarized, the authors suggest that the reader interpret reviews with a high degree of overlap as partial replications of each other, confirming or raising questions about results.

A table summarizing which interventions were found to have supporting evidence (table 1), is included in the results section below, while a more detailed narrative summary of data for each intervention is provided online in [supplement 7](#). Criteria for the category *“Interventions with a moderate to large amount of reviewed evidence showing positive effects on behavior”* (table 1) were: at least one systematic review dedicated to the intervention, or including that intervention, showing overall positive effects, with at least 10 of the reviewed studies showing positive effects or several reviews showing positive effects across a total of 10 or more non-overlapping studies or a meta-analysis showing clear positive effects or a systematic review declaring the intervention evidence-based

according to recognized criteria. Interventions with a small amount of reviewed evidence suggesting positive effects, i.e., with less evidence than the above threshold, are shown on table S7, which can be found online in [supplement 9](#).

Different criteria can be used to classify interventions as evidence-based or not (e.g., Chambless & Hollon, 1998; Horner, Carr, et al., 2005; Kratochwill et al., 2013). Evaluation of whether individual interventions can be considered evidence-based is beyond the scope of the overview method, as this would require access to, and quality appraisal of, the primary studies included in the systematic reviews. Some included systematic reviews classified interventions as evidence-based using recognized criteria such as the 5-3-20 threshold (5 quality Single Case Design (SCD) studies conducted by 3 or more different research teams across 20 or more cases) (Kratochwill et al., 2013). This was recorded and displayed on the review characteristics table ([supplement 5](#)) and in the narrative summary of data ([supplement 7](#)).

Assessment of methodological quality of included reviews

Using the AMSTAR checklist, a tool commonly used in overviews to assess methodological quality of reviews (Lunny, Brennan, McDonald, & McKenzie, 2018; Pollock et al., 2016), all included reviews were independently scored by 2 reviewers, and a consensus process was followed, involving a third person if needed. If the review used statistical meta-analysis, it was scored out of 11. Narrative reviews, for which AMSTAR questions 9 and 10 were not relevant, were given a score out of 9. These summary scores were captured on the review characteristics table ([supplement 5](#)). Summary scores were used for ease of reference, so that, while perusing the data on the table, readers would be able to see by the score whether each review was of higher or lower methodological quality, and whether statistical meta-analysis was used or not. As is recommended (Pollock et al., 2017), however, a separate table showing scoring for each AMSTAR question, for all included reviews was completed, and can be found online in [supplement 8](#).

It was not feasible to assess risk of bias of the primary studies included in each review, but design of included studies is reported on the review characteristics table ([supplement 5](#)), to give some indication of strength of evidence.

Results

A total of 223 reviews were included, covering 3,921 relevant primary studies, and providing data on a wide range of interventions. Reviews varied widely in quality and were drawn from different fields, such as applied behavior analysis, education, medicine, public health and restorative justice. Reviewed studies varied in design, with single case experimental designs (SCDs), randomized controlled trials (RCTs), cross-sectional and longitudinal being some of the most common. There was considerable heterogeneity across reviews in terms of population, and a wide range of target behaviors, both positive and negative. Participants in the reviewed studies ranged in age from infancy to late adolescence. Ethnicity and SES varied. Most studies were set

in high-income countries, such as USA, European countries and Australia. Low and middle-income countries were far less represented. Children and adolescents with disabilities and more severe behavior problems were well represented. Detail on population, target behavior and outcomes for each intervention is provided in narrative form, online, in [supplement 7](#). Further detail can be found on the review characteristics table, online, in [supplement 5](#).

Interventions with supporting evidence

Table 1 shows interventions with a moderate to large amount of reviewed evidence showing positive effects on child behavior. These include over 50 tools in the categories: antecedent interventions, behavior contracts, communication, cost, distraction, extinction, feedback on behavior, goal setting, graduated exposure, modelling, monitoring, opportunities to respond, problem solving, prompting, reinforcement, restorative justice interventions, restraint, self-management, structure and time-out. Descriptions of each tool can be found on the table, with further detail available online in the narrative summary of data ([supplement 7](#)).

A table showing interventions with a small amount of reviewed evidence suggesting positive effects can be found online in [supplement 9](#). Among others, this category includes the relatively well-known tools of preparation and routine.

Table 1: *Interventions with a moderate to large amount of reviewed evidence showing positive effects on behavior*¹

| Intervention category & review no. ² | Intervention type & brief description | Outcomes |
|--|---|--|
| Antecedent interventions: 57; 62; 98; 130; 140; 161; 171; 180; 216 | Antecedent interventions - general: Environmental modifications in which the events or circumstances precipitating the target behavior are altered. There are many different types. | Reduction in problem behavior; increase in appropriate behavior. |
| 35; 73; 82; 128; 129; 150; 165; 172; 173; 175; 219 | Availability: Limiting access to unhealthy items or increasing access to healthy items | Increasing availability of healthy dietary items & limiting availability of unhealthy items: decrease in unhealthy eating & increase in healthy eating. Parents not making alcohol available to their children: protective factor against alcohol misuse. Allowing or providing alcohol for teenagers (including to teach responsible drinking): earlier initiation, heavier drinking & more chance of alcohol related problems. |
| 38; 104; 155; 216 | Behavioral momentum: also referred to as high probability instruction / command / request sequence. Child is asked to complete series of 3 to 4 brief requests with high probability of compliance, just before a request with low probability of compliance. Thought to build momentum, increasing likelihood of compliance with low probability/preference requests. | Increased compliance. |
| 25; 84; 138; 149; 159; 163; 194; 220 | Choice: Child is given a choice between things, such as tasks, reinforcers, order of activities, materials or settings. | Decreases in disruptive & inappropriate behavior; increases in appropriate behavior (e.g., consumption of fruit & vegetables; work completion; on-task behavior); improvements in affect, interest, intrinsic motivation, effort, task performance, & perceived competence. Where preference (see below) was controlled for, only modest effects were seen for choice-making, & only in low-preference activities. Caution: Effect of choice on intrinsic motivation diminished after five or more choices were given. |

¹ More precise reporting on age, disability, review quality etc. is available in the review characteristics table ([supplement 5](#)) & narrative summary of data ([supplement 7](#)).

² Numbers correspond with included reviews in [supplement 2](#)

| | | |
|---|--|--|
| 155 | Errorless compliance training: Allowing child to demonstrate compliance at higher-probability requests, before systematically introducing lower & lower-probability requests. | Increased compliance (initiation & completion). |
| 113 | Inhibitory stimulus control procedures: Child is taught to engage in the target behavior only when a specific stimulus is present (e.g. flapping arms only allowed when wearing the wristband). | Decrease in stereotypy for children & adolescents with ASD. |
| 98; 208 | Modifying task difficulty: Difficulty of a task is modified to lower the chance of escape or avoidance-motivated behavior. | Reduction in escape-maintained problem behaviors (e.g. challenging, destructive, aggressive, disruptive, noncompliant or off-task). |
| 63; 127; 155 | Non-contingent reinforcement (NCR): Reinforcement is added to the environment without the participant needing to earn it. Sometimes called environmental enrichment, object manipulation, matched stimulation or time-in (a reinforcing environment with touch & verbal praise amply available). | NCR: Decrease in behavior maintained by automatic reinforcement, such as self-injury, verbal or motor stereotypy & pica. Time-in: associated with increased compliance. |
| 50; 155 | Precorrection: Reminding students of rules just before the behavior is expected, e.g., before a transition: teacher reminds students of behavioral expectations for the transition area. | Prevention of predictable problem behaviors & increase in appropriate behaviors, Effective across grades. Giving a rationale, or warnings without stating expectations have not been shown to work. |
| 138 | Preference / interest: Interests or preferences of students are incorporated into required academic tasks. | Improvement in student behavior & academic performance. |
| 79; 100; 131; 160; 188; 216; 223 | Social narratives: Short, simple, individualized stories, usually with text & pictures, composed to help a child learn appropriate behavior in a specific social situation. Often used for children with ASD, has also been used for others with & without disabilities. | Increase in appropriate behavior (e.g. social skills, communication; academic skills; adaptive skills), decrease in challenging behavior (e.g. aggression, disruptive behaviors). For challenging behavior, best used alongside other interventions with stronger effects (such as differential reinforcement), rather than alone. |
| Behavior contracts 16; 43; 179 | Behavior contracts: Written documents, agreed upon with the child, that define expected behavior & outcomes for engaging or not engaging in that behavior. | Improved on-task behavior, daily assignment completion, school grades, student self-control. More effective in reducing inappropriate behaviors than increasing appropriate behaviors. Small but significant prevention effects for delinquency, criminal offending & recidivism. |
| Communication: adult-child 31; 33; 69; 93; 141; 165; 191; 222 | Caregiver-child communication: Usually described as warm, open communication between parent & child. | Delayed sexual initiation & increased responsible sexual behavior; prevention or reduction of adolescent substance use. Less delinquency: weak association for good communication, strong association for child disclosure. |

| | | |
|---|---|---|
| 75; 78 | Emotion socialization behaviors (ESBs) of caregivers: Reactions to emotions, discussion of emotions, emotion coaching. Positive ESBs include being aware of low intensity emotion, supportive of emotional expression, & using emotions as opportunities for intimacy & teaching. May include elaborative reminiscing, in which caregivers discuss past events with the child, acknowledging & validating emotions experienced. Questions are asked about, or references made to emotions, & emotions are labelled, discussed & validated. | Decreased likelihood of child conduct problems: (antisocial behavior; non-compliance, aggression, disruptive, defiant or oppositional behavior, or symptoms of DSM-IV/V disruptive behavior disorders); Improved parenting behaviors & skills. |
| 176; 221 | Empathic communication by dental or hospital staff: Listening; providing relevant information. | Reduction in child fear-related behaviors; increase in co-operation; improvement in child hospital experience. |
| 32 | Parental mediation of media: Discussion about content viewed. | Protective factor against negative effects of media on aggression, substance use, & sexual outcomes. |
| Communication: child-adult 177; 206 | AAC: Augmentative & alternative communication methods, for children with communication or language impairments. | Decrease in challenging behavior, increase in appropriate behavior |
| 60; 61; 62; 132; 142 | FCT (Functional Communication Training): Child is taught an appropriate communicative response to replace a problem behavior. | Decrease in challenging behavior (e.g. aggressive, disruptive, destructive; self-injurious). |
| 216 | PECS: Picture Exchange Communication System: uses pictures to help child struggling with spoken language to communicate. | Improved social skills, communication & joint attention. |
| Cost 73; 74; 84; 175; 214 | Price interventions: Prices of food items manipulated to encourage healthy eating. Tobacco prices increased to discourage smoking. Time-efficiency interventions add a cost in time for unhealthy food items e.g., by introducing express lines at the school cafeteria for healthy food only. | Increases in sales & consumption of healthy food. Reduced smoking among adolescents. Adolescents more price sensitive than adults, likely because price sensitivity is stronger when less money is available. Time efficiency incentives/costs: associated with increased selection of healthy food & decreased consumption of less-healthy food. |
| 57; 110; 114; 179 | Response cost: Usually a deduction of reward, such as tokens or points, for problem behavior. | Decrease in off-task & disruptive classroom behavior, swearing, aggression & other inappropriate behavior; improved task performance, especially for children with ADHD. For inhibitory control in children & adolescents with ADHD, there were stronger effects for reward without response cost. |
| Distraction 12; 13; 28; 29; 41; 45; 83; 86; 87; 89; | Distraction in medical & dental settings: Drawing the child's attention away from a painful or distressing stimulus & toward something else, such as a game, toy, | Positive effects on pain, anxiety & distress, & reduction in distress-related behavior. Low in cost, with no harmful effects. |

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| 96; 99; 101; 123; 145; 152; 211 | book, conversation, bubbles. video, story, music, or virtual-reality experience. | Effective across a wide range of ages & medical procedures & found in some cases to decrease the need for medication. |
| 112; 216 | Response Interruption & Redirection (RIRD): A distractor such as a prompt or comment is used to interrupt the child from engaging in the target behavior & then redirect towards a more appropriate, alternative behavior (such as appropriate language, or, for pica, throwing a non-food item in the trash). Used predominantly for repetitive, stereotypical or self-injurious behaviors, which are often maintained by sensory reinforcement, & are often resistant to other interventions. | Decrease in challenging behavior, increase in appropriate behaviors. |
| Extinction 62; 135; 179; 216 | Extinction / planned ignoring: Once the function of a challenging behavior is identified, the reward is withdrawn, e.g.: the reward of attention is withdrawn by ignoring the behavior. Extinction with parental presence (for sleep problems): involves the parent staying in the child's room after bedtime, but ignoring the child & their behavior. | Decrease in challenging behavior & increase in appropriate behavior in school & other contexts. Extinction with parental presence was effective for bedtime problems & night waking. Caution: Initial increase in the challenging behavior ("extinction burst") often occurs before the behavior is reduced. Usually, extinction should not be used in isolation, but with other interventions, such as teaching & reinforcing appropriate replacement behaviors. |
| 171 | Escape extinction: Used for escape-motivated behaviors, & involves not allowing the child to escape a disliked task through tantrums or other challenging behavior. | Effective for food selectivity & food refusal. |
| 135 | Graduated extinction (sleep training): Parents ignore bedtime crying & tantrums for specified periods between check-ins with the child. The check-in involves parents comforting their child for a brief period, while minimizing interactions that could reinforce attention-seeking behavior. Goal is to enable the child to develop self-soothing skills so that they can fall asleep independently, while avoiding child & parent distress that have been reported with use of standard extinction, which does not involve check-ins or reassurance. | Effective for bedtime problems & night waking in all studies. No adverse secondary effects reported. Better sleep & other improvements: infants less irritable, cried & fussed less, improvements in children's daytime behavior. Improvements in overall mental health of parents; fewer depression symptoms; improved marital satisfaction; reduced parenting stress. |
| Feedback on behavior 39; 57; 66; 72; 154; 161; 169; 179; 199; 215 | Daily report cards: Reports on which students receive teacher feedback on target behaviors after every lesson. Usually used for students who frequently engage in off-task, disruptive or inappropriate behavior, & have not responded sufficiently to universal interventions which work for the rest of the class. There are also other forms | Decrease in challenging, disruptive & ADHD-type behavior; increase in appropriate behavior, academic achievement, school engagement & completion; improvements in social behavior. Other forms of performance feedback showed increase in appropriate, prosocial & academic behaviors; decrease in |

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| | of performance feedback , in which students are provided with data (e.g., charts, graphs, reports) systematically tracking their performance in target classroom behaviors / physical activity / sedentary behaviors. | inappropriate behavior; decrease in classroom transition times; short-term increases in physical activity. |
| Goal setting 20; 51; 72 | Goal setting: Involves clear goals set with or for participants. | Positive effects across a range of educational, sport & health behaviors, e.g. increase in physical activity; decrease in challenging classroom behavior, increase in appropriate behavior. |
| Graduated exposure 111; 133 | Graduated exposure: Hierarchical exposure to feared stimuli e.g., sitting in the waiting room; then seeing a syringe without a needle; then seeing a syringe with a needle; then holding a syringe with a needle; then holding the tip of a needle against their arm, & eventually having an injection. | Reduction or elimination of targeted fears or phobias; decrease in challenging behavior. |
| Modelling 43; 111; 200; 216 | Modelling: An adult or peer demonstrates a target behavior in the hope that the child will imitate & eventually acquire that behavior. | Strongly influenced food intake. Effective to teach social skills; communication; joint attention; play; school-readiness; academic skills & vocational skills to children & adolescents with ASD. Reduction in fears or phobias & decrease in related challenging behavior for children with ASD. Small but significant prevention effects for juveniles at risk for persistent offending or more severe antisocial & delinquent behavior. |
| 32; 47; 53; 128; 129; 136; 143; 150; 165; 166; 193; 198; 210; 218; 219 | Parental modelling: Behaviors engaged in by parents & observed by their children. | Associated with child healthy or unhealthy diet, in same direction as behavior modelled by parents. Has not shown clear effects on child physical activity. Parental modelling of alcohol use associated with earlier alcohol initiation & higher levels of later alcohol use. Co-viewing of media (parent watching or playing together without discussion) is associated with increased aggression & media use. |
| 6; 10; 11; 30; 46; 68; 70; 71; 124; 125; 126; 196; 216 | Video modelling: Uses videos to provide a model of the target behavior / skill. There are different types: video modelling other, video self modelling (participant is recorded successfully performing the target behavior, with mistakes, negative behavior & adult prompts edited out), point of view modelling & video prompting. | Effective for teaching appropriate behavior & skills (e.g. on-task behavior; social skills; communication; play; academic skills; self-help; independent living). Reduction in challenging behavior, (e.g., out-of-seat; inattentive; fidgeting; distracted; off-task; argumentative; inappropriate; negative; disruptive; tantrum; aggressive; self-injurious). Particularly effective for children & adolescents with ASD. Did not reduce distress for children undergoing needle-related procedures. |

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| Monitoring 33; 48; 69; 91; 93; 94; 141; 148; 150; 165; 222 | Parental monitoring of child whereabouts & activities e.g. supervision, talking to parents of children's friends or information from child disclosure. | Delayed & more responsible sexual behavior; less cyberbullying perpetration & victimization; less likelihood of delinquent behavior; fewer externalizing symptoms after exposure to violence; prevention or reduction of adolescent substance use. Stronger effects when combined with parental warmth & open communication encouraging child disclosure. No effect on fruit & vegetable intake. |
| 52; 179 | Playground supervision (increased) or active supervision (teacher moves around, looking around, interacting with students, correcting any behavior inconsistent with expectations & reinforcing good behavior). | Increased playground supervision: decrease in bullying; identified in meta-analysis as one of the most important elements of school anti-bullying programs. Active supervision: improved student behavior in classrooms, hallways & other school settings; higher levels of participation in class; decrease in minor behavioral incidents. |
| Opportunities to Respond (OTR) 34; 54; 189; 117; 147; 156; 189 | Teacher Directed Opportunities to Respond: Teachers increase opportunities for all students to respond, as opposed to choosing only one student to respond. May use response cards; choral responding; student response systems or clickers; unison hand gestures such as thumbs up or thumbs down; laminated boards with response choices, or erasable markers. | Decrease in off-task, disruptive & inappropriate behavior; increase in appropriate behavior, academic engagement; improved academic outcomes. Strong positive effects & good social validity. |
| Problem-solving together 64; 118; 153; 203 | Student participation in decision making (e.g., re class rules or school problems): discussing, brainstorming, choosing & implementing solutions. Collaborative problem solving approach: Adult attempts to solve a problem collaboratively with the child: adult explores child's concerns about the problem; adult states their concern; adult & child brainstorm solutions that address both their concerns; child is given the first opportunity to generate a solution; no solutions are dismissed outright; adult helps child to think through whether each solution addresses both of their concerns & whether it is realistic & feasible; they agree on a solution, implement it & return to discuss whether it was successful. If not, they discuss further & try another solution until they find one that works. | Student participation: qualitative results: increase in satisfaction, motivation, ownership, skills, competencies, knowledge, personal development, self-esteem, social status & democratic skills; improved student–adult relationships; improved school climate / culture; Stronger sense of connection to school; higher perceptions of safety. A few studies reported negative effects: unmet expectations; negative feelings (e.g., not taken seriously; overwhelmed by responsibility). Collaborative problem solving: Outpatient settings: improved parent-child relationships; reduction in oppositional behaviors, ADHD symptoms & parenting stress. Inpatient settings: dramatic reduction in use of restraint & locked-door seclusions; decrease in staff & patient injuries. School settings: reduction in disciplinary referrals & teacher stress. |

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| Prompting 7; 77; 102; 112; 209; 216 | Prompting: Assisting or reminding a child to engage in a target behavior, usually as, or just before, they attempt the behavior. Prompts can be verbal, visual, gestural or physical & can be used systematically, in a hierarchy of least to most, or most to least intrusive prompts. Example of least to most prompting: proceeding, as needed, from visual to verbal to gestural to modelling to partial physical to full physical prompts. | Increase in targeted behaviors such as toilet use, play skills, imitation skills, social skills, communication skills, academic skills, motor skills & vocational skills. Decrease in stereotypy for response redirection (a specialized form of prompting). |
| Reinforcement 15; 57; 62; 85; 102; 111; 207; 209; 216; 221 | Reinforcement – General: not specified, or a combination of praise & reward. | Increase in targeted behaviors: imitation; communication; social skills; play; cognitive skills; school-readiness; academic skills; motor skills; adaptive skills; vocational skills. Effective for toilet training. Decrease in off-task & disruptive classroom behavior; digit sucking; fears, phobias & related challenging behavior. |
| 57; 97; 116; 127; 151; 158; 179; 216 | Differential reinforcement: Desired behaviors are reinforced, while reinforcement for inappropriate behaviors is withheld (extinction) or lessened. Several types, all involve making the problem behavior less reinforcing than the desired behavior. | Increase in appropriate behavior; decrease in inappropriate, disruptive, aggressive or self-injurious behavior. A well-researched skill, effective for a wide range of target behaviors across different settings. |
| 2; 9; 105; 146; 164; 179; 219 | Praise: Adult expresses approval or admiration for appropriate behavior. Behavior specific praise: adult gives verbal or written praise statements explicitly describing the behavior being praised. Behavior should be something in the child's control (e.g., effort) rather than out of their control (e.g., ability). | Increased physical activity; healthier eating; appropriate classroom behavior (e.g., increases in on-task behavior, attention; correct responses; productivity; accuracy & academic performance). Decrease in inappropriate classroom behaviors. Students with & without disabilities taught to recruit praise received more praise, feedback & assistance & in turn showed increased task engagement, productivity & accuracy of work. Praise was ineffective or showed mixed results for compliance. Time-out had stronger effects on compliance. |

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| 23; 24; 36; 44; 81; 84; 109; 110; 114; 146; 149; 169; 178; 186; 190; 219 | Reward: Something given in exchange for good behavior or work. May be called an incentive when offered ahead of the desired behavior e.g., financial incentives, vouchers, points, prizes, TV or screen time. | Positive effects for increasing physical activity (no data on maintenance); healthier eating (in school settings, at the time of the intervention, but no effect found for parental reward on healthy eating at home); adolescent smoking cessation; increased rate of single-action positive health behaviors, such as clinic attendance or return of vaccination consent forms (but not for more complex health behaviors); decreased truancy; increased post 16 educational participation; increased reading fluency, speed & accuracy; improvements in nocturnal enuresis (although not as effective as alarms or medication); increased compliance; enhanced intrinsic motivation for low-interest tasks; improved motivation & task performance especially for participants with ADHD, who show more benefit from rewards. Can normalize inhibitory control in participants with ADHD to the baseline level of controls. Caution: Rewarding participants who are already motivated to do something can undermine intrinsic motivation, suggesting that rewards should be used with attunement to child motivation levels. Not problematic to reward children for things they are not motivated to do. Caution: Food rewards have been associated with unhealthy eating. |
| 59; 119; 179; 183; 192 | Token economy: Reward system in which participants earn tokens or points for good behavior, that can later be exchanged for back-up reinforcers such as activities or tangible goods. | Increase in appropriate classroom behavior; decrease in disruptive & inappropriate classroom behavior; improved motivation & performance of children with brain injury; improved behavioral, educational & work-related outcomes for juveniles in prisons & other institutions. |
| Reinforcement for groups 76; 107; 120; 121; 179. | Group contingencies: Reward systems in which common expectations are set for a class or group, & common positive outcomes earned. Dependent group contingency: rewards for the entire group depend on the performance of selected member/s of the group, while performance of the others is irrelevant. Independent group contingency: each group member receives reward based on their own performance, but everyone has the same target behaviors & rewards. Interdependent group contingency: the entire group receives reward, based on the behavior of any, or all of the members. | Decrease in disruptive behavior; increase in appropriate behavior in K-12 classroom or school settings. Increase in peer social acceptance. All varieties of group contingency strongly effective with a wide range of target behaviors regardless of age, grade & gender. Where reported, social validity (acceptability / satisfaction with the intervention) good. The interdependent group contingency has the most evidence. One specific group contingency (smoke free class competition) was not effective for the target behavior (prevention of smoking initiation). |

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| 8; 17; 55; 56; 115; 182; 205; 212 | Good Behavior Game (GBG): An interdependent group contingency used to address disruptive classroom behavior. Usually the class is divided into teams, & team points allocated for inappropriate behavior of any individual. Teams must stay below a certain number of points to qualify for the daily reward. | Immediate & substantial decrease in disruptive, aggressive or off-task classroom behaviors. Increase in attentive, on-task & prosocial behaviors & peer acceptance. Effective K-12, particularly for children with or at risk of emotional & behavioral disorders. RCTs in different countries show significant long-term effects: less substance misuse, lower rates of anti-social personality disorder, less depression, less suicidal ideation, higher high school graduation rates, especially for males, less externalizing behavior, lower incidence of psychiatric diagnosis, oppositional defiant disorder (ODD) & conduct disorder. |
| Restorative Justice Interventions 43; 108; 144; 168; 187; 217 | Restorative justice conferencing (RJC) includes victim-offender mediation (VOM) & the family group conference (FGC) . VOM: mediator meets with victim & offender separately, to prepare them for a meeting with each other. Followed by a mediated session together, to speak about the crime & its effects, & decide together how best to repair the damage. FGCs: meeting between victim, offender, family members of both & a facilitator, to discuss the crime & its effects, & decide together on appropriate reparation. | Mixed results regarding whether RJCs have effects on recidivism. One review found that behavioral program components such as behavioral modelling, behavior contracting, or parent training in behavioral skills (e.g. contingency management) had stronger prevention effects than restorative justice interventions. No suggestion that restorative justice is less effective than traditional court processing. More sensitive measures than recidivism show greater victim satisfaction; slightly higher recognition of wrongdoing by offenders; less serious / harmful re-offenses. |
| Restraint 15; 67; 97 | Protective restraint interventions are often used for self-injurious behavior (SIB) & sometimes for aggression. Eg., response blocking (child is physically prevented from carrying out an inappropriate behavior, e.g. by catching an arm raised to punch someone); environmental restraint (e.g., time-out); manual restraint (e.g., holding the child's hands down for a short while contingent on each instance of SIB); mechanical restraint (e.g., protective clothing or equipment for SIB). | Effective for self-injurious & aggressive behavior. There is a trend towards less restrictive procedures, e.g. a change in the use of restrictive clothing & equipment from continuous to contingent use (worn briefly following SIB). Findings from 2 comparative studies suggest that contingent use may be more effective & easier to fade. Caution: although sometimes necessary, use of restraint is controversial, & should involve minimum force. |
| Self-management 18; 19; 21; 22; 26; 27; 40; 42; 57; 62; 72; 109; 137; 157; 161; 184 | Self-management , also called self-regulation : interventions involve self-monitoring & usually self-recording of a specific target behavior (e.g. on-task behavior; a disruptive behavior; exercise), & may involve other components such as goal setting, self-evaluation & self or adult-delivered reinforcement. | Decrease in challenging & ADHD-type behavior; increase in appropriate behavior; improved scholastic outcomes. Effective across all school grades, for a range of different behaviors, and for children with & without disabilities (e.g. ASD; behavioral disorders). Small but significant improvements in physical activity, diet & weight loss. |
| Structure 80; 179 | General: Parental positive control: e.g. limit-setting; directiveness with mild to moderate power assertion; clear guidance & instructions. Classroom structure: explicitly defined routines & teacher-directed activity. | Parental positive control associated with greater child self-regulation. Classroom structure: less aggression; more appropriate academic & social behaviors, e.g., task involvement; |

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| | | friendly peer interactions; helpful behaviors (e.g., cleaning up); attentiveness. |
| 4; 14; 52; 58; 122; 128; 139; 162; 167; 170; 181; 202; 213; 214 | Policies: School or school-based or population-based e.g., safe school; anti-bullying; physical activity; diet; alcohol; tobacco. Policies may ban or restrict unhealthy products or behaviors, or increase opportunities for healthy behaviors. | Less bullying & discrimination; fewer suicide attempts; increased physical activity; improved food consumption behaviors; lower consumption of sugar sweetened beverages; reduced tobacco use; reduced alcohol use. |
| 32; 49; 93; 128; 136; 141; 150; 165; 174; 219 | Rules: Parental rules restricting media, unhealthy food, tobacco; cannabis & alcohol. | Decreased sedentary behavior; increased physical activity; healthier eating; prevention, curbing or reduction of adolescent substance abuse; enhanced adolescent self-control around alcohol. |
| 3; 5; 52; 179; 203 | Rules: Classroom & school rules describing acceptable & unacceptable behavior; anti-bullying rules. | Improved student behavior: strongest effects when rules were taught to students & linked to positive or negative consequences. Stronger perceptions of safety, less violence & victimization, less bullying. |
| 88; 92; 106; 185 | Activity Schedules: a sequence of visual cues (e.g. pictures) used to prompt, teach skills or reduce problem behavior. | Decreased challenging behavior; increased appropriate behavior; increased independence, improved transitions. |
| 1; 216 | Scripting & script fading: a script for appropriate behavior in a specific situation, usually for participants with ASD. Scripts are practiced repeatedly, then used in real situations until successful, then systematically faded. | Increased social skills & communication; increased unscripted responses. |
| Time-out 37; 78; 90; 105; 127; 146; 179; 201 | Exclusionary & non-exclusionary time-out: Exclusionary timeout: removing the child from the environment they are in, for a short while, contingent on an inappropriate behavior e.g., aggression or non-compliance. Non-exclusionary time-out: child is barred from participation in an activity or receiving reinforcement for a while, but not excluded from the venue. | Reduction or elimination of verbal & physical aggression, non-compliance & disruptive, off-task or inappropriate behaviors. Both kinds of time-out are effective. See narrative summary (supplement 7) for more detail on parameters & practical application. |

Interventions included in the search, but for which no reviewed evidence was found.

A number of interventions included in the search were not covered in any review. No reviewed evidence was found for any intervention referred to as “logical consequences”, however several of the tools found effective, such as increased monitoring, daily report cards, time-out from a specific activity the child is not managing, contingent protective restraint, response cost and restorative justice interventions which involve making amends, could be used as logical consequences, depending on how they are framed. Although there was strong evidence for the importance of communication, no reviewed evidence was found for separate components of communication, such as active listening, open ended questions, or allowing a child to “vent” (speak freely when they are upset or angry). There is implicit evidence for active listening, however, in the important positive results for good parent-child communication (e.g., *Mynttinen, Pietilä, & Kangasniemi, 2017; *Ryan, Jorm, & Lubman, 2010) and child disclosure (e.g., *Hoeve et al., 2009). Certain aspects of structure such as deadlines (“I’m counting to 3”) or turn-taking were not represented in reviews. Reviews on family rituals were found, but none met the inclusion criteria for this overview. No reviews were found addressing remedial stories other than Social Stories™ (Gray & Garand, 1993), or making amends in contexts other than restorative justice interventions. No reviews were found on talking circles, or Adlerian-style family or class meetings, although evidence on student participation and collaborative problem solving suggest that these could be useful approaches. No reviews were found on natural consequences, cool-down time for children in a hyperactive state, quiet time for sensory overstimulation, or assertive repetition of an instruction. No reviews were found on skills to de-escalate explosive or aggressive situations.

Discussion

A wide range of evidence-supported interventions exist (see table 1), many of which have been found effective across age, gender and disability status, in ethnically diverse samples and with severely challenging behavior. In the two cases where reviews tested this statistically, effectiveness of individual interventions was not moderated by ethnicity (*de Vries, Hoeve, Assink, Stams, & Asscher, 2015; *Johnson, Hawes, Eisenberg, Kohlhoff, & Dudeney, 2017) suggesting that these tools may be good candidates for use in different cultural contexts. This would be consistent with findings that parenting programs, many of which teach selections of these tools, seem to transfer effectively from one cultural context to another (Gardner, Montgomery & Knerr (2016). However, this is not firm evidence that all skills are applicable cross-culturally, and further research should explore this.

There are further interventions for which the small amount of available evidence suggests positive effects (see [supplement 9](#)), and more research is needed on these. Gaps in the literature include that no specific systematically reviewed evidence could be found for some relatively well-known interventions, such as active listening, family rituals, talking circles or class meetings, although, in some cases, evidence suggesting efficacy can be found in closely related interventions. Another gap in the literature concerns the use of many of the interventions in typical home

settings. Their successful use in more extreme or challenging situations, however, bodes well for their use in more common situations.

When we consider that discipline situations often involve dysregulation, anger and other heightened emotions, that the behavior that may need containing may be aggressive or violent, and that this could easily prompt a violent response from caregivers, it is clear that the lack of reviews on skills to de-escalate explosive or aggressive situations is a serious gap in the literature. Since time-out is often effective for aggression, it could be useful in this kind of situation. Listening and empathy could also apply, as they have been found to be key components of de-escalation in violent and aggressive situations with adults (Price & Baker, 2012), however no similar reviews were found addressing children or adolescents. Life Space Crisis Intervention (Long, Wood, & Fecser, 2001), an approach to crisis intervention with children and adolescents, includes a step called “drain-off”, which usually involves listening empathically to “drain-off” heated emotions, but may also involve allowing the child some time to cool off on their own, which could be seen as a kind of time-out. While LSCI as a whole, has shown positive effects (Dawson, 2003; D’Oosterlinck, Goethals, Boekaert, Schuyten, & De Maeyer, 2008), no reviews were found on effects of the individual components, such as “drain-off”. There is an urgent need to test and review time-out, listening, and other skills specifically as de-escalation tools.

Aside from their effectiveness and thus usefulness as alternatives to physical punishment, a significant finding of this overview concerns the important and often long-term positive outcomes associated with use of the non-violent methods reviewed (see table 1, the review characteristics table in [supplement 5](#), and narrative summary in [supplement 7](#)). Examples include improved school engagement, academic achievement, participation, communication and social relationships, better self-regulation, higher self-esteem and independence, and lower rates of depression, suicide, substance abuse, sexual risk behavior, conduct disorders, aggression and crime. These positive outcomes suggest that use of these tools would be beneficial not only as alternatives to physical punishment, but to foster optimum child development.

It was clear that the tools were more effective in certain situations or for certain children than for others, for example, rewards undermined intrinsic motivation for children who were already motivated, but had positive effects where motivation was low (*Deci, Koestner, & Ryan, 1999), and were found to be particularly important for children with ADHD (*Luman, Oosterlaan, & Sergeant, 2005; *Ma, van Duijvenvoorde, & Scheres (2016)). This suggests the need for attunement on the part of the adult, matching the use of discipline tools to the needs and signals of the child.

Overview limitations It is important to remember that overviews give a description of reviewed evidence, rather than all available evidence on each intervention. Systematic reviews are limited in scope, often only covering a narrow population or target behavior. Thus, evidence presented on each intervention should not be considered comprehensive. Likewise, absence of reviews on an intervention should not be understood as proof of no evidence, as this could simply indicate that the available evidence has not yet been systematically reviewed.

Some included reviews were of excellent quality, but many were less rigorous, limiting the conclusions that can be drawn about intervention effectiveness (see AMSTAR scores in [supplement 8](#)). However, the inclusion of more than one review on each intervention provided some confirmation of results.

Although studies indexed under the term “discipline” are relatively rare, the field of possibly relevant studies is huge. The chance of missing reviews is therefore relatively high, even with a rigorous and sensitive search process.

Risk of bias of primary studies included in each review was not assessed. Although this is recommended (Becker & Oxman, 2008), there is conflicting guidance in methodological texts on how exactly to collect and present data on primary study quality in an overview of reviews (Pollock et al., 2016). Methods proposed include extracting and reporting the quality assessments conducted within each review, but there are as yet no guidelines on how to manage the difficulties inherent in this approach, such as use of different quality assessment tools in different reviews, (Pollock et al., 2016) or the fact that not all reviews assess study quality. Another option would be to refer back to each primary study to conduct quality assessments (Pollock et al., 2016), which would not have been feasible considering there were 3,921 studies covered by the included reviews.

Grey literature was not included, to ensure that all included reviews had been through the peer review process involved in publication, as an indicator of quality. However, many of the included reviews did search for and include grey literature. Those that did not, increase the likelihood of publication bias, as studies finding positive results are more likely to be published. This is not a serious impediment to this overview, however, as the aim of this overview was to build a non-violent toolkit, rather than to find a single solution. It is thus not necessary to prove that each intervention is always or even mostly effective. The fact that it has been found effective for certain target behaviors (see table 1) is enough for a skill to be considered a useful addition to the toolkit. That an intervention will not always be effective is expected, and one of the reasons why it is necessary to provide a range of options, so that, if one does not prove effective, another can be tried. This also suggests that, in addition to providing caregivers and teachers with discipline tools, a focus on attunement may be necessary.

Conclusion

In this overview, most of the included reviews did not have positive discipline options as a focus. Most examined a specific behavior problem, a specific intervention, or perhaps a few interventions for problems in a specific population or setting (e.g. autistic children or the classroom setting). The overview method enabled extraction of relevant data from each of these focused reviews to answer the broader question of what non-violent, evidence-based discipline interventions could be used by caregivers and teachers, a topic which, to the best of the authors’ knowledge, has never been systematically examined in this breadth before.

The lack of reference materials on positive discipline methods has been an impeding factor in the prevention of violence against children. Listing and reviewing these evidence-supported non-violent interventions is an important step towards providing

caregivers and teachers in different cultural contexts with a toolkit of effective interventions for challenging behavior. Although there are some gaps in the literature, this research has shown that a wide range of well-tested, evidence-supported interventions exist and are effective even with severely challenging behavior. Many important and often long-term positive outcomes were found in review of these methods. It is reasonable to conclude therefore, that use of these non-violent tools should be promoted not only for prevention of violence, but for optimum child development.

Table 2: *Implications for practice, policy, and research*

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| 1. Listing and reviewing these evidence-supported tools is an important step towards providing caregivers and teachers in different cultural contexts with a toolkit of effective alternatives to corporal punishment. |
| 2. Policy makers should not hesitate to legislate against corporal punishment, as this research has shown that a wide range of well-tested, evidence-supported alternatives exist and are effective even with severely challenging behavior. |
| 3. Since legislation alone has limited effects, policy should also support caregivers and teachers to learn these non-violent alternatives. |
| 4. The positive outcomes shown suggest that policy should promote non-violent discipline not only as an alternative to physical punishment, but to foster optimum child development. |
| 5. There is a need for more research on the use of many of the tools in typical home settings. |
| 6. The lack of evidence on tools to de-escalate explosive or aggressive situations is a serious gap in the literature with implications for child safety. There is an urgent need to test and review time-out, listening, and other skills specifically as de-escalation tools. |

Authors' note

This research was supported by grants to the second author, from the National Research Foundation (Grant no. 109479) and the University of Cape Town Research Committee. Opinions expressed are those of the authors and not of the National Research Foundation or University Research Committee.

The protocol for this overview was approved by a review committee in the Department of Psychology, University of Cape Town.

Acknowledgements

Thanks to the three research assistants, who worked alongside the first author at different times during screening and data extraction. They are: Ayabonga Timakwe, Tamsyn Naylor and Stijn de Leeuw. Thanks to Mikha Davids for technical support, help designing figures, and customized software automating repetitive aspects of data management.

Declaration of conflicting interests

There are no conflicts of interest for either author or for the research assistants. The first author runs workshops on positive discipline interventions. Workshop materials were adjusted in light of the evidence found here, and not the other way around.

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Included reviews

See [supplement 2](#). Citations indicated above with * are included reviews.

Excluded reviews

See [supplement 3](#).

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