

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

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This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

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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. At the other extreme, lack of awareness of positive options may lead to permissive parenting, which also has negative outcomes for children. 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. To meet this objective, a systematic overview of systematic reviews was conducted. In the course of the overview, aside from information on the individual discipline tools, data relevant to attunement was collected and explored. Attunement describes sensitive responsiveness of caregivers towards their children, understanding and matching the child’s needs and signals with appropriate responses. Results of the overview show that a wide range of evidence-supported interventions exist, many of which have been found effective with severely challenging behavior. Further, evidence was found suggesting the importance of attunement in optimal use of these discipline tools. Practical implications of these findings are discussed and gaps in the research highlighted.

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Chapter 1: Introduction

This research was initiated to meet a need for reliable information experienced in my work as a practitioner in the field of non-violent discipline, and to provide reliable information for others. In order best to serve these purposes, the thesis follows a somewhat non-traditional structure. I will start with some background information, and then describe the structure of the thesis.

1.1. Background

People who shame, humiliate, kick, beat and burn children are not usually strangers to them. They are, ironically, the people responsible for their care and protection. Most of this violence is meted out as punishment for misbehavior (Durrant & Ensom, 2017; Mbugua, Muriithi, Muthui, & Ogeda, 2015; UNICEF, 2017). It was my job, as school counsellor, to deal with the children who came to school with bruises and other injuries inflicted by their caregivers. Intervention was not easy. The child would be terrified, the parents furious at my “interference” in their “discipline”, and the social services ridiculously, tragically overloaded. While the number of children whose injuries attracted attention was smaller, if I asked any class who had been hit or beaten by their parents, by far the majority would raise their hands. When I ask this question in group settings today this is still the case, an observation supported by recent research (Meinck, Cluver, Boyes, & Loening-Voysey, 2016).

I started teaching in 1996 at a high school in Cape Town, my role divided between teaching and counselling. The average class size at that stage was 45 to 48 students, and I found I had to manage a lot of disruptive behavior. I also discovered first-hand how difficult it can be to find information on positive discipline skills. In our teacher training we had hardly touched on discipline, and I soon discovered that this was a serious gap in our education. Discipline and

discipline-related issues were a huge part of my job. Aside from needing skills to manage disruptive behavior in my classes, as the counsellor it was my job to consult with school management on constructive ways to deal with cases of aggression, theft, vandalism, substance abuse, bullying, and sexual harassment. I also needed to advise parents on alternatives to corporal punishment.

Like many inexperienced teachers, at first, I was not firm enough in class. Wanting to be approachable, I gave too much leeway, and the students quickly went out of control. I asked other teachers for advice. “Don’t smile till Easter”, said one. “Well, you scream and you shout and you act like a dragon and after a while they listen!” said another. An older teacher told me a story about “getting respect” by caning a boy in front of the class. This was unhelpful, to say the least. As the school counsellor I needed the children to feel safe with me. Sometimes a student needed counselling in one lesson and classroom discipline in the next. I needed ways to be firm while staying approachable.

I found a pamphlet put out by an NGO: “10 things to do instead of hitting”. Eagerly, I picked it up, thinking it would be a list of non-punitive discipline options. Here is what I remember of what was on that pamphlet:

Take a deep breath.
Leave the room.
Phone a friend.
Go to the shop...

The rest, which I don’t remember now, was equally unhelpful to me as a teacher. Disappointing as this was, I think this was the moment in which the idea of a list of discipline options was born.

As I gained experience and learned some non-punitive discipline skills, things started going a lot better. The children co-operated and participated, and I loved teaching them.

However, ten years of work as a school counsellor and teacher convinced me that if I wanted to

make a difference, the people I needed to work with were not the children but their caregivers and teachers.

I now work independently, coaching and running workshops on non-violent discipline for parents, teachers and child-care workers. It made sense to me to package discipline in the way people commonly asked about it, i.e., “What can we do instead of hitting?” The workshops, called *Peace Discipline*, take a “toolkit” approach, providing attendees with access to a range of non-violent discipline options, and have been running for 16 years now. Groups range from under 10 people to over 150 and are run in diverse cultural settings, the largest in more collectivist contexts.

At the end of 2014, I started writing a book, but realized I felt ungrounded. Like most parenting programs in our country (Wessels & Ward, 2015), *Peace Discipline* was not evidence-based. The skills had been extracted over the years from popular literature e.g. (Faber & Mazlish, 2012; Gray, 2011; Nelsen, 2011) and tested through experience. Around that time controversy was growing around the use of timeout, with detractors citing research to boost their arguments (Siegel & Bryson, 2014a; Siegel & Payne Bryson, 2014b). I witnessed the paralyzing effect this had on the parents I worked with, and the negative effects on their children’s behavior. While I knew I could write a book full of entertaining stories about skills that work in our context, I felt uneasy writing it without knowing what research *really* said about these methods. I realized I was facing a crossroads: I could write a pop-psychology book, or I could do research, and write something more evidence-supported. I started writing a research proposal instead of a book. The aim of this research was to provide parents, teachers and others working with children with an evidence-supported list of safe, non-punitive discipline options, and whatever guidance research could offer on how to use them. Beyond this, my aim was, and still is, to find ways to give

people access to these skills without having to attend a program (including Peace Discipline). I still plan to write the book, and, also, to make reliable information freely available online.

1.2. Thesis structure

To achieve these aims I originally proposed a systematic review of the evidence for individual discipline skills. It soon became apparent that this would be an unmanageable task, and, instead, a systematic overview of systematic reviews was conducted. The results of this are presented in Chapter 2 of the thesis. Experience in the field had led me to the hypothesis that attunement, in other words matching the discipline skills to the needs and signals of the child at that time, is an important part of discipline. During the systematic overview, I collected data that would allow me to explore this hypothesis, and the results of this are presented in Chapter 3. Chapter 4 discusses how attuned discipline might be used in practice, and Chapter 5 concludes the thesis.

Because this thesis was driven by a desire to make reliable information more available, I resolved from the start to publish findings in peer-reviewed outlets. To expedite this, Chapters 2 and 3 are formatted as papers which will be submitted to journals for publication. I therefore invite my examiners to review these as potential publications in an academic journal, and would be grateful for their feedback. Aside from the usual interchanges between student and supervisor, these papers are my own work. The use of the word “we” in these papers, and references to my supervisor as the second author, acknowledge her support, guidance, and thus academic contribution, to the work. For ease of reading, figures and most tables are situated in text, deviating somewhat from the usual paper layout.

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Chapter 2

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

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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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Abstract

Background: 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. At the other extreme, lack of awareness of positive options may lead to permissive parenting, which also has negative outcomes for children. 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 interventions are evidence-supported and what that evidence says, so that robust alternatives to corporal punishment can be made available.

Objective: 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.

Method: A systematic overview of systematic reviews was conducted. Screening, quality assessment using AMSTAR and data extraction were performed independently by two reviewers.

Results: 223 reviews were included, covering data from 3,921 primary studies.

Conclusion: 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: systematic review; umbrella review; positive discipline; behavior; parenting; classroom management

2.1. Introduction

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). Worldwide, around 1.1 billion caregivers, more than 1 in 4, admit to believing that physical punishment is necessary as a form of discipline (UNICEF, 2017).

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 (e.g., Kenya or in South

African schools), many children still experience corporal punishment (Burton & Leoschut, 2013; Mbugua et al., 2015; Meinck et al., 2016). One reason corporal punishment is still used as “discipline”, seems to be the 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, they are less able to resolve relationship problems constructively, and more likely to engage in hostile marital conflict (Topham, Larson, & Holman, 2005).

Baumrind (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, or 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 also 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”, accessibility and fit with diverse client needs may be more achievable, as evidence-based skills could be made available for use in whatever combination best suited client needs (Barth et al., 2012). This would allow caregivers and teachers to choose

and use effective non-violent methods within the framework of their own values and cultural norms.

Thus, a toolkit approach might allow for a more flexible, attuned approach, while still using evidence-based practices. 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 to 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.

2.2. 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 interventions can be considered to be evidence-supported? (2) What does this evidence show about their use and effectiveness? (3) Where are there gaps in the research?

2.3. Definitions

We define *positive discipline options* as discreet, non-violent interventions that can be used to address a child's resistance, lack of co-operation, problem behavior or dysregulation, or to teach and support appropriate behavior. 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, we widen the definition 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.

We will use the term *evidence-supported* 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 4.4 below.

2.4. 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, University of Cape Town.

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

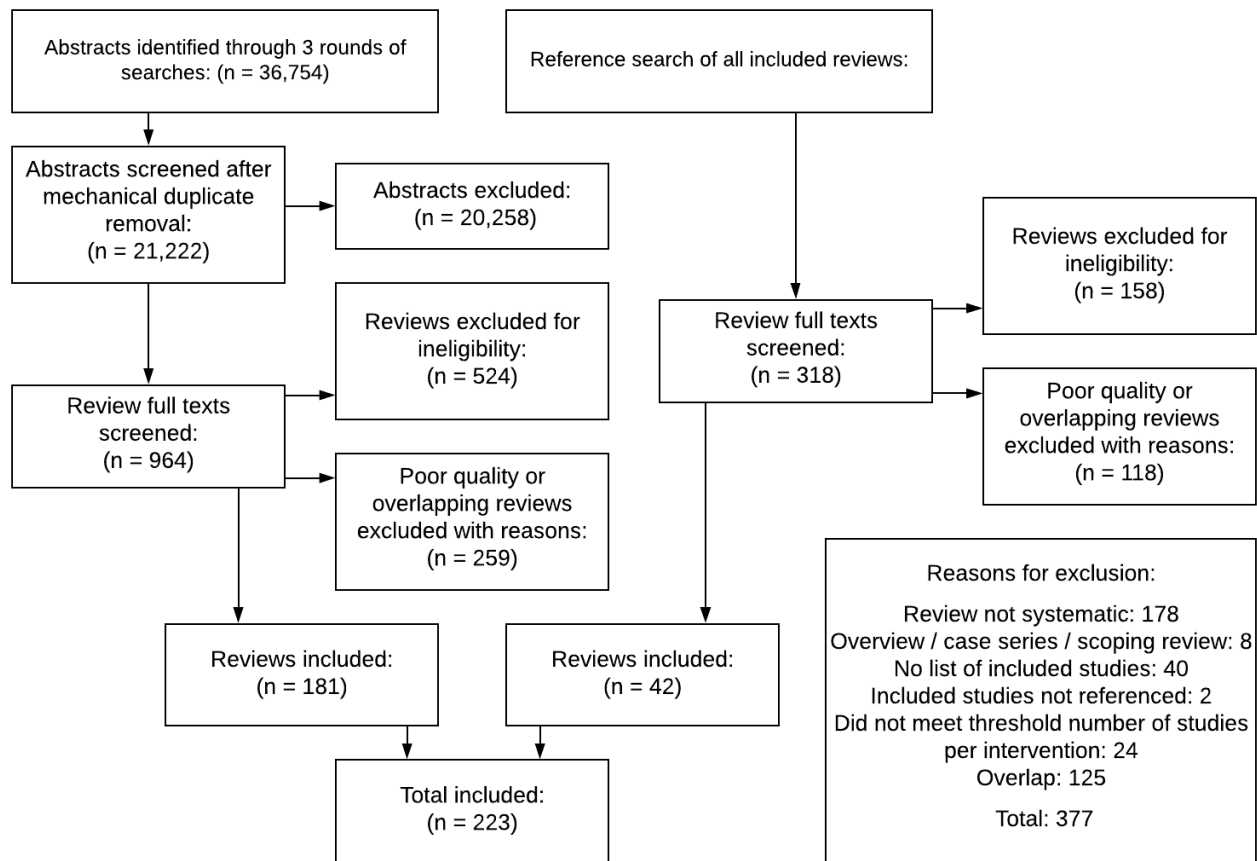
methods to avoid double-counting of data (Pollock et al., 2016; Thomson et al., 2013): One is to choose one review per intervention (for instance: the latest, the best quality or the most relevant to the overview question). Another way is to include all the reviews found for each intervention but report 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.

2.4.1. Search strategy

A detailed account of the search strategy and intensive search process, including search terms used, can be found in [web-appendix A](#). 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 in [web-appendix A](#). 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 retrieved and screened for inclusion. A PRISMA flow diagram showing the overview process is shown in Figure 1.

Figure 1: *PRISMA Flow Diagram*

2.4.2. 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, or learned to use an Augmentative and Alternative Communication device. 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 in [web-appendix B](#). The list of excluded reviews, with reasons for exclusion, can be found in [web-appendix C](#).

2.4.3. 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 in [web-appendix D](#). 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 2nd author. Extracted data from each included review was

summarized on a “review characteristics” table, grouped by intervention. This table can be viewed in [web-appendix E](#).

A table showing the overlap of studies between the reviews can be found in [web-appendix F](#). For ease of reference, overlap is also clearly summarized per review in 3 columns of the review characteristics table ([web-appendix E](#)). 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 ([web-appendix E](#)), by showing the number of relevant studies in relation to the total number of studies in each review.

2.4.4. 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, we recommend that the reader

interpret reviews with a high degree of overlap as partial replications of each other, confirming or raising questions about results.

Tables summarizing which interventions were found to have supporting evidence, are included in the results section below, while a more detailed narrative summary of data for each intervention is provided in [web-appendix G](#). We created categories to report which skills had supporting evidence, defining them in the following ways: 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. Criteria for the category “*Interventions with a small amount of reviewed evidence suggesting positive effects*” were: positive effects shown, albeit with less evidence than the above category.

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 ([web-appendix E](#)) and in the narrative summary of data ([web-appendix G](#)).

2.4.5. Assessment of methodological quality of included reviews

The AMSTAR checklist is one of the tools most commonly used to assess methodological quality of reviews included in overviews (Lunny, Brennan, McDonald, & McKenzie, 2018; Pollock et al., 2016). Using AMSTAR, all 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 questions 9 and 10 were not relevant, were given a score out of 9. These summary scores were captured on the review characteristics table ([web-appendix E](#)). 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 is attached in [web-appendix H](#).

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 ([web-appendix E](#)), to give some indication of strength of evidence.

2.5. 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 behavioral science, 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, and African countries almost completely unrepresented. 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 in [web-appendix G](#). Further detail can be found on the review characteristics table available in [web-appendix E](#).

2.5.1 Interventions with supporting evidence

Table 1 shows interventions with a moderate to large amount of reviewed evidence showing positive effects on child behavior. Table 2 shows interventions with a small amount of reviewed evidence suggesting positive effects.

2.5.2 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.

2.6. 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, and with severely challenging behavior. In the very few cases where it was tested, effectiveness of individual interventions was not moderated by ethnicity (e.g., de Vries, Hoeve, Assink, Stams, & Asscher, 2015; Johnson, Hawes, Eisenberg, Kohlhoff, & Dudeney, 2017) suggesting that these tools would be good candidates for inclusion in toolkits in different cultural contexts. However, more research would be needed to confirm this.

There are further interventions for which the small amount of available evidence suggests positive effects (see table 2), 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), but 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. 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 [web-appendix E](#), and narrative summary in [web-appendix G](#)). 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. Evidence found regarding the important role of attunement is explored in a companion paper (chapter 3).

2.7. 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 [web-](#)

[appendix H](#)). 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 a focus on attunement may be necessary, in addition to teaching skills. This is discussed in chapter 3.

2.8. Conclusion

An overview often addresses a different question to the reviews it includes, thus presenting a unique end product and making an important contribution to the literature (Thomson et al., 2013). 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 our 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. Beyond prevention of violence, the many important and often long-term positive outcomes found in review of these methods show that their use would be highly beneficial to child development. 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.

References

Included reviews

See [web-appendix B](#)

Excluded reviews

See [web-appendix C](#)

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

Intervention category & Review code (1 st author & date)	Intervention type & brief description	Outcomes
Antecedent interventions: Gaastra (2016); Goh (2012); Langthorne (2014); McDonald (2013); Mulligan (2014); Richardson (2015); Seubert (2014); Simó-Pinatella (2013); Wong (2015).	Antecedent interventions - general: There are many different types, but all are environmental modifications in which the events or circumstances precipitating the target behavior are altered.	Reduction in problem behavior; increase in appropriate behavior.
Cook (2015); Jaime (2009); Kaynak (2014); Mazarello Paes (2015); McClain (2009); Pearson (2009); Ryan (2010); Sharma (2007); Sharmin (2017b) Shepherd (2006); Yee (2017)	Availability: Limiting access to unhealthy items or increasing access to healthy items	Increasing availability of healthy dietary items and limiting availability of unhealthy items: associated with decreases in unhealthy eating & increases 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): associated with earlier initiation, heavier drinking and more chance of alcohol related problems.
Cowan (2017); Lee (2005); Radley (2016); Wong (2015)	Behavioral momentum: also referred to as the high probability instruction / command / request sequence. Child is asked to complete series of 3 to 4 brief requests with a high probability of compliance, just before a request with a low probability of compliance. This is thought to build momentum, increasing likelihood of compliance with low probability/preference requests.	Increased compliance

¹ More precise reporting on age, disability, review quality etc. is available in the review characteristics table and narrative summary of data.

Cannella (2005); Kessler (2016); Morgan (2006); Patall (2008); Reutebuch (2015); Royer (2017); Tullis (2011); Zelinsky (2018)	Choice: participants are given a choice between something, 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. Caution: effect of choice on intrinsic motivation diminished after five or more choices had been made. Also, it is possible that some positive outcomes attributed to choice, should be attributed to preference. Where preference was controlled for, only modest effects were seen for choice-making, and only in low-preference activities.
Radley 2016	Errorless compliance training: allowing child to demonstrate compliance at higher-probability requests, before systematically introducing lower and lower-probability requests.	Increased compliance (initiation & completion).
Lydon (2017)	Inhibitory stimulus control procedures: participants are 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 and adolescents with ASD.
Langthorne (2014); Warmbold-Brann (2017)	Modifying task difficulty: difficulty of a task is modified in order 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).
Gover (2018); Matson (2005); Radley (2016)	Non-contingent reinforcement (NCR): reinforcement is added to the environment without the participant needing to earn or qualify for it. Sometimes referred to as environmental enrichment, object manipulation, matched stimulation or time-in (a reinforcing environment in which physical touch & verbal praise, are amply available).	Decrease behavior maintained by automatic reinforcement such as self-injury, verbal or motor stereotypy & pica. Time-in associated with increased compliance.
Ennis (2017); Radley (2016)	Precorrection: prevent predictable problem behaviors and increase the likelihood of appropriate behaviors, by reminding students of rules just before the behavior is expected. E.g., before a transition, the teacher might remind students of behavioral expectations for the transition area.	Effective across grades for various problem behaviors. Giving a rationale, or warnings without stating expectations have not been shown to work.

Morgan (2006)	Preference / interest: interests or preferences of students are incorporated into required academic tasks.	Improvement in student behavior & academic performance.
Karkhaneh (2010); Leaf (2015); McGill (2015); Reynhout (2011); Styles (2011); Wong (2015); Zimmerman (2017)	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, but has also been used for others with and without disabilities.	Increase in appropriate behavior (e.g. social skills, communication; academic skills; adaptive skills), decrease in challenging behavior (e.g. aggression, disruptive behaviors). Best used alongside other interventions with stronger effects (such as differential reinforcement) for challenging behavior, rather than alone.
Behavior contracts Simonsen (2008); Bowman-Perrott (2015); de Vries (2015)	Behavior contracts: written documents, agreed upon with the child, that define expected behavior & outcomes for engaging or not engaging in a 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 Commendador (2010); Zimmer-Gembeck (2008); Coakley (2017); Sutton (2014) Kuntsche (2016); Mynttinen (2017); Ryan (2010); Hovee (2009)	Caregiver-child communication: Usually described as warm, open communication between parent and child.	Delayed sexual initiation & increased responsible sexual behavior; preventing or reducing adolescent substance use. Less delinquency: weak association for good communication, strong association for child disclosure.
Johnson (2017); Kaminski (2008)	Caregivers' emotion socialization behaviors (ESBs): reactions to emotions, discussion of emotions, emotion coaching. Positive ESBs include being aware of low intensity emotion, supportive of emotional expression, and using emotions as opportunities for intimacy and teaching. May also include elaborative reminiscing, in which caregivers discuss past events with their child, acknowledging and validating the emotions experienced. Questions are asked about, or references made to emotions, and 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 and skills.
Zhou (2011); Shilling (2012)	Dental or hospital staff empathic communication ; listening; providing relevant information.	Reduced child fear-related behaviors; increased co-operation; improved child hospital experience.
Collier (2016)	Active parental mediation of media (discussion about content viewed).	Protective factor against negative effects of media on aggression, substance use, & sexual outcomes.

Communication: Teaching children to communicate better.	AAC: Augmentative and alternative communication methods, for children with communication or language impairments.	Decreased challenging behavior, increased appropriate behavior
Sigafos (2008); Walker (2013)		
Gerow (2018a); Gerow (2018b); McKenna (2016); Neely (2018); Goh (2012)	FCT: (Functional communication training). Child is taught an appropriate communicative response to replace a problem behavior.	Decreased challenging behavior (e.g. aggressive, disruptive, destructive; self-injurious).
Wong (2015)	PECS: Picture Exchange Communication System, which uses pictures to help those who struggle with spoken language, to communicate.	Improved social skills, communication & joint attention.
Cost	Price & time-efficiency interventions. Prices of food items (e.g., at school) manipulated to encourage healthy eating. Tobacco prices increased to discourage smoking. Time-efficiency interventions add a cost in time for unhealthy food items by introducing express lines at the school cafeteria for healthy food only.	Increases in sales & consumption of healthy food. Reduced smoking among adolescents, with a 1–14% decrease in smoking prevalence for every 10% increase in price. Adolescents were more price sensitive than adults, likely because price sensitivity is stronger when there is less money available. Time efficiency incentives/costs were associated with increased selection of healthy food items & decreased consumption of less-healthy food.
Gaastra (2016); Luman (2005); Ma (2016); Simonsen (2008)	Response cost usually refers to a deduction of reward, such as token or point, for problem behavior.	Decrease in off-task & disruptive classroom behavior, swearing, aggression & other inappropriate behavior; positive effects on task performance, especially for children with ADHD. However, for inhibitory control in children and adolescents with ADHD, there were stronger effects for reward without response cost.
Distraction	In medical and dental settings involves drawing the child's attention away from a painful or distressing stimulus and toward something else, such as a game, toy, book, conversation, bubbles, video, story, music, or virtual-reality experience.	Positive effects on pain, anxiety & distress, and reduction in distress-related behavior. Low in cost, with no harmful effects. Effective across a wide range of ages and medical procedures & found in some cases to decrease the need for medication.
Bice (2017); Birnie (2018); Cepeda (2006); Chorney (2014); Davidson (2016); DeMore (2005); Klassen (2008); Kenney (2016); Kleiber (1999); Koller (2012); Landier (2010); Lassetter (2006); Leão Goettens (2017); Manyande (2015); Oliveira (2015); Pillai Riddell (2015); Wentz (2013)		

Lydon (2013); Wong (2015)	Response Interruption and Redirection (RIRD): a distractor such as a prompt or comment is used to interrupt the child from engaging in the target behavior and 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. These behaviors are often maintained by sensory reinforcement, and are often resistant to other interventions.	Decrease in challenging behavior, increase in appropriate behaviors.
Extinction Goh (2012); Mindell (2006); Simonsen (2008); Wong (2015)	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 & his or her 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: An initial increase in the challenging behavior (an “extinction burst”) often occurs before the behavior is reduced. It is recommended that extinction should not be used in isolation, but with other interventions, such as teaching & reinforcing appropriate replacement behaviors.
Seubert (2014)	Escape extinction is used for behaviors which have the function of escape, and involves not allowing the child to escape from the thing they don’t want to do, through tantrums or other challenging behavior.	Effective for food selectivity & food refusal.
Mindell (2006)	Graduated extinction (sleep training): parents ignore bedtime crying and 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 and 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 and 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 Vannest (2010); Cox (2005); Hynynen (2016); See (2012); Hawken (2014); Wolfe (2016); Gaastra (2016); Pyle (2017);	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, and have not responded sufficiently to the universal interventions which work for the rest of the class. There are also other	Decrease in challenging, disruptive and ADHD-type behavior; increase in appropriate behavior, academic achievement, school engagement & completion; improvements in social behavior.

Richardson (2015); Simonsen (2008)	forms of performance feedback , in which students are provided with data (e.g., charts, graphs, reports) systematically tracking their performance in positive or negative target classroom behaviors, or on their physical activity / sedentary behaviors.	Other forms of performance feedback showed increase in appropriate, prosocial & academic behaviors; decrease in inappropriate behavior; decrease in classroom transition times; short-term increases in physical activity.
Goal setting Bruhn (2016); Epton (2017); Hynynen (2016)	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 Lydon (2015); McMurtry (2015)	Graduated exposure: hierarchical exposure to feared stimuli e.g., for needle procedures: 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, and eventually having an injection.	Reduction or elimination of targeted fears or phobias; decrease in challenging behavior.
Modelling de Vries (2015); Lydon (2015); Vartanian (2015); Wong (2015)	Modelling: an adult or peer demonstrates a target behavior in the hope that the child will imitate and eventually acquire that behavior.	Effective to teach social skills; communication; joint attention; play; school-readiness; reducing or increasing food intake; academic skills and 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.
Collier (2016); Edwardson (2010); Ferreira (2007); Mazarello Paes (2015); McClain (2009); Mitchell (2012); Nixon (2012); Pearson (2009); Ryan (2010); Sallis (2000); Trost (2011); Van Der Horst (2006); Webber (2013); Yao (2015); Yee (2017)	Parental modelling refers to behaviors engaged in by parents and 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 and higher levels of later alcohol use. Co-viewing of media (parent watching or playing together without discussion) is associated with increased aggression and media use.
Baker (2009); Bellini (2007); Bennett (2017); Clinton (2016); Domire (2014); Hitchcock (2003);	Video modelling uses videos to provide a model of the target behavior / skill. There are different types: Video modelling other (VMO), Video self modelling (VSM; participant is recorded successfully performing	Effective for teaching appropriate behavior & skills (e.g. on-task behavior; social skills; communication; play; academic skills; self-help; independent living). Reduction

<p>Hong (2016); Hong (2017); Mason (2012); Mason (2013); Mason (2016); Uman (2006); Wong (2015)</p>	<p>the target behavior, with mistakes, negative behavior and adult prompts edited out), point of view modelling & video prompting.</p>	<p>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 and adolescents with ASD. Did not reduce distress for children undergoing needle-related procedures.</p>
<p>Monitoring</p> <p>Commendador (2010); Zimmer-Gembeck (2008); Elsaesser (2017); Kowalski (2014); Hoeve (2009); Ozer (2017); Kuntsche (2016); Lac (2009); Mynttinen (2017); Pearson (2009); Ryan (2010)</p>	<p>Parental monitoring of child whereabouts and activities e.g. supervision, talking to parents of children's friends or information from child disclosure.</p>	<p>Delayed and 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 and vegetable intake.</p>
<p>Farrington (2009); Simonsen (2008)</p>	<p>Increased playground supervision or Active Supervision, in which the teacher moves around, looking around, interacting with students, correcting any behavior inconsistent with expectations & reinforcing good behavior.</p>	<p>Decrease in bullying: Increased playground supervision identified in meta-analysis as one of the most important elements of school anti-bullying programs. Active supervision showed improved student behavior in classrooms, hallways & other school settings; higher levels of participation in class; decrease in minor behavioral incidents.</p>
<p>Opportunities to Respond (OTR)</p> <p>Common (2019); Fitzgerald (2018); Sutherland (2001); MacSuga-Gage (2015); Owiny (2018); Randolph (2007)</p>	<p>Teacher Directed Opportunities to Respond: teachers increase opportunities for all students to respond, as opposed to the common situation, in which only one student is chosen to respond. Examples include response cards, choral responding, student response systems or clickers, unison hand gestures such as thumbs up or thumbs down, laminated boards with picture or response choices, or erasable markers.</p>	<p>Decrease in off-task, disruptive & inappropriate behavior; increase in appropriate behavior, academic engagement; improved academic outcomes. Strong positive effects & good social validity.</p>
<p>Problem-solving together</p> <p>Griebler (2017); Mager (2012); Voight (2016); Pollastri (2013)</p>	<p>Student participation in decision making e.g., deciding class rules, discussing school problems, brainstorming, choosing & implementing solutions. In the collaborative problem solving approach, an adult attempts to solve a problem collaboratively with a child using the following process: The adult explores the child's concerns about a</p>	<p>Qualitative results for student participation suggest increases in satisfaction; motivation; ownership; skills; competencies; knowledge; personal development; self-esteem; social status; democratic skills; improved student-adult relationships; improved school climate / culture;</p>

	<p>problem or issue. The adult states their concern. The adult and child brainstorm solutions that will address both their concerns. The child is given the first opportunity to generate a solution. No solutions are dismissed outright. The adult helps the child to think through whether each solution addresses both of their concerns and whether it is realistic & feasible. They agree on a solution, implement it and return to discuss whether it was successful. If not, they discuss further and try another solution until they have found one that works.</p>	<p>Stronger sense of connection to school & higher perceptions of safety. A few studies reported negative effects such as student negative feelings (e.g. not taken seriously); unmet expectations; feeling overwhelmed by the responsibility. Outcomes for collaborative problem solving in outpatient settings include improved parent-child relationships; reduction in oppositional behaviors, ADHD symptoms & parenting stress. Outcomes in inpatient settings include dramatic reduction in use of restraint & locked-door seclusions; decrease in staff & patient injuries. Outcomes in school settings include reduction in disciplinary referrals & teacher stress.</p>
<p>Prompting Barton (2008); Jung (2013); Ledford (2011); Lydon (2013); Warzak (2016); Wong (2015)</p>	<p>Prompting: assisting or reminding participants to engage in target behavior. Prompts can be verbal, visual, gestural or physical, and are generally given as, or just before, the participant attempts to use a skill. Prompts can be used systematically, in a hierarchy of least to most, or most to least intrusive prompts. An example of a least to most prompting hierarchy would be to proceed, as needed, from visual to verbal to gestural to modelling to partial physical to full physical prompts.</p>	<p>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).</p>
<p>Reinforcement Borrie (2015); Gaastra (2016); Goh (2012); Kim (2009); Ledford (2011); Lydon (2015); Walton (2013); Warzak (2016); Wong (2015); Zhou (2011)</p>	<p>Reinforcement – General: not specified, or a combination of praise & reward.</p>	<p>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; fears, phobias & related challenging behavior; digit sucking,</p>
<p>Gaastra (2016); Lang (2010); MacNaul (2018); Matson (2005); Petscher (2009); Reinoso (2018); Simonsen (2008); Wong (2015)</p>	<p>Differential reinforcement: several types, all involve making the challenging behavior less reinforcing than the desired behavior: desired behaviors are reinforced, while reinforcement for inappropriate behaviors is withheld (extinction) or lessened.</p>	<p>A well-researched skill, effective for wide range of target behaviors across different settings. Increase in appropriate behavior; decrease in inappropriate, disruptive, aggressive or self-injurious behavior.</p>

<p>Alber (2000); Beets (2010); Leijten (2018); Owen (2012); Royer (2018); Simonsen (2008); Yee (2017)</p>	<p>Praise: adults express approval or admiration for appropriate behavior. With behavior specific praise, the adult gives verbal or written praise statements that explicitly describe the behavior being praised. The behavior would be something in the child's control (e.g., effort) rather than out of their control (e.g., ability).</p>	<p>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 and without disabilities taught to recruit praise received more praise, feedback & assistance and in turn showed increased task engagement, productivity and accuracy of work. Praise was ineffective or showed mixed results for compliance. Time-out had stronger effects on compliance.</p>
<p>Caldwell (2013); Cameron (2001); Corepal (2018); Deci (1999); Kavanagh (2011); Kessler (2016); Lubans (2009); Luman (2005); Ma (2016); Owen (2012); Patall (2008); See (2012); Sigmon (2012); Standley (2008); Sutphen (2010); Yee (2017)</p>	<p>Reward: something given in exchange for good behavior or work. A reward may be called an incentive when offered ahead of the desired behavior. Examples include financial incentives, vouchers, points, prizes, TV or screen time.</p>	<p>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 and accuracy; improvements in nocturnal enuresis (although not as effective as alarms or medication); increased compliance; enhanced intrinsic motivation for low-interest tasks; improved motivation and 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.</p> <p>Caution: Rewarding participants who are already motivated to do something can undermine intrinsic motivation, suggesting that rewards should be used with attunement to the child's motivation levels. But not problematic to use reward to motivate children to do things they are not motivated to do.</p>

		Caution: Food rewards have been found to be associated with unhealthy eating.
Gendreau (2014); Maggin (2011); Simonsen (2008); Soares (2016); Tatla (2014)	Token economy is a 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 and performance of children with moderate to severe acquired brain injury; improved behavioral, educational & work-related outcomes for juvenile inmates in prisons and other institutions.
Reinforcement for groups Johnston (2012); Little (2015); Maggin (2017); Maggin (2012); Simonsen (2008).	Group contingencies: reward systems in which common expectations are set for a class or group, and common positive outcomes earned. In a dependent group contingency, rewards for the entire group depend on the performance of a selected member or members of the group, while the performance of the rest of the group members is irrelevant. In an independent group contingency, each group member receives reward based on their own performance, but everyone in the group has the same target behaviors and rewards. In an 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 were strongly effective with a wide range of target behaviors regardless of age, grade & gender. Where reported, social validity (acceptability / satisfaction with the intervention) was 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).
Bayer (2009); Bowman-Perrott (2016); Flower (2014); Foxcroft (2011); MacArthur (2018); Smedler (2015); Waddell (2018); Whear (2013)	Good Behavior Game (GBG): an interdependent group contingency used to address disruptive classroom behavior. Usually the class is divided into teams, and 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	Restorative justice conferencing (RJC) includes victim-offender mediation (VOM) & the family group conference (FGC) . For VOM, a mediator meets with the victim and the offender separately, to	Mixed results regarding whether RJs have effects on recidivism. One review found that behavioral program components such as behavioral modelling, behavior

de Vries (2015); Livingstone (2013); Schwalbe (2012); Wong (2016); Nugent (2004); Strang (2013)	prepare them for the meeting with each other. This is followed by a mediated session together, to speak about the crime & its effects, and decide together how best to repair the damage. FGCs involve a meeting between the victim, offender, family members of both and a facilitator, to discuss the crime and its effects, and decide together on appropriate reparation.	contracting, or parent training in behavioral skills (e.g. contingency management) had stronger prevention effects than restorative justice interventions. No suggestion that the restorative justice approach 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 Borrie (2015); Heyvaert (2014); Lang (2010)	Protective restraint interventions are often used for self-injurious behavior (SIB) and sometimes for aggression. Examples are response blocking , in which the 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 , such as holding the child's hands down for a short while contingent on each instance of SIB; mechanical restraint , such as 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 and easier to fade. Caution: although sometimes necessary, use of restraint is controversial, and should involve minimum force.
Self-management Briesch (2009); Briesch (2018); Bruhn (2015); Busacca (2015); Carr (2016); Carr (2014); Darling (2017); Davis (2016); Gaastra (2016); Goh (2012); Hynynen (2016); Lubans (2009); Mooney (2005); Reid (2005); Richardson (2015); Southall (2011)	Sometimes called self-regulation, self-management interventions involve self-monitoring and usually self-recording of a specific target behavior (e.g. on-task behavior or a specific disruptive behavior), and may involve other components such as goal setting, self-evaluation and self or adult-delivered reinforcement.	Decrease in challenging and 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 and without disabilities (e.g. ASD; behavioral disorders). Public health reviews show small but significant improvements in physical activity, dietary behaviors & weight loss.
Structure Karreman (2006); Simonsen (2008)	General: Parental positive control: e.g. limit-setting; directiveness with mild to moderate power assertion; clear guidance & instructions. General: classroom structure refers to explicitly defined routines & teacher-directed activity.	Parental positive control was associated with greater child self-regulation. Classroom structure: less aggression; more appropriate academic & social behaviors, e.g., task involvement; friendly peer interactions; helpful behaviors (e.g., cleaning up); attentiveness.
Black (2012); Farrington (2009); Morton (2016); Robertson-Wilson (2012); Williams (2013);	School or school-based policies or population-based policies e.g. safe school; anti-bullying; physical activity; diet; alcohol; tobacco.	Less bullying & discrimination; fewer suicide attempts; increased physical activity; lower consumption of sugar

Mazarello Paes (2015); Vézina-Im (2017); Mansfield (2017); Singh (2017); Sellström (2006); Aveyard (2004); Galanti (2014); Schreuders (2017); Wilson (2012)	Policies may ban or restrict unhealthy products or behaviors, or increase opportunities for healthy behaviors.	sweetened beverages; improved food consumption behaviors; reduced tobacco use; reduced alcohol use.
Collier (2016); Mitchell (2012) Mazarello Paes (2015); Pearson (2009); Yee (2017); Emory (2010); Kuntsche (2016); Mynttinen (2017); Ryan (2010); Sharmin (2017a)	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.
Alter (2017); Simonsen (2008); Farrington (2009); Azeredo (2015); Voight (2016)	Rules: Classroom and school rules describing acceptable and 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.
Koyama (2011); Lequia (2012); Knight (2015); Spriggs (2017)	Activity Schedules: a sequence of visual cues (e.g. pictures or photographs) used to prompt, teach skills or reduce problem behavior.	Decreased challenging behavior; increased appropriate behavior; increased independence, improved transitions.
Akers (2016); Wong (2015)	Scripting & script fading: a script for appropriate behavior in a specific situation, usually for participants with autism spectrum disorders (ASD). Scripts are practiced repeatedly, then used in real situations until successful, then systematically faded.	Increased social skills & communication; increased unscripted responses.
Time-out Corralejo (2018); Kaminski (2008); Kostewicz (2010); Leijten (2018); Matson (2005); Owen (2012); Simonsen (2008); Vegas (2007)	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: the child is not excluded from the venue, but is barred from participation in an activity or receiving reinforcement for a while.	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 for more detail on parameters and practical application.

Table 2: *Interventions with a small amount (less than 10 studies) of reviewed evidence suggesting positive effects.*

Intervention category & Review code (1 st author & date)	Intervention type & brief description	Outcomes
Antecedent interventions Van der Burg (2007)	Cueing: antecedent intervention in which participants receive verbal, auditory, visual, or vibratory cues at different time schedules to prompt target behaviors. Cueing is different from prompting, in that prompts show or tell the participant what to do, while cues do not.	Positive effects for drooling in children and adolescents with disabilities e.g. increase in swallowing & wiping.
Radley (2016)	“Effective Instruction Delivery” or “Precision Requests”: antecedent intervention involving obtaining eye contact prior to issuing an instruction, providing praise for eye contact, issuing the request in a directive form, allowing 5 to 10 seconds for compliance, & providing praise for compliance.	Increased compliance with adult requests
Langthorne (2014)	Non-contingent escape (the participant can ask for a short break) or scheduled breaks are offered as an antecedent intervention to reduce the likelihood of escape-motivated challenging behavior during demand situations such as lessons or dental treatment.	Reduction in problem behavior such as aggression, disruptive behavior & unauthorized breaks.
Simonsen (2008)	Physical arrangement of the classroom: antecedent intervention involving changes to classroom design such as location of materials, color, attractiveness of room, shelving, walls & visual dividers.	Increase in appropriate & engaged behaviors through reducing crowding & distraction. Lower teacher & student distraction, & higher student satisfaction in classrooms with more walls or visual dividers.
Davidson (2016); Uman (2013); Lee (2003); Manyande (2015); Leão Goettems (2017)	Preparation: Children were prepared with information about upcoming medical or dental procedures using videos, booklets, photo’s, online education, demonstration with a doll, preparation story with pictures etc.	Increased co-operation; decreased distress & lower pulse rate; significant reduction in anxiety for parents before child anesthesia, but not for children; reduction in anxiety during dental treatment.
Reprimands Simonsen (2008); Leijten (2018)	Reprimands by teachers (also known as error correction): a brief, specific statement, contingent on student engagement in an inappropriate behavior. The teacher states the observed behavior and tell the student exactly what they should do in the future. Reprimands by parents involved the parent telling the child what they did wrong.	Error corrections (by teachers) were associated with a decrease in reprimanded behavior. Quiet / discreet corrections were more effective than loud corrections. Brief corrections (1 to 2 words) were more effective than longer ones (2 or more phrases) & consistent more effective than inconsistent. Verbal reprimands by parents did not consistently increase child compliance. Time-out had stronger effects.

<p>Structure Meltzer (2014); Mindell (2006)</p>	<p>Routines: Structured positive bedtime routines, which are set bedtime routines of quiet activities enjoyed by the child.</p>	<p>Decreased bedtime problems & night waking; increased marital satisfaction for parents.</p>
<p>Lancioni (1999)</p>	<p>Sleep scheduling: implementing a consistent sleep and wake time, and a consistent bedtime routine. Fixed naps during the day may be included if appropriate. Sleep outside of the scheduled times is prevented. If the child wakes at night, interaction is kept to the minimum necessary to keep the child in bed.</p>	<p>Reduction in sleep problems.</p>

Chapter 3

Using non-violent discipline skills to scaffold child development: Evidence suggesting the importance of attunement

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Abstract

Background: Attunement describes sensitive responsiveness of caregivers towards their children and has been found to be central to the formation of secure attachment bonds. It includes understanding or being “in tune with” the child’s needs and signals, and matching those signals with appropriate responses. This paper is the second in a two-part series. The first paper reported on a systematic overview of non-violent discipline options, conducted in order to form a “toolkit” for use by caregivers and teachers. The overview included 223 peer reviewed systematic reviews published in English between 1999 and 2018.

Objective: The primary objective of this second paper is to explore evidence relevant to attunement found in the systematic overview, and to apply this information to guide caregivers and teachers in optimal use of the toolkit to scaffold child development.

Method: Reviews included in the overview were screened for information relevant to attunement.

Results: Of the 223 included reviews, 122 were found to include data relevant to attunement. Although no reviews explicitly addressed attunement, evidence was found suggesting its importance in the use and effectiveness of non-violent discipline methods.

Conclusion: In the context of a positive developmental relationship with the caregiver, attunement, rather than the use of any particular discipline tool, could be key to effective discipline. More research should be conducted on this. Since attunement builds secure attachment, it would also be logical to investigate effects of attuned or misattuned discipline on attachment security.

Key words: positive discipline; behavior; parenting; classroom management; attachment; scaffolding

3.1. Introduction

This paper is the second in a two-part series. The first paper (chapter 2) reported on a systematic overview of the evidence on non-violent discipline options. This was conducted with a view to building a positive discipline toolkit for use by caregivers and teachers as a violence prevention strategy. An advantage of a toolkit approach is that it can make evidence-based tools available to people who may not have access to parenting or classroom-management programs (Barth et al., 2012; Embry & Biglan, 2008). Another advantage is flexibility, as tools can be chosen for use according to their fit with a particular situation or child, and used within the framework of the caregiver's particular values and cultural norms (Baker-Henningham, 2018; Barth et al., 2012; Lyon, Lau, McCauley, Vander Stoep, & Chorpita, 2014). A large range of evidence-supported interventions were found and described.

In this second paper, we explore the idea that attunement on the part of the caregiver or teacher could play an important role in effective discipline. We discuss attunement first from the perspective of attachment theory, and then take it beyond its original attachment context, mapping it onto the concepts of the developmental relationship, and scaffolding of child development. We then explore evidence found in the systematic overview, suggesting the importance of attunement, and discuss implications of this for the practice of positive discipline.

Attachment theory proposes secure attachment with a primary caregiver as fundamental to human wellbeing (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth, 1967; Bowlby, 1973; Karen, 1994). Insecure or disorganized attachment to parents has been found to be significantly linked to unempathic, aggressive, violent and delinquent behavior (Bowlby, 1944, 1973; Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley & Roisman 2010; Hoeve, Stams, Van der Put, Dubas, Van der Laan & Gerris, 2012; Savage, 2014). It would thus be logical to

target attachment in the prevention of challenging behavior. It would also be important that discipline does not in any way damage the attachment bond (Dadds & Tully, 2019).

Although there were some exceptions, such as collaborative problem solving (Pollastri, Epstein, Heath, & Ablon, 2013) and restorative justice interventions (e.g., Strang, Sherman, Mayo-Wilson, Woods, & Ariel, 2013; Wong, Bouchard, Gravel, Bouchard, & Morselli, 2016), most of the tools described in our previous paper (chapter 2) were developed in the context of behaviorism (Skinner, 1965) or applied behavior analysis (ABA) (Baer, Wolf, & Risley, 1968). Over the years, behavioral scientists have conducted thousands of carefully controlled experiments evaluating skills such as prompting, reinforcement or extinction according to their impact on various target behaviors. However, research in the tradition of behaviorism or ABA only addresses observable behavior (Boutot & Hume, 2012), not cognition, emotion, relational disconnection and repair, attachment bonds or internalizing behavior. While this exclusive focus on behavior has certainly resulted in more objectivity and scientific validity, it is also limiting.

Evidence-based parenting programs typically use behavioral skills such as timeout and rewards (Kaminski, Valle, Filene, & Boyle, 2008; Leijten, Gardner, Melendez-Torres, van Aar, Hutchings, Schulz, Knerr & Overbeek, 2018), but, largely influenced by the work of Constance Hanf, (e.g.: 1969; 1973), also focus on enhancing the parent-child relationship. Thus, in most evidence-based programs, a warm nurturing parent-child relationship is emphasized, and the discipline skills taught are embedded in this relational context (Dadds & Tully, 2019; Kaehler, Jacobs & Jones, 2016; Leijten, Melendez-Torres, Gardner, Van Aar, Schulz & Overbeek, 2018). A danger in providing a toolkit of skills could be that users of the toolkit may miss out on the relational guidance they would have received in a program. Recent meta-analyses of outcomes of parenting programs with and without the relationship enhancement component (Leijten,

Melendez-Torres, Gardner, Van Aar, Schulz & Overbeek, 2018) suggest that this would not be problematic in prevention settings, where parents generally already have adequate relationships with their children. In treatment settings, however, where one would see more severe behavior problems, the relationship enhancing aspect has been shown to improve results. While relationship enhancement may not generally be essential to the teaching of nonviolent discipline tools, this paper explores the possibility that a specific aspect of the caregiver-child relationship, attunement, would enhance the use of discipline tools across settings.

Attunement is an attachment term coined by Mary Ainsworth (Ainsworth et al., 1978) to describe the parenting behavior she identified as central to the development of secure attachment: sensitive responsiveness (Trautman, 2015). Sensitivity described whether the mother noticed the baby's signals, including subtle ones. Responsiveness described how her responses fit or matched appropriately with those signals. Attuned responses are "in tune with" (Trautman, 2015, p. 30) the child's needs and inner state, and can take many forms, such as emotional accessibility, physical comfort especially when the child is distressed, appropriate responses to states such as hunger, cold or overstimulation, acceptance and co-operation with the baby's desires and rhythms, and support for exploration. Misattunement could involve the mother being unresponsive, intrusive, or responding in some other way that does not fit with the child's needs and signals (Ainsworth et al., 1978; Trautman, 2015).

Ainsworth observed that attunement built attachment security (Ainsworth et al., 1978; Ainsworth, 1967), and the concept has been much studied since. Researchers found that attuned parents match their responses to fit with their babies' signals, often just to share in an experience with them. Where the parent's response is not attuned, i.e. does not fit with the baby's signals, babies usually notice immediately and react with perturbation (Stern, 1985; Tronick, Als,

Adamson, Wise, & Brazelton, 1978). A misattuned response on the part of the parent could be a still face in the middle of an animated interaction, or an intrusive act such as forcing eye contact or persisting in engaging or trying to play with the baby, when they are trying to minimize interaction by looking away (Tronick et al., 1978). Stern (1985) found that babies notice and respond in a perturbed way even to minor misattunements on the part of the mother, such as jiggling the baby at a rate that is slightly above or below their level of excitement. Stern (1985) used the term attunement specifically to describe affect attunement, which is parental matching of an affect state rather than a behavior of the baby. In this paper, the term attunement is used in the broader sense that Ainsworth (1978) used it, to describe appropriate responsiveness to feelings, behavior or other signals.

Further research has confirmed Ainsworth's finding, that well-synchronized mother-infant interactions, in which maternal responses fit with the child's signals, predict secure attachment (Isabella & Belsky, 1991; Isabella, Belsky, & von Eye, 1989), while regular misattunement can disrupt attachment, leading to various forms of insecure attachment (Beebe et al., 2010; Trautman, 2015). Also, interventions effective in enhancing parental sensitivity have been shown to enhance attachment security (Bakermans-Kranenburg, Van Ijzendoorn, & Juffer, 2003).

Child self-regulation, which includes self-control, behavioral and emotion regulation, is an important goal and outcome of effective discipline (Dadds & Tully, 2019). Development of self-regulation has been found to be critical to success and well-being later in life, while low self-regulation has been significantly linked to violent and delinquent behavior, substance abuse and other negative outcomes such as poor financial management (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Fergusson, Boden, & Horwood, 2013; Moffitt et al., 2011). Aside from secure

attachment, attunement has also been found to be significantly associated with child-self-regulation (Davis, Bilms, & Suveg, 2017). Being accurately sensed and understood by their parents helps children to sense and understand themselves. For example, when the parent understands and appropriately soothes and comforts the child in times of distress, the child learns about their own needs, and is more able to understand and help themselves in such times, in other words to self-regulate (Beebe et al., 2010).

Another mechanism by which attunement builds self-regulation lies in not over-responding to the child (Beebe et al., 2010; Trautman, 2015). Ainsworth described how, most of the time, an attuned mother would co-operate with the baby's desires rather than imposing her own, however if what the baby wanted was not what she considered best for them, she tactfully responded to their needs (such as a decrease in stimulation) rather than their desires (Ainsworth et al., 1978). One kind of appropriate response may be for a parent to hold back on responding to allow the child to develop their emerging capabilities of self-regulation (Beebe et al., 2010; Trautman, 2015; Van Ijzendoorn & Hubbard, 2000). Thus, attunement involves knowing when to respond, but also when not to (Trautman, 2015), when to be responsive and when to be appropriately demanding (Baumrind, 1966, 1967, 2013).

When we consider the vital role of attunement in the development of self-regulation and secure attachment, and the vital role of each of these in the prevention of delinquent behavior (Fergusson et al., 2013; Hoeve et al., 2012; Moffitt et al., 2011) and in the wellbeing of any person (Fergusson et al., 2013; Johnson, 2013; Karen, 1994; Moffitt et al., 2011), it makes sense to investigate the idea that, for the best results in discipline situations, adults should respond with attunement to the signals sent by the child through their behavior.

Since attunement builds attachment security, it would be logical to predict that attuned discipline would have implications for attachment security. Further, the importance of discipline to attachment security is suggested by the fact that interventions such as Parent Child Interaction Therapy (Eyberg & Funderburk, 2011), which aim, and have been shown, to improve parent-child attunement and attachment, also rely on behavioral skills, coaching parents in the use of skills such as praise and time-out (Trautman, 2015). Attunement in discipline may be particularly important with regard to attachment because discipline situations, times when a child is dysregulated, has behaved badly, made a mistake or is not managing something, are situations in which a child is likely to feel more vulnerable. They may feel uncertainty, frustration, failure or shame. At times of vulnerability, human attachment needs are primed, heightening sensitivity to whether or not caregivers offer safety and comfort, and thus also increasing the likelihood of injury to the attachment bond if they do not (Johnson, 2013). Misattunement in the form of harsh or abusive parenting practices at these times put the child in the confusing and terrifying situation in which their attachment figures, the people they turn to for protection and reassurance, are in fact the source of danger (Karen, 1994).

As mentioned above, research in the tradition of behaviorism or ABA addresses observable behavior (Boutot & Hume, 2012), not relationships or attachment. Since many of the studies reviewed in our overview of non-violent discipline options (chapter 2) were behavioral, it would have been unrealistic to expect to find evidence in the overview on the effects of attuned discipline on attachment security. It is possible, however, to look at whether there is evidence suggesting that attunement, even if not described in those terms, would have an impact on effectiveness of interventions.

Beyond attachment literature, concepts similar to attunement have emerged in classroom management research, research on temperament, and even ABA. Kounin's "withitness" is a similar, if not synonymous, concept to attunement. Kounin (1970) found that "withitness" was a better predictor of teacher efficacy than use of any particular discipline or classroom management skill. "Withitness" describes the teacher's constant awareness of what is happening in the classroom, and their ability to read and respond appropriately and promptly to the needs of the students. Children in these teachers' classes performed significantly better academically and behaviorally.

The concept of "goodness of fit", from research on temperament (Chess & Thomas, 1986) is related. One of the major discoveries in temperament research was that, if there was a lack of fit between the temperament of the child and what their environment expected of them, behavior problems tended to develop. This lack of fit could be seen as a kind of misattunement, in which the caregiver persists in expecting something unrealistic for their child's temperament, such as for a very active child to sit still for long periods, or for a cautious child to be more approaching in unfamiliar situations.

Function-based interventions could be seen as ABA's version of attunement. Function based interventions are interventions based on functional behavior assessment (FBA) or functional analysis. Functional assessment is a process aimed at identifying the function of a problem behavior, i.e. the purpose that problem behavior serves for the child and the variables that predict and maintain the problem behavior (Horner & Carr, 1997). Functions include reward (the problem behavior gets the child something they want), escape (the problem behavior gets them out of doing something they don't want to do) or automatic reinforcement (the problem behavior is enjoyable in itself). FBA may involve various forms of data collection such as

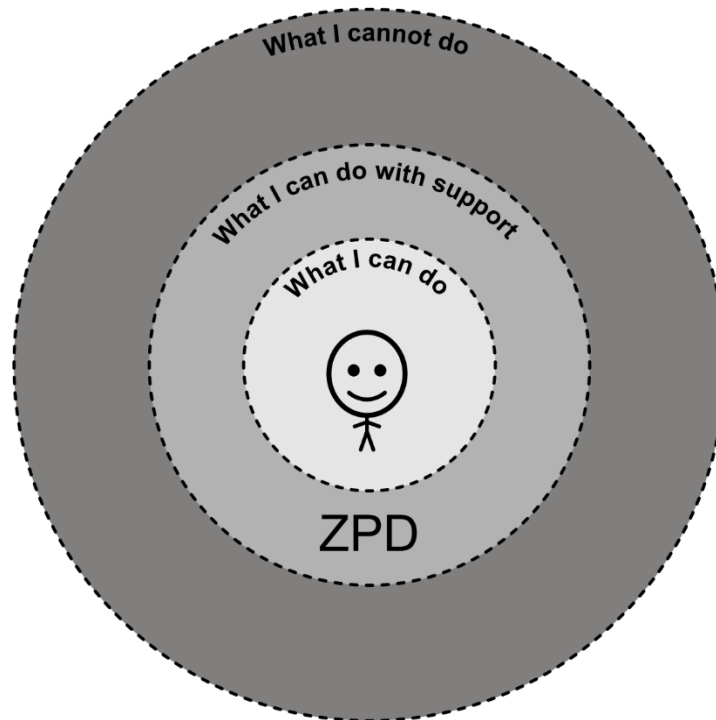
teacher interviews, parent interviews, student interviews, observation, record reviews and/or various assessments (McKenna, Flower, & Adamson, 2016). They may also include functional analysis, a more formal, scientific process which would be conducted by a trained behavior analyst testing different hypothesis about the behavior to identify its function. Once the function of the behavior is determined, an intervention is designed which addresses that function. A relatively consistent finding in reviews and meta-analyses of behavioral interventions is that interventions based on functional assessments are more effective in addressing challenging behavior than those that are not (Didden, Korzilius, van Oorsouw, & Sturmey, 2006 ; Harvey, Boer, Meyer, & Evans, 2009; Horner, Carr, Strain, Todd, & Reed, 2002). This process of understanding what is underlying the behavior and then matching the intervention to the underlying need could be seen as a kind of attunement.

The importance of both “goodness of fit” and “withitness” in relation to challenging behavior, and the effectiveness of function-based interventions, add weight to the idea that attunement would be a logical focus in research on discipline. It also suggests that the original context of use of the word attunement could be widened from attachment bonds to relationships with teachers and other caregivers. This is helpful as some of the people responsible for child discipline, such as teachers, are not typically attachment figures for the children in their care. The concept of the developmental relationship (Li & Julian, 2012) is useful here.

While attachment usually describes the bond between child and primary caregiver, developmental relationships refer to any positive and appropriate emotional connection (Li & Julian, 2012). A developmental relationship is defined as an enduring connection in which the balance of power shifts gradually from the adult to the child, as the child matures, and achieves competence in progressively more complex actions (Bronfenbrenner, 1979; Li & Julian, 2012).

The adult's role is to support or scaffold this development towards eventual self-regulation and independence.

The concept now widely referred to as scaffolding (Berk & Winsler, 1995) comes from the Vygotskian concept of the zone of proximal development (ZPD) (Vygotsky, 1978) (figure 2).



At any stage of development, there are things the child cannot do, things they can do, and things they can only do with some support. This last category is their ZPD (Vygotsky, 1978). The role

Figure 2: *The zone of proximal development*

of the caregiver or teacher is to scaffold the child's learning in the zone of proximal development, providing support when it is needed and fading the support as they begin to manage something on their own (Li & Julian, 2012). In this way, the caregiver or teacher supports the child to manage something just beyond what they would be able to manage unassisted, with the idea that, with that assistance, they will develop the competence to manage by themselves (Vygotsky, 1978).

This paper focuses on child self-regulation and appropriate behavior as the specific areas of learning in the ZPD. From this perspective, discipline is conceptualized as support rather than punishment, and includes addressing misbehavior and teaching appropriate behavior as forms of scaffolding. Attunement in this context would include accurate location of the zone of proximal development, appropriate fit between tools used and the kind of support the child needs, and accurate matching of the level of adult support to the child's level of competence and emerging self-regulation, adding support when it is needed, and fading it when it is no longer needed. Another way of looking at this would be to say that attunement in this context requires the adult to be both responsive and appropriately demanding of the child in the balance which best supports their eventual autonomy (Baumrind, 1966, 1967, 2013). Misattunement in this context would include overinvolvement of the adult in the areas a child can manage on their own (such as overprotection, excessive direction, or rewarding a child who is already intrinsically motivated to do something), a lack of support in an area the child needs it (such as a lack of boundary, or not providing any extra support for a child with ADHD), or trying to scaffold the development of a competence the child would not be able to manage at that age or stage (such as trying to toilet train a child not developmentally ready for toilet training).

3.2. Definitions

Positive discipline tools or options are defined here as discreet, non-violent interventions that can be used to address a child or adolescent's resistance, lack of co-operation, problem behavior or dysregulation, or to teach and support appropriate behavior.

The term *caregiver* is used to refer to the parent, or any others, such as guardians, relatives, nannies, teachers 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.

Attunement in the context of discipline is defined as the matching or fit of disciplinary responses to the child's behavioral signals. An attuned response is thus one that fits the child's signals in a way that best addresses the child's needs and the function of their behavior. Since attunement has two parts: 1) understanding or accurate reading of signals; 2) matching those signals with an appropriate response, as a shorthand, *understanding* will be used for the first part and *matching* for the second part.

3.3. Method

A systematic overview of evidence on non-violent discipline options had already been conducted in order to form a toolkit for use by caregivers and teachers. Full reporting on the method and findings of the overview can be found in the first paper in this series (chapter 2). A large number of tools were found and described based on the 223 included systematic reviews. A further goal of the overview was to examine the evidence found in these reviews through the lens of attunement, to see if understanding the child and matching interventions to their needs and signals appeared to play any role in the use and effectiveness of the discipline tools. This is the focus of the current paper.

The overview was designed to look for discipline skills, not attunement. Since attunement is primarily an attachment term, not a term used in behavioral, public health, medical or classroom management literature, it proved unproductive as a search term in relation to discipline tools. Instead, after using search terms designed to find information on individual non-violent discipline interventions, we also examined included reviews for information relating to attunement.

Data extraction forms completed for each review included a section on any aspects or findings potentially related to attunement. These could fall into any of the following 4 categories: outcomes of interventions which inherently involve the kind of understanding and matching that could be classed as attunement; effects of interventions likely to improve attunement; evidence that interventions work better for some than for others; and outcomes of tailored interventions, in other words interventions custom-made according to the needs and signals of specific children.

These findings were captured and are narratively summarized on tables below. A list of reviews included in the overview can be found in [web-appendix B](#). Where these reviews are referenced on the tables below, a code is used, namely first author and date.

3.4. Results

As expected, none of the included reviews examined attunement directly, however data relating to attunement was found and extracted from 122 of the 223 included reviews. Findings are presented here under the categories mentioned above: outcomes of interventions which inherently involve the kind of understanding and matching that could be classed as attunement; effects of interventions likely to improve attunement; evidence that interventions work better for some than for others; and outcomes of tailored interventions.

3.4.1. Interventions which inherently involve the kind of understanding and matching that could be classed as attunement

In the case of a number of the tools, a certain amount of understanding of the child is necessary in order to use them, as by nature these interventions need to be matched to the child's area of difficulty, level of ability and their usual responses. For example, using behavioral momentum requires knowledge (understanding) of which tasks are easier for, or preferred by the child, so that requests can be sequenced accordingly (matching). Any individualized intervention,

for example a social narrative, also requires a process of understanding and matching that could be classed as attunement because the intervention is tailored to match the needs and behavior of a specific child. The same can be said for any function-based interventions such as functional communication training, as these are designed to match the function challenging behavior usually serves for a specific child (e.g. attention or escape). Thus, a number of evidence-supported interventions inherently involve the kind of understanding and matching that could be classed as attunement. Table 3 describes these interventions, shows how they involve attunement, and summarizes their outcomes. Since understanding and matching are integrally involved in the use of all these interventions, it could be argued that the positive outcomes found for them would also suggest positive outcomes for attunement in discipline.

Table 3: *Interventions which inherently involve the kind of understanding and matching that could be classed as attunement*

Intervention & brief description	How the intervention involves attunement	Outcomes & review codes (1 st author & date) ²
Antecedent interventions general: There are many different types, but all are environmental modifications in which the events or circumstances precipitating the target behavior are altered.	Antecedent interventions require understanding of how the child is responding to their environment in order to make appropriate adjustments to aspects of the environment that might impact on the child's behavior (matching).	Reduction in problem behavior; increase in appropriate behavior. Gaastra (2016); Goh (2012); Langthorne (2014); McDonald (2013); Mulligan (2014); Richardson (2015); Seubert (2014); Simó-Pinatella (2013); Wong (2015).
Antecedent intervention: Behavioral momentum. Also referred to as the high probability instruction / command / request sequence. Child is asked to complete series of 3 to 4 brief requests with a high probability of compliance, just before a request with a low probability of compliance. This is thought to build momentum, increasing likelihood of compliance with low probability/preference requests.	Using behavioral momentum requires knowledge (understanding) of which tasks are easier for, or preferred by, each child, so that requests can be sequenced accordingly (matching).	Increased compliance Cowan (2017); Lee (2005); Radley (2016); Wong (2015)
Antecedent intervention: Errorless compliance training. Allowing child to demonstrate compliance at higher-probability requests, before systematically introducing lower and lower-probability requests.	Using errorless compliance training requires knowledge (understanding) of which tasks are easier for, or preferred by, each child, so that requests can be sequenced accordingly (matching).	Increased compliance (initiation & completion). Radley 2016
Antecedent intervention: Modifying task difficulty: difficulty of a task is modified in order to lower the chance of escape or avoidance-motivated behavior.	Modifying task difficulty requires understanding of what the child finds difficult, in order to match task difficulty to child skill level.	Reduction in escape-maintained problem behaviors (e.g. challenging, destructive, aggressive, disruptive, noncompliant or off-task). Langthorne (2014); Warmbold-Brann (2017)
Antecedent intervention: Non-contingent reinforcement (NCR). Reinforcement is added to the environment without the participant needing to earn or qualify for it. Sometimes referred to as environmental enrichment, object manipulation, matched stimulation or time-in (a reinforcing environment in which physical touch & verbal praise, are amply available).	Matched stimulation involves identifying the function of a problem behavior (understanding), such as automatic reinforcement, so that similar stimulation can be freely offered in the environment (matching).	Decrease in behavior maintained by automatic reinforcement such as self-injury, verbal or motor stereotypy & pica. Time-in associated with increased compliance. Gover (2018); Matson (2005); Radley (2016)

² References can be found in the list of included reviews [web-appendix B](#).

Antecedent intervention: Preference / interest: interests or preferences of students are incorporated into required academic tasks.	Using preference involves ascertaining what the child prefers or finds interesting (understanding), in order to improve the match between task and interest.	Improvement in student behavior & academic performance. Morgan (2006)
Antecedent intervention: Social narratives: short, simple, individualized stories, usually with text & pictures, composed to help a child or adolescent learn appropriate behavior in a specific social situation. Often used for children with ASD, but has also been used for others with and without disabilities.	Social narratives are usually individualized. Knowledge is required (understanding) of what a child struggles with, and what appropriate behaviors they need to learn, in order to custom-design (match) a story for them, targeting specific behaviors in a specific situation.	Increase in appropriate behavior (e.g. social skills, communication; academic skills; adaptive skills), decrease in challenging behavior (e.g. aggression, disruptive behaviors). Best used alongside other interventions with stronger effects (such as differential reinforcement) for challenging behavior, rather than alone. Karkhaneh (2010); Leaf (2015); McGill (2015); Reynhout (2011); Styles (2011); Wong (2015); Zimmerman (2017)
Communication: caregiver-child: Characteristics of good parent – child communication include warmth, openness, respect, child disclosure, and talking about emotions.	A appropriate matching of adult responses to child signals is needed in communication to reassure the child that they are understood and safe to disclose further.	Delayed sexual initiation & increased responsible sexual behavior; preventing or reducing adolescent substance use. Less delinquency: weak association for good communication, strong association for child disclosure. Commendador (2010); Zimmer-Gembeck (2008); Coakley (2017); Sutton (2014) Kuntsche (2016); Mynttinen (2017); Ryan (2010); Hoeve (2009)
Communication: emotional communication skills. Caregivers' emotion socialization behaviors (ESBs): reactions to emotions, discussion of emotions, emotion coaching. Positive ESBs include being aware of low intensity emotion, supportive of emotional expression, and using emotions as opportunities for intimacy and teaching. May also include elaborative reminiscing, in which caregivers discuss past events with their child, acknowledging and validating the emotions experienced. Questions are asked about, or references made to emotions, and emotions are labelled, discussed & validated.	Emotional communication requires that the adult must read or understand the emotion of the child and match that emotion with accurate reflection, so that the child can learn about their emotions and develop language to express them.	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 and skills. Johnson (2017); Kaminski (2008)
Communication: Dental or hospital staff empathic communication; listening; providing relevant information.	Any empathic communication requires understanding so that responses and reflections will match what the child is communicating.	Reduced child fear-related behaviors; increased cooperation; improved child /adolescent hospital experience. Zhou (2011); Shilling (2012)

<p>Communication: Functional communication Training (FCT): Child is taught an appropriate communicative response to replace a problem behavior.</p>	<p>All FCT is function-based. Understanding through functional analysis) is essential, as the communicative responses taught are individualized (matching), based on the function of the challenging behavior and the participant's communication abilities. Without identifying the function that the challenging behavior serves for the child, an appropriate alternative response serving the same purpose cannot be devised and taught.</p>	<p>Decreased challenging behavior (e.g. aggressive, disruptive, destructive; self-injurious). Gerow (2018a); Gerow (2018b); McKenna (2016); Neely (2018); Goh (2012)</p>
<p>Extinction: 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 (planned ignoring). Escape extinction is used for behaviors which have the function of escape, and involves not allowing the child to escape from the thing they don't want to do, through tantrums or other challenging behavior.</p>	<p>Extinction relies on accurately identifying the function of the target behavior (understanding), so that the consequences reinforcing it can be withdrawn (matching).</p>	<p>Decrease in challenging behavior & increase in appropriate behavior in school & other contexts. Effective for bedtime problems & night waking. Escape extinction was effective for food selectivity & food refusal. Caution: An initial increase in the challenging behavior (an "extinction burst") often occurs before the behavior is reduced. It is recommended that extinction should not be used in isolation, but with other interventions, such as teaching & reinforcing appropriate replacement behaviors. Goh (2012); Mindell (2006); Simonsen (2008); Wong (2015) Seubert (2014)</p>
<p>Feedback on behavior: Daily report cards are 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, and have not responded sufficiently to the universal interventions which work for the rest of the class. There are also other forms of performance feedback, in which students are provided with data (e.g., charts, graphs, reports) systematically tracking their performance in positive or negative target classroom behaviors, or on their physical activity / sedentary behaviors.</p>	<p>Target behaviors on daily report cards are usually individualized (matching), according to knowledge of the child's usual behavior difficulties (understanding). Any intervention involving performance feedback potentially involves attunement because the child's behavior must be closely observed, and the feedback given must accurately match child performance.</p>	<p>Decrease in challenging, disruptive and 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 inappropriate behavior; decrease in classroom transition times; short-term increases in physical activity. Vannest (2010); Cox (2005); Hynynen (2016); See (2012); Hawken (2014); Wolfe (2016); Gaastra (2016); Pyle (2017); Richardson (2015); Simonsen (2008)</p>
<p>Video modelling uses videos to provide a model of the target behavior / skill. There are different types. With video self-modelling, the child is recorded successfully performing the</p>	<p>Video self-modelling is an individualized intervention (matched). Videos are tailor-made to address each child's specific target behaviors.</p>	<p>Effective for teaching appropriate behavior & skills. Reduction in challenging behavior. Particularly effective for children and adolescents with ASD.</p>

<p>target behavior, with mistakes, problem behavior and adult prompts edited out.</p>		<p>Baker (2009); Bellini (2007); Bennett (2017); Clinton (2016); Hitchcock (2003); Hong (2017); Mason (2016); Wong (2015)</p>
<p>Problem-solving together: Student participation in decision making e.g., deciding class rules, discussing school problems, brainstorming, choosing & implementing solutions. In the collaborative problem-solving approach, the adult attempts to solve a problem collaboratively with a child using the following process: The adult explores the child’s concerns about a problem or issue. The adult states their concern. The adult and child brainstorm solutions that will address both their concerns. The child is given the first opportunity to generate a solution. No solutions are dismissed outright. The adult helps the child to think through whether each solution addresses both of their concerns and whether it is realistic & feasible. They agree on a solution, implement it and return to discuss whether it was successful. If not, they discuss further and try another solution until they have found one that works.</p>	<p>Problem-solving with children involves listening to children’s views, concerns and suggestions (understanding), and finding solutions that fit those (matching). Collaborative Problem Solving also involves attunement after deciding on a solution, as the adult must assess, together with the child, whether the solution worked (understanding) and, if not, keep trying solutions until an effective one is found (matching).</p>	<p>Qualitative results for student participation suggest increases 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 such as student negative feelings (e.g. not taken seriously); unmet expectations; feeling overwhelmed by the responsibility. Outcomes for collaborative problem solving in outpatient settings include improved parent-child relationships; reduction in oppositional behaviors, ADHD symptoms & parenting stress. Outcomes in inpatient settings include dramatic reduction in use of restraint & locked-door seclusions; decrease in staff & patient injuries. Outcomes in school settings include reduction in disciplinary referrals & teacher stress. Griebler (2017); Mager (2012); Voight (2016); Pollastri (2013)</p>
<p>Prompting: assisting or reminding participants to engage in target behavior. Prompts can be verbal, visual, gestural or physical, and are generally given as, or just before, the participant attempts to use a skill. Prompts can be used systematically, in a hierarchy of least to most, or most to least intrusive prompts. An example of a least to most prompting hierarchy would be to proceed, as needed, from visual to verbal to gestural to modelling to partial physical to full physical prompts.</p>	<p>Systematic prompting procedures use the least intrusive prompt necessary (e.g. a gesture rather than physical guidance) to prompt the desired behavior. The kind of prompt used is thus determined by the child’s behavior. When teaching a behavior, the interventionist works from most to least, and, when fading prompts, from least to most. The adult uses the child’s responses as a guide (understanding), only moving to the next level once the child manages (with most to least) or doesn’t manage (with least to most) the previous level (matching).</p>	<p>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). Barton (2008); Jung (2013); Ledford (2011); Lydon (2013); Warzak (2016); Wong (2015)</p>
<p>Differential reinforcement: several types, all involve making the challenging behavior less reinforcing than the desired behavior: desired</p>	<p>Differential Reinforcement requires assessment of what variables are maintaining the problem behavior (understanding). Other components of the</p>	<p>A well-researched skill, effective for wide range of target behaviors across different settings. Increase in appropriate behavior; decrease in inappropriate,</p>

behaviors are reinforced, while reinforcement for inappropriate behaviors is withheld (extinction) or lessened.	intervention (depending on what type of differential reinforcement is used), such as extinction, teaching replacement behaviors or reinforcing other behaviors are based on this assessment (matching).	disruptive, aggressive or self-injurious behavior. Gaastra (2016); Lang (2010); MacNaul (2018); Matson (2005); Petscher (2009); Reinoso (2018); Simonsen (2008); Wong (2015)
Praise: adults express approval or admiration for appropriate behavior. With behavior specific praise, the adult gives verbal or written praise statements that explicitly describe the behavior being praised. The behavior would be something in the child's control (e.g., effort) rather than out of their control (e.g., ability).	Behavior specific praise requires observation of the child's behavior and matching positive feedback to that behavior.	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 and without disabilities taught to recruit praise received more praise, feedback & assistance and in turn showed increased task engagement, productivity and accuracy of work. Praise was ineffective or showed mixed results for compliance. Time-out had stronger effects on compliance. Alber (2000); Beets (2010); Leijten (2018); Owen (2012); Royer (2018); Simonsen (2008); Yee (2017)
Restorative Justice Interventions: Restorative justice conferencing (RJC) includes victim-offender mediation (VOM) & the family group conference (FGC). For VOM, a mediator meets with the victim and the offender separately, to prepare them for the meeting with each other. This is followed by a mediated session together, to speak about the crime & its effects, and decide together how best to repair the damage. FGCs involve a meeting between the victim, offender, family members of both and a facilitator, to discuss the crime and its effects, and decide together on appropriate reparation.	Attunement to both perpetrator and victim is inherent in RJC's, both in the process of listening to all parties (understanding) and in matching of consequence to offense, since reparation fitting the specific crime and parties involved must be decided by all participants.	Mixed results regarding whether RJC's 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 the restorative justice approach 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. de Vries (2015); Livingstone (2013); Schwalbe (2012); Wong (2016); Nugent (2004); Strang (2013)
Scripting & script fading: A script is created for appropriate behavior in a specific situation, usually for participants with autism spectrum disorders (ASD). Scripts are practiced	Scripts are individualized (matched), based on understanding of the child's needs and difficulties with a specific situation. Fading progresses to each new step only when the child has mastered the current step (matching).	Increased social skills & communication; increased unscripted responses. Akers (2016); Wong (2015)

repeatedly, then used in real situations until
successful, then systematically faded.

3.4.2. Interventions which are likely to improve attunement

Anything that involves observation, monitoring, listening to a child, or anything that involves effort to increase knowledge and understanding of the child, has the potential to improve attunement, if the adult is able to use their increased understanding to respond appropriately i.e. according to the child's needs. For example, attunement to the child could increase with good parent-child communication because it would increase understanding of the child's state and perspective, thus increasing the likelihood of appropriate adult responses. The same could be said for interventions such as increased parental monitoring, where appropriate; playground supervision; use of a daily report card; or increased teacher directed opportunities to respond (OTR). Each of these interventions increase adult awareness of the child, and thus also the likelihood of accurate assessment of child progress and performance in desired behaviors or possible function of problem behaviors. Adults who are more in tune with children in this way would be more able to match their responses to child needs and signals. There are also interventions which increase the child's ability to send appropriate and readable signals. Table 4 lists interventions which are likely to improve attunement, their outcomes, and explanations of how they can improve attunement. It could be argued that the positive outcomes found for these interventions suggest positive outcomes for attunement.

Table 4: *Interventions which are likely to improve attunement*

Intervention & brief description	How the intervention could improve attunement	Outcomes & review codes (1 st author & date)
<p>Communication: adult-child</p> <p>Usually described as warm, open communication between adult and child.</p>	<p>Warm, open communication encourages child disclosure. This increases adult understanding of the child's state and perspective. Understanding the child in this way would increase the chance that adult responses would fit with child needs (matching).</p>	<p>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.</p> <p>Commendador (2010); Zimmer-Gembeck (2008); Coakley (2017); Sutton (2014); Kuntsche (2016); Mynttinen (2017); Ryan (2010); Hovee (2009)</p>
<p>Communication: Caregivers' emotion socialization behaviors (ESBs): reactions to emotions, discussion of emotions, emotion coaching. Positive ESBs include being aware of low intensity emotion, supportive of emotional expression, and using emotions as opportunities for intimacy and teaching. May also include elaborative reminiscing, in which caregivers discuss past events with their child, acknowledging and validating the emotions experienced. Questions are asked about, or references made to emotions, and emotions are labelled, discussed & validated.</p>	<p>Emotional communication skills such as these increase adult awareness of child emotions and teach and encourage children to share their emotions more. This improves adult understanding of the child's state and increases the chance that adult responses would fit with child needs (matching).</p>	<p>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 and skills.</p> <p>Johnson (2017); Kaminski (2008)</p>
<p>Communication: Dental or hospital staff empathic communication; listening; providing relevant information.</p>	<p>Listening to children empathically would increase adult awareness and understanding of the child's state. This understanding would increase the chance that adult responses, such as information provided, would fit with child needs (matching).</p>	<p>Reduced child fear-related behaviors; increased co-operation; improved child /adolescent hospital experience.</p> <p>Zhou (2011); Shilling (2012)</p>
<p>Communication: Active parental mediation of media Discussion about content viewed.</p>	<p>Discussion of media content would increase parental awareness of child views and responses to media content. This understanding would increase the chance that adult decisions about child media</p>	<p>Protective factor against negative effects of media on aggression, substance use, & sexual outcomes.</p> <p>Collier (2016)</p>

	use and content allowed, would fit with child needs (matching).	
<p>Communication: Teaching children to communicate better through AAC.</p> <p>Augmentative and alternative communication methods (AAC), for children or adolescents with communication or language impairments.</p>	AAC improves the child's ability to send appropriate and readable signals. This would improve adult understanding of the child's state, and in turn increase the chance that adult responses would fit with child needs (matching).	Decreased challenging behavior, increased appropriate behavior. Sigafoos (2008); Walker (2013)
<p>Communication: Teaching children to communicate better through functional communication training (FCT).</p> <p>Child is taught an appropriate communicative response to replace a problem behavior.</p>	FCT would improve the child's ability to send appropriate signals when they want or need something. As the child learns to come <i>to</i> the adult (with communication) instead of <i>at</i> them (with challenging behavior), adult understanding of the child's state would increase and so also the likelihood of adult responses which fit with child needs (matching).	Decreased challenging behavior (e.g. aggressive, disruptive, destructive; self-injurious). Gerow (2018a); Gerow (2018b); McKenna (2016); Neely (2018); Goh (2012)
<p>Communication: Teaching children to communicate better through Picture Exchange Communication System (PECS).</p> <p>A system using pictures to help those who struggle with spoken language, to communicate.</p>	PECS improves the child's ability to send appropriate and readable signals. This would improve adult understanding of the child's state, and in turn increase the chance that adult responses would fit with child needs (matching).	Improved social skills, communication & joint attention. Wong (2015)
<p>Feedback on behavior:</p> <p>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, and have not responded sufficiently to the universal interventions which work for the rest of the class. There are also other forms of performance feedback, in which students are provided with data (e.g., charts, graphs, reports) systematically tracking their performance in positive or negative target classroom behaviors, or on their physical activity / sedentary behaviors.</p>	Daily report cards provide daily data on the student's behavioral performance in every lesson, which can be used to monitor & assess progress and inform decisions on further interventions if appropriate. Daily report cards or other feedback systems give more thorough and accurate feedback to students than spontaneous teacher comments, which may focus on problem behaviors and fail to mention appropriate behaviors exhibited. Thus awareness of the child's state increases, the match between student performance and adult feedback is improved, as well as the chance that further decisions and interventions will fit with student needs.	Decrease in challenging, disruptive and 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 inappropriate behavior; decrease in classroom transition times; short-term increases in physical activity. Vannest (2010); Cox (2005); Hynynen (2016); See (2012); Hawken (2014); Wolfe (2016); Gaastra (2016); Pyle (2017); Richardson (2015); Simonsen (2008)

<p>Monitoring: Parental monitoring of child / adolescent whereabouts and activities e.g. supervision, talking to parents of children’s friends or information from child disclosure.</p>	<p>Monitoring increases parental awareness of child activities, relationships and coping within those activities. This would increase understanding and awareness of the child’s state and increase the chance that adult responses would fit with child needs (matching).</p>	<p>Delayed and 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 and vegetable intake. Commendador (2010); Zimmer-Gembeck (2008); Elsaesser (2017); Kowalski (2014); Hoeve (2009); Ozer (2017); Kuntsche (2016); Lac (2009); Mynttinen (2017); Pearson (2009); Ryan (2010)</p>
<p>Monitoring: Increased playground supervision or Active Supervision, in which the teacher moves around, looking around, interacting with students, correcting any behavior inconsistent with expectations & reinforcing good behavior.</p>	<p>Monitoring increases adult awareness of child activities, relationships and coping within those activities. This would increase understanding and awareness of the child’s state, and increase the chance that adult responses would fit with child needs (matching). For example, the teacher could respond immediately to pre-empt or address problem behaviors.</p>	<p>Decrease in bullying: Increased playground supervision identified in meta-analysis as one of the most important elements of school anti-bullying programs. Active supervision showed improved student behavior in classrooms, hallways & other school settings; higher levels of participation in class; decrease in minor behavioral incidents. Farrington (2009); Simonsen (2008)</p>
<p>Opportunities to Respond (OTR) Teacher Directed Opportunities to Respond: teachers increase opportunities for all students to respond, as opposed to the common situation, in which only one student is chosen to respond. Examples include response cards, choral responding, student response systems or clickers, unison hand gestures such as thumbs up or thumbs down, laminated boards with picture or response choices, or erasable markers.</p>	<p>Increasing OTR gives teachers an immediate indication of students’ understanding, enabling them to adjust their lessons for better fit with student needs (matching). For example, if everyone in the class holds up response cards with the right answer the teacher may move on to something more challenging, but if a number of students hold up cards with the wrong answer, the teacher may explain more first, and then check understanding again. Without response cards, the teacher might assume class-wide understanding, based on a few students giving accurate answers, when, in fact, a number of students do not yet understand the concept.</p>	<p>Decrease in off-task, disruptive & inappropriate behavior; increase in appropriate behavior, academic engagement; improved academic outcomes. Strong positive effects & good social validity. Common (2019); Fitzgerald (2018); Sutherland (2001); MacSuga-Gage (2015); Owiny (2018); Randolph (2007)</p>

<p>Problem-solving together</p> <p>Student participation in decision making e.g., deciding class rules, discussing school problems, brainstorming, choosing & implementing solutions. In the Collaborative Problem Solving approach, an adult attempts to solve a problem collaboratively with a child using the following process: The adult explores the child's concerns about a problem or issue. The adult states their concern. The adult and child brainstorm solutions that will address both their concerns. The child is given the first opportunity to generate a solution. No solutions are dismissed outright. The adult helps the child to think through whether each solution addresses both of their concerns and whether it is realistic & feasible. They agree on a solution, implement it and return to discuss whether it was successful. If not, they discuss further and try another solution until they have found one that works.</p>	<p>Student participation would increase teacher understanding of student state and views and therefore also increase the likelihood of adult responses that fit with student needs (matching).</p> <p>The process of listening to child concerns in the Collaborative Problem Solving process would increase adult awareness of the child's state. This awareness as well as the process of agreeing together on a solution and later evaluating the solution together, would increase the likelihood of adult responses which fit with child needs (matching).</p>	<p>Qualitative results for student participation suggest increases 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 such as student negative feelings (e.g. not taken seriously); unmet expectations; feeling overwhelmed by the responsibility. Griebler (2017); Mager (2012); Voight (2016)</p> <p>Outcomes for collaborative problem solving in outpatient settings include improved parent-child relationships; reduction in oppositional behaviors, ADHD symptoms & parenting stress. Outcomes in inpatient settings include dramatic reduction in use of restraint & locked-door seclusions; decrease in staff & patient injuries. Outcomes in school settings include reduction in disciplinary referrals & teacher stress. Pollastri (2013)</p>
<p>Restorative Justice Interventions</p> <p>Restorative justice conferencing (RJC) includes victim-offender mediation (VOM) & the family group conference (FGC). For VOM, a mediator meets with the victim and the offender separately, to prepare them for the meeting with each other. This is followed by a mediated session together, to speak about the crime & its effects, and decide together how best to repair the damage. FGCs involve a meeting between the victim, offender, family members of both and a facilitator, to discuss the</p>	<p>The restorative justice process increases understanding of both perpetrator and victim through the process of talking about what was done and listening to all parties. This increased understanding, as well as the process of deciding together how to repair the harm, increases the likelihood of adult responses which fit with the needs of both perpetrator and victim (matching).</p>	<p>Mixed results regarding whether RJs 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 the restorative justice approach is less effective than traditional court processing. More sensitive measures than recidivism show greater victim satisfaction; slightly higher recognition of</p>

crime and its effects, and decide together on appropriate reparation.

wrongdoing by offenders; less serious / harmful re-offenses.

de Vries (2015); Livingstone (2013); Schwalbe (2012); Wong (2016); Nugent (2004); Strang (2013)

3.4.3. Evidence that interventions work better for some than for others

Evidence that interventions work better for some than for others, or work better used in a certain way, can be interpreted as evidence that attunement is needed in choosing and applying interventions to match the particular needs of each child. A number of reviews showed such evidence, highlighting several important aspects of attunement, such as appropriate match of intervention with child needs and abilities, developmental level or function of behavior. Table 5 summarizes this evidence alongside these and other aspects of attunement. These examples illustrate that behavioral interventions can be very helpful for some children, but not very effective for others, depending on the child's particular needs and abilities. This suggests that skills should not be considered effective or good in themselves, but rather according to their fit with the needs of the child.

Table 5: *Evidence that interventions work better for some than for others or work better used in a certain way*

Aspect of attunement highlighted	Examples / evidence & review codes (1 st author & date)
Does the intervention fit the child's unique needs, sensitivities and preferences?	Children with Autism Spectrum Disorders (ASD) respond well to Visual Activity Schedules (Knight 2015; Koyama 2011; Lequia 2012; Spriggs 2017). It has been noted that this intervention fits well with their preference for visual learning and strong need for predictability (Knight 2015; Lequia 2012).
	Children with ASD respond well to video modelling (Bellini 2007; Bennett 2017; Domire 2014; Hong 2016; Hong 2017; Mason 2012; Mason 2013; Mason 2016; Wong 2015). This intervention fits well with their tendency to prefer visual learning (Bennett, 2017). One review noted that video self-modelling (VSM) alone yielded larger effects than VSM with reinforcement or as a component of a packaged intervention. Authors thought it likely that presentation of other components increased social interaction with the interventionist, which would be more demanding for participants with ASD (Mason 2016).
	Rewards have been found to be an important and effective intervention for children with ADHD. This intervention fits well because these children have been found to be more sensitive to rewards than typical controls (Luman 2005; Ma 2016).
	Daily report cards and self-regulation interventions have shown large positive effects for children with ADHD (Bruhn 2015; Gaastra 2016; Pyle 2017; Reid, 2005; Richardson 2015). These interventions fit well because frequent feedback about their behavior, a characteristic of both interventions, has been found to be a critical factor in their self-regulation (Reid 2005). It has been noted (Reid 2005) that, since self-regulation is a deficit for children with ADHD, self-regulation interventions may be particularly important, although this deficit may also mean that some children are not yet capable of enough self-regulation to participate effectively in this intervention (Briesch 2018). These children may respond better at first to a daily report card, where feedback is given by an adult. Attunement would be needed to ascertain which intervention would work best for each child.
Does the intervention fit with the child's abilities?	When rewards were used to motivate children and adolescents with moderate to severe acquired brain injury (ABI) in rehabilitation settings, effects varied based on the severity of brain injury, with more severely injured participants showing less improvement with reward. This is in keeping with the finding that more severe injuries are likely to affect white matter structures known to be important in reward processing (Tatla 2014).
	A review on nocturnal enuresis (Caldwell 2013) found that medication or enuresis alarms were often more effective than reward. It is possible that the children did not respond well to reward because they were not physically able to achieve the target behavior without the support of medication or an alarm.
Does the intervention fit with the child's developmental level?	One review found that self-monitoring for children with ASD was more effective for older students. Authors suggested that this could be attributed to more mature executive functions and thus greater developmental readiness for the intervention (Davis 2016).

	In one study reviewed regarding toilet training for typically developing toddlers, 9 of 10 children who did not complete training were under 25 months. Review authors concluded that they may not have been old enough for toilet training (Warzak 2016). Thus, interventions such as prompting and reward, which are usually effective for toilet training (Warzak 2016), were ineffective because the children were not developmentally ready.
	Time-out shows largest effects for boys under 7 (Vegas 2007), suggesting greater need for this intervention for boys at this developmental stage.
Does the intervention fit with the function of the target behavior?	Functional communication training (FCT) has a strong evidence base (Gerow 2018a; Gerow 2018b; McKenna 2016; Neely 2018; Goh 2012), however, if functional assessment identifies the function of a problem behavior as automatic reinforcement (i.e. it is rewarding in itself), it is less likely to respond to FCT (Gerow 2018a) and extinction may not be possible. An antecedent intervention such as matched stimulation (Gover 2018) or inhibitory stimulus control procedures (Lydon 2017) may be a better choice.
	The function of problem behavior has been found to play a key role in the effectiveness of check in check out (CICO), an intervention involving a daily report card. Strong effects were demonstrated for attention-maintained problem behavior while, unless modified, it was ineffective for escape-maintained problem behavior (Hawken 2014; Wolfe 2016).
	Time-out is usually effective for aggression (Vegas 2007; Kaminski 2008; Matson 2005; Corralejo 2018), however interventions need to be matched to the function of the behavior (Matson 2005), as, in one study, time-out reinforced aggression.
	Praise is such an important and effective intervention, that sometimes students are taught to recruit it, however for this to be effective, teacher attention needs to function as a reinforcer for the students (Alber 2000).
Is the intervention necessary?	Rewards have been shown to undermine intrinsic motivation (Deci 1999), but they are usually effective where there is a lack of intrinsic motivation (Cameron 2001; Deci 1999). This suggests that if a child is not motivated to do something, reward would be useful, but if they are already motivated to do something a reward would be unnecessary and possibly have undesirable effects.
How much is necessary / constructive?	Higher parental monitoring, including supervision and talking to parents of adolescents' friends, was significantly associated with delay in age of first intercourse (Zimmer-Gembeck 2008), however, 2 studies showed that overcontrol was associated with earlier intercourse. This outcome suggests that parents need to attune to the amount of monitoring appropriate for their child, as too much or too little could have negative outcomes.
	Positive effects of choice diminish if too many choices (5 or more) are given (Patall 2008).
	Longer timeouts have not been found to add any benefits. Short timeouts (5 minutes or less) are usually enough (Corralejo 2018).
	Restraint in the form of protective clothing or equipment has been used to reduce or prevent skin picking and eye gouging among adolescents with developmental disabilities. Continuous use of this equipment is not always necessary, however, as studies have shown that contingent use (e.g. gloves worn for a few minutes contingent on skin picking) can sometimes be more effective and easier to fade (Lang 2010).
Is the intervention appropriate?	The use of extinction (planned ignoring) could be problematic for children with self-injurious behavior (Vriend 2011).

Non-exclusionary time-outs have been shown to be effective for low intensity or high frequency inappropriate behaviors, but are not as appropriate for behaviors such as physical damage to self, property, or others (Kostewicz, 2010). For aggression, exclusionary timeouts have been shown to work well (Vegas 2007).

Is the intervention having the desired effect?

Praise is usually effective and beneficial (Beets 2010; Yee 2017; Simonsen 2008; Royer 2018; Alber 2000), however two reviews showed that praise may not always be experienced as rewarding by children. Authors suggest that it may increase self-consciousness or be experienced as controlling (Deci 1999; Owen 2012).

3.4.4. Superior outcomes of tailored interventions.

Tailored interventions are interventions which are custom-made according to the needs and signals of specific children. As suggested above, function-based interventions, in which the intervention is guided by functional assessment or functional analysis, could be seen as ABA's equivalent of attunement. Previous research has shown that interventions based on functional assessments are more effective in addressing challenging behavior than those that are not (Didden et al., 2006 ; Harvey et al., 2009; Horner et al., 2002). This was confirmed in the current research, with a number of included reviews showing that function-based interventions and other forms of tailoring are associated with greater intervention effectiveness and other positive results. Table 6 summarizes this evidence. Overall, these outcomes suggest the importance of attunement in the effectiveness of behavioral interventions.

Table 6: Superior *outcomes of tailored interventions*

Examples / evidence & review codes (1 st author & date)	Aspect of attunement highlighted & comments
Common components of effective interventions designed to improve parent-child communication about sex included developmental and/or cultural tailoring (Sutton 2014).	Tailoring (tailor-making the intervention for a specific group).
Incorporating the child's interests, motivation (through reinforcement), and targeting play skills that match the child's developmental level were found to be common features of effective interventions (Jung 2013) to teach play skills to children with ASD and PDD.	Tailoring (tailor-making the intervention for a specific child).
In a review examining the good behavior game (GBG), authors highlighted the importance of making sure the rewards used are appealing to students. Of the 4 studies reporting use of preference assessments, three indicated large or moderate effects (Flower 2014)	Tailoring.
Practitioners who employ preference assessments when using the antecedent intervention choice-making, are more likely to improve a student's task engagement than those relying on choice-making alone (Morgan 2006).	Tailoring.
In medical settings, distraction interventions for pain, such as music or videos that were not tailored to the child's preferences were more likely to produce higher effect sizes (Cepeda 2006; DeMore 2005).	Tailoring. Comment: At first glance, this may seem to be an exception to the rule, but attunement does not necessarily mean giving a child their preference. Better attunement in this case might be to identify what has the highest distraction value, which may mean something the child is less familiar with than their preferred music or video.
For children and adolescents with disabilities, augmentative and alternative communication (AAC) interventions based on functional behavior assessments (FBAs) had significantly larger effect sizes than those that did not use FBAs. Also, AAC with functional communication training (FCT) had significantly stronger effects in reducing challenging behavior. This may be attributed to the fact that FCT is function-based, utilizing FBA to inform intervention development (Walker 2013).	Matching the function of the target behavior.
For video modelling, custom-made videos were more effective than commercially available videos, and function-based videos more effective than non-function-based videos. One study compared reinforcement contingencies as part of the video intervention, and found that function-based consequences were more effective than non-function-based (Bennett 2017).	Tailoring & matching the function of the target behavior.
Function-based antecedent interventions for stereotypy were slightly more effective than nonfunction-based interventions (Mulligan 2014).	Matching the function of the target behavior.

Goh and Bambara (2012) conducted a meta-analysis of individualized Positive Behavior Support (PBS) interventions in school settings for children, with and without disabilities. Target behaviors were often severe, as in the PBS system, individualized interventions (Tier 3) are employed for children who have not responded to first (universal) or second tier (additional strategies, usually implemented in small groups) PBS interventions. All the interventions reviewed, (such as FCT, self-management, extinction, reinforcement, differential reinforcement or antecedent interventions) were effective. No significant differences in effect sizes were found between intervention types, intervention agents, settings, gender, grade or disability, although greater effect sizes were found where there had been team decision making. Authors attributed the lack of differences in results to the fact that all the interventions were highly individualized, based on FBA results, in other words they were carefully tailored for each participant. Authors concluded that functional assessment, rather than any specific skill, may be the “predominate influential variable governing intervention effects” (Goh & Bambara, 2012)(p 10).

Teachers and students rate function-based interventions highly (McKenna 2016).

Matching the function of the target behavior. Comments: Author’s conclusions echo Kounin’s finding, that “withitness” was a better predictor of teacher efficacy than the use of any particular discipline or classroom management skill (Kounin, 1970). The finding that team decision making improved results, may also relate to attunement, since input from more people working with each child should increase understanding of the child and their behavior, enabling better intervention choices.

Matching the function of the target behavior. Comment: This impact on social validity makes sense when we consider the attachment research finding that when responses fit with the child’s signals, there is greater child satisfaction with the encounter (Stern, 1985; Tronick et al., 1978) and increased security (Ainsworth et al., 1978; Isabella & Belsky, 1991; Isabella et al., 1989).

3.4.5. Interventions not showing evidence related to attunement

Despite the fact that none of the included reviews specifically addressed attunement, some evidence was found relating to attunement in reviews on most of the discipline tools, as seen in the tables above. There were a few tools, however, for which reviewed evidence did not show evidence relating to attunement. Certain aspects of structure, such as rules and policies did not show a link. Modelling and parental modelling, preparation, reprimands and goal setting also did not show a link. One review on goal setting (Bruhn, McDaniel, Fernando, & Troughton, 2016) mentioned that around half of the studies used individualized goals but none compared the effects of individualized goals versus generalized goals. This example illustrates the possibility that these few exceptions exist only because the reviews were not focused on attunement and therefore did not seek or present evidence that could have related to attunement. It is very possible that evidence could be found for attunement in the use of each of these interventions if it were sought.

3.5. Discussion

The above results give evidence suggesting the importance of attunement in the use of discipline tools. It is possible that a toolkit of discipline options would be useful in scaffolding child development to the extent that a caregiver is able to use those tools with attunement. From this perspective, individual tools such as reward, time-out or active listening would not be considered to be good skills in themselves, but would only be good if they matched the needs and signals of the child at the time they were used. For instance, timeout could be a good skill to address aggression or non-compliance on the part of the child (Corralejo, Jensen, Greathouse, & Ward, 2018; Kaminski, Valle, Filene, & Boyle, 2008; Leijten, Gardner, Melendez-Torres, Knerr, & Overbeek, 2018; Matson, Dixon, & Matson, 2005; Owen, Slep, & Heyman, 2012), but a bad skill to use if the child is experiencing fear or panic and actually needs reassurance or comfort (Dadds & Tully, 2019; Trautman, 2015).

Active listening may be a good skill to use if a child seems upset (Lisper & Nilsson, 1982), but should not be the first choice when a young child is upset because the parent wants them to climb down from the 7th floor balcony railing, or stop running towards the middle of a busy road. Manual restraint in the form of taking the child off the railing, or holding their hand at the roadside could be appropriate in the latter two cases, while there are plenty of other situations in which restraint is not called for and would be intrusive (Luiselli, 2009).

Beyond which skill to use, the above evidence suggests other important areas of attunement such as whether intervention is necessary and constructive at all (Deci, Koestner, & Ryan, 1999), whether it is appropriate (Kostewicz, 2010; Vriend, Corkum, Moon, & Smith, 2011), whether it is having the desired effect (Owen et al., 2012), and how much of an intervention is constructive. Regarding the latter point: at what point is a larger or longer dose of a particular skill unnecessary (Corralejo et al., 2018; Lang et al., 2010), at what point does a bigger dose undermine effects (Patall, Cooper, & Robinson, 2008) or have negative effects (Zimmer-Gembeck & Helfand, 2008)? For the reader interested in what attuned discipline would look like in practice, further explanation and real examples can be found in chapter 4.

An obvious limitation of this research is that attunement was not directly examined in any of the included reviews, however it is hoped that highlighting this potentially important area will attract more research to it in future. Research is needed directly examining attunement in discipline, and more information is needed on all the above points. Also, observation suggests that securely attached children can become less secure, and insecure children more secure over time (Ainsworth, 1967; Bowlby, 1973). Future studies should examine the role of discipline in these changes. For instance, caregivers aware of the importance of attachment may fear that discipline could impact negatively on child attachment security, and may unnecessarily avoid using certain discipline strategies (Dadds & Tully, 2019). On the other hand, appropriate use of discipline could enhance attachment

security (Dadds & Tully, 2019; Trautman, 2015). Research directly addressing these hypotheses is needed. Further, a reasonable hypothesis would be that attunement in the use of discipline tools would be more likely to impact on attachment security than the use of any particular discipline tool. Thus, research specifically on the effects of attuned or misattuned discipline on attachment security would be a valuable addition to the literature.

3.6. Conclusion

In the previous paper in this series, we reported on a systematic overview of the evidence on a range of non-violent discipline options, conducted in order to form a “toolkit” for use by caregivers and teachers. A large range of evidence-supported tools were found and described, with outcomes not only showing effectiveness for challenging behavior but many other benefits for child development. In this second paper, we explored the idea that attunement plays an important role in the effectiveness and appropriate use of discipline tools. Although no included review explicitly addressed attunement, evidence was found suggesting its importance in both the use and effectiveness of the reviewed interventions. This was documented and summarized on tables and in text. It is possible that attunement may be a better predictor of efficacy and social validity than use of any particular intervention, and this concept should be explored further in relation to non-violent discipline. It is also possible that a toolkit approach would be more constructive if information made available on the tools was accompanied by information explaining the need for attunement in their use. When using a toolkit approach, caregivers and teachers could employ a model of “attunement plus options”, in which interventions are not considered as effective in themselves, but rather evaluated according to their fit with the situation at hand, and the needs and signals of the child.

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Chapter 4: Attuned Discipline in Practice

4.1. Introduction

This chapter (designed as an appendix to paper 2) presents some everyday examples, to demonstrate attunement as it applies to practice of discipline by caregivers and teachers. As seen in the tables in chapter 3, attunement applies to discipline in a number of ways. We focus here on three important areas: understanding when and where a child needs behavioral support; choosing tools that would best fit the situation and needs of the child; and understanding when to stop intervening or to fade the support.

4.2. Understanding when and where a child needs behavioral support

If we return to the ZPD, the solid line in figure 3 and 4 indicates adult involvement using limits and discipline tools. The area inside the solid line is therefore the amount of freedom and responsibility the child is allowed. An important part of attuned discipline would be adjusting this line so that it falls in the zone of proximal development.

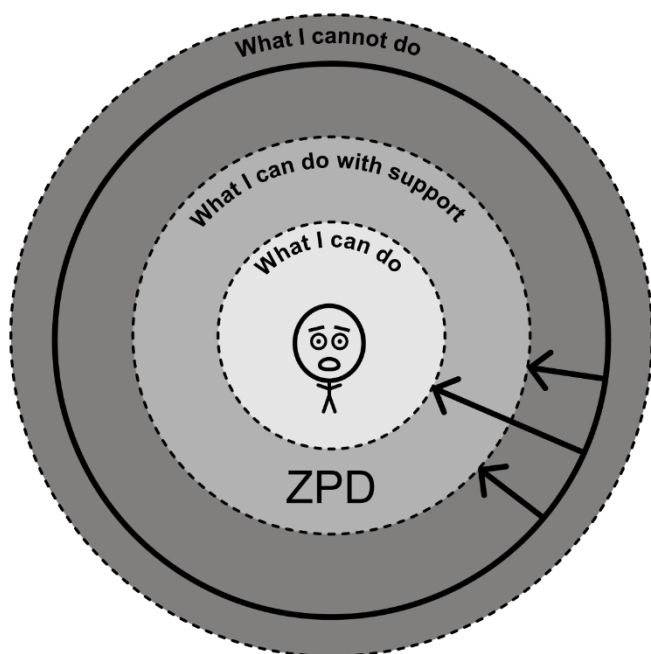


Figure 3: *Too much freedom & responsibility*

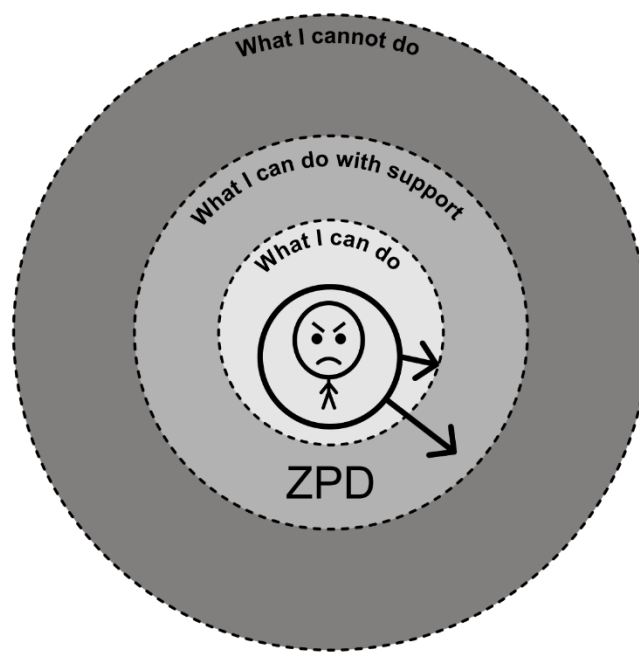


Figure 4: *Too little freedom & responsibility*

If the child is given too much freedom (figure 3), in other words they are allowed or expected to manage without adult support in the outer circle, they will not be able to manage

this freedom and responsibility and there will be negative effects. Examples would include a young child with unsupervised access to a cellular phone, who starts looking at pornographic material, or a young child left at home unsupervised, who injures themselves. In each of these situations it would be unfair for the caregiver to be angry with the child, because the problematic behavior was the outcome of the child being allowed freedom and responsibility that they were not developmentally ready to manage. When a child is in this situation, it is the responsibility of the adult to reduce the child's freedom and responsibility until they are mature enough to manage more, moving the solid line back to the ZPD, to the edge of what the child can manage.

In this outer zone, what is often needed from caregivers is protection. For example, if the child cannot yet swim, the adult should not leave them unsupervised near a swimming pool. Another example would be the important gatekeeping role caregivers have in limiting availability of things that would be bad for the child (Ryan, Jorm, & Lubman, 2010; Yee, Lwin, & Ho, 2017). Recognizing that appropriate self-regulation of screen time and content viewed, or how many readily available sugar-sweetened items they consume, falls in the zone of things the child cannot do yet, the parents take on the responsibility, protectively, to regulate and limit access to these things. These monitoring or restrictive actions are attuned to the developmental level of the child. Not offering protection where it is needed would be misattunement, and a form of neglect.

If the solid line falls in the area the child can manage (figure 4), representing adult over-involvement or overcontrol, the adult would need to adjust in the other direction, to back off, allowing the child the responsibility and freedom they are ready for. In this area the child needs opportunities to exercise autonomy and self-regulation. Adult over-involvement, such as directing the child unnecessarily, or over-involving themselves in the child's schoolwork would be intrusive, and an act of misattunement.

The solid line should fall at the edge of what the child can manage, in the ZPD, where the child needs adult support, and therefore where it is helpful to scaffold using discipline tools. Examples would include using a daily report card for a child with ADHD to help them exercise more self-regulation in class or using a reward system to motivate children to do certain tasks at home.

To understand when and where a child needs behavioral support the adult needs to use tools that would increase attunement, such as monitoring and listening. If the child is managing well, the adult does not need to scaffold further except perhaps with praise. If the child is not managing with something, the adult needs to attune further to whether the child cannot be expected to manage that thing developmentally, or whether they may be able to manage with support. In the former case, more limits and protection may be needed. In the latter case it would be appropriate to scaffold using discipline tools.

4.3. Choosing tools that best fit the situation and needs of the child

Not only do children need adult support in the ZPD, they need the right kind of support, to learn to manage on their own in future. Here the adult needs to use attunement in the form of choosing supportive interventions that fit best with the child's needs and evaluating whether they are having the desired effect or whether a different supportive skill should be used. Here are some real examples of scaffolding using discipline tools in the zone of proximal development. Names have been changed.

4.3.1. A teacher is supervising a group of young children, 3 to 6 years old, in a play area. The fact that she is supervising them is already a form of scaffolding. They are too young to be expected to play safely on their own, but manage well with her there. The fact that there are rules is also a form of scaffolding. One of the rules is that the children may not go out of bounds. The teacher has shown them where they may or may not play. Occasionally the younger children seem to forget the boundaries and wander over into an out-of-bounds

area. The teacher prompts them, verbally, to return to the play area. This reminder is enough scaffolding for most of the children and they return to play happily within bounds.

Four-year-old Mila walks over the boundary. The teacher sees this and prompts her with a reminder of where she can and can't go. Since, in this case, Mila is being defiant and not forgetful, this first attempt at scaffolding better behavior fails. Mila turns to look at the teacher, then turns back and marches purposefully to a swing in another play area. The teacher uses another skill from her toolkit of possible interventions, a timeout. Since there is no aggression, Mila does not need an exclusionary timeout. She is managing being with other people, but she is not managing the outside rules, so the teacher gives her a brief timeout from the thing she is not managing, which is playing outside.

The teacher leads her inside and says: "You are going to play inside now." "But I want to play outside," Mila says. "I know," says the teacher in an understanding voice, "you love playing outside," (here the teacher uses an active listening-type reflection to support Mila through the disciplinary process), "but we tried that and it did not go well. You need to play inside." Mila looks at the teacher: "I won't go where I'm not supposed to go," she says. "We tried playing outside and you did go where you were not supposed to go," says the teacher, "so now you must play inside. If you manage that nicely, then just now I will give you another chance to play outside." Mila plays inside, interacting with other children who are playing there. After 5 minutes the teacher asks: "If I let you go outside now, do you think you will manage the outside rules?" "Yes!" says Mila. "And you won't go where you are not supposed to go?" "No!" "All right, let's see how it goes: you may play outside." Mila plays very nicely and does not go out of bounds that day or any other day thereafter.

Note the attunement in the use of timeout: the teacher matches the kind of timeout given to what Mila is not managing. This is an example of a non-exclusionary time-out. Experiencing a sudden reduction of her freedom, and realizing that getting it back is

conditional on her staying in bounds, provides the motivation needed for Mila to co-operate with the outside rules. The trial and error process in which the teacher first uses a prompt and then a timeout to address the child's behavior is part of the process of attunement, rather than a misattunement. Checking whether the prompt works helps the teacher diagnose that the child is being defiant and needs a different intervention. Using a time-out immediately would have been unnecessary for the other children, who only needed prompts. A principle of minimum intervention makes sense in the ZPD, because the less the adult does, the more self-regulation the child has the opportunity to exercise and therefore to learn.

4.3.2. Jared, 5, is very angry because his parents have said no to something he wanted to do. He nags and nags for what he wants, but his parents stand firm. His mother tries to show understanding by using active listening and reflecting his disappointment at her answer. Sometimes this calms him, but this time Jared does not respond to active listening and does not allow her to comfort him. He screams and starts hitting her. Mom immediately puts him in his room for a 3-minute time-out. Jared knows about timeouts as his parents use them consistently for any kind of aggression. They have explained this to him, saying: "Sometimes we need to stop you, but one day you will be able to stop yourself." After the timeout Jared is still upset, but no longer being aggressive. He apologizes and allows his mother to comfort him with a hug and help him to understand his feelings with active listening.

As Jared gets older, he learns to take himself to timeout and runs to his room when he gets very angry, without hitting people first. After he does this, his parents praise him and tell him how proud they are of him for realizing by himself that he needed a timeout and for managing not to hit anyone. As Jared gets even older, he manages a lot of similar situations without losing his temper and without needing to go to timeout at all. Here we can see how, as Jared's capacity for self-regulation increases, parental intervention appropriately decreases, from using timeout, to using praise, to not needing to do anything at all.

4.3.3. On the weekend, Aiden, 16, spends a lot of time playing games and watching YouTube videos on his phone, leaving his household chores undone. His parents prompt him to do the dishes, and he promises to “do them in a minute.” Two hours go by and he does not get around to the chore. His parents use a timeout. Sending him to his room would provide further escape from the dishes, so they adjust his freedom only in the area he is not managing, and give him a timeout from his phone. As his mother asks him to hand over the phone, she adds a contingency: he can have it back when the dishes are done. Aiden grumbles, but washes the dishes immediately, then asks for his phone. His mother thanks him for washing the dishes, and gives back the phone.

These three examples concern the attuned use of timeout, but there are many other behavioral skills that can be used to scaffold in the ZPD. One of these is reward, which can be particularly useful when caregivers want a child to do something that the child is not at all motivated to do.

4.3.4. Six-year-old Jade is capable of dressing herself in the morning, but keeps saying “I can’t,” or “I want you to help me.” If she would dress herself it would certainly make things easier for her parents, but where is the motivation for Jade? She enjoys the attention she receives when her mother helps her get dressed. If she dresses herself, she will be alone, while her mother helps her younger brother. Her mother recognizes that Jade’s helplessness is attention-motivated, and supports her by adding some motivation in the form of a reward involving attention. Jade dresses herself without complaint, knowing that each time she does this, she earns an extra story, read to her by her mother in the afternoon. Soon, dressing herself becomes a habit, and her mother fades out the use of the reward by shifting it to another area where Jade needs motivation.

Here we can see that the support Jade needed was added motivation. Her mother could have rewarded her with an unrelated reward, such as a sticker, but instead matched the

kind of reward to the function of Jade's behavior (attention), increasing the likelihood of success and child satisfaction by using a more attuned intervention.

The examples above focus mainly on attuned use of timeout and reward. These two skills were chosen because, aside from being commonly known, they are both somewhat controversial. Despite decades of studies showing positive outcomes associated with these tools (Corralejo, Jensen, Greathouse, & Ward, 2018; Dadds & Tully, 2019; Embry & Biglan, 2008; Kaminski, Valle, Filene, & Boyle, 2008; Luman, Oosterlaan, & Sergeant, 2005; Ma, van Duijvenvoorde, & Scheres, 2016; Owen, Slep, & Heyman, 2012), popular literature, internet advice and even academic articles have warned against dangers associated with their use (Corralejo et al., 2018; Drayton et al., 2014; Durrant & Stewart-Tufescu, 2017; Alfie Kohn, 1999; D. J. Siegel & Payne Bryson, 2014b). These two controversies lend support to the argument for attunement.

The main concern about timeout seems to be damage to the attachment bond by communicating to the child that the parent is not available to them in times of distress (Dadds & Tully, 2019). This is a legitimate concern, but not supported by evidence, and there are several reasons why this damage is not only unlikely, but that appropriate use of timeout could support secure attachment (Dadds & Tully, 2019). A further argument is added here: If we look closer at descriptions of the examples used in texts warning against the use of timeout (Durrant & Stewart-Tufescu, 2017; Siegel & Bryson, 2014a; Siegel & Payne Bryson, 2014b), they describe children isolated at times when they are in distress, and needing soothing and comfort. This would be an example of inappropriate or misattuned use of timeout. The authors of two of the above articles have since retracted some of what they said, and confirmed that they were referring to inappropriate use of timeout (Siegel & Bryson, 2014c). From the perspective of attunement, timeout is not good or bad in itself, but should be evaluated by its fit with the needs of the child. Attuned use of timeout, as described in the

examples above, should not be problematic: after all, attachment security is built through attuned responses (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth, 1967; Isabella & Belsky, 1991; Isabella, Belsky, & von Eye, 1989).

The main concern about reward is the undermining of intrinsic motivation (Alfie Kohn, 1999; Alfie Kohn, 2003). We argue that this is not an indication that reward should not be used, rather that reward should be used with attunement. Research has indeed shown that if a child is already intrinsically motivated to do something, rewards could undermine that motivation (Deci, Koestner, & Ryan, 1999); however if intrinsic motivation is low, reward enhances motivation and can thus be a constructive intervention (Cameron, Banko, & Pierce, 2001; Deci et al., 1999). Praise has been found to have different effects, enhancing intrinsic motivation and self-reported interest (Cameron et al., 2001; Deci et al., 1999). Does this indicate that praise is a better skill and should be used instead of reward? Further research shows that praise is not always enough to motivate compliance (Leijten, Gardner, Melendez-Torres, Knerr, & Overbeek, 2018; Owen et al., 2012). In the case of compliance, reward has been shown to be more effective (Owen et al., 2012). The best option for caregivers is thus to use rewards or praise with attunement to the motivation level of the child. If there is no or very low motivation to do something, it is safe to use reward (Cameron et al., 2001; Deci et al., 1999), and reward is likely to work better than praise to achieve compliance (Owen et al., 2012). If motivation is high, however, it would be safer to use praise (Cameron et al., 2001; Deci et al., 1999).

If we relate this to the diagrams, praise would be safe to use in the area where a child can manage or in the ZPD. Reward would be unnecessary and unconstructive if the child is already motivated (the inner circle), but it may be very helpful in the ZPD. Neither reward nor praise would work in the outer circle, for things the child cannot manage developmentally.

4.4. Understanding when to stop

Knowing when to stop intervening can be very difficult for caregivers, many of whom may be used to judging the effectiveness of discipline by the amount of distress or suffering it causes the child (Dadds & Tully, 2019; Nelsen, 1985). The skills reviewed in chapter 2 were drawn from different fields and schools of thought. Each of these offer different perspectives from which we can draw guidance in this important aspect of attunement.

From a behavioral perspective, discipline is effective when problem behavior has been reduced or eliminated (Dadds & Tully, 2019) or an appropriate target behavior learned. An important part of behavioral interventions is to fade support gradually once the child is coping better (Carlson & Mayer, 1971). One would thus consider the intervention complete when it is effective, when supports such as rewards and prompts have been removed, and the child is managing the target behavior by themselves.

From a self-regulation perspective, one would look for signs that the child is able to exercise self-control, and fade adult control as this becomes apparent. More intervention than is needed would be misattuned and reduce opportunities for the child to exercise their emerging capacity for self-regulation (Trautman, 2015).

From a collaborative problem-solving perspective (Greene & Ablon, 2005; Pollastri, Epstein, Heath, & Ablon, 2013), a discipline problem would be considered resolved when child and adult agree that the solution they had agreed on collaboratively and implemented was successful. If not, they would discuss further and try another solution until they found one that works.

From an attachment perspective, misattunements and periodic disconnection are normal parts of attachment relationships. What is important is that when there is disconnection, which may happen around challenging behavior, there should, as soon as

possible, be repair (Karen, 1994). Thus, from an attachment perspective, a discipline problem would only be considered resolved when caregiver and child have reconnected.

From a restorative justice perspective, one would look beyond the individual child to the others affected by the problem behavior. From this perspective, problem behavior occurs in the context of relationship, and incurs responsibility to repair or engage in restitution for any damage done. Discipline would be defined as an attempt to repair the harm a problem behavior has caused, rather than inflicting harm on the offender (Strang, Sherman, Mayo-Wilson, Woods, & Ariel, 2013). From this perspective one could stop intervening when appropriate reparation has been made to those affected by the problem behavior.

With the guidance of these different perspectives, caregivers could ask themselves questions to aid their attunement at the end part of intervening, such as: Has the problem been solved or problem behavior ceased? Is the child now engaging in the desired behavior? Is there any unfinished business such as fading supports, apologizing, reconnecting, or making amends?

4.5. Conclusion

This chapter used further explanation and real examples to illustrate the practice of attuned discipline. Three important areas were highlighted: understanding when and where a child needs behavioral support; choosing tools that would best fit the situation and needs of the child; and understanding when to stop intervening or to fade support. It is hoped that this will give practical guidance to readers wanting to use non-violent discipline tools.

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Chapter 5: Conclusion

5.1. Introduction

This research was undertaken to provide reliable information on non-violent discipline tools for caregivers and teachers. The overview method proved an excellent fit for our research objectives. While very little research is available indexed under either discipline methods or attunement in discipline, the overview method enabled us to find and explore a large amount of information relevant to these important topics. Since overviews of systematic reviews give a description of reviewed evidence, rather than all available evidence, and since systematic reviews are limited in scope, evidence presented on each intervention cannot be considered comprehensive. The overview has shed light however, on an area in which reliable information has previously been difficult to access. It is hoped that the information found and presented in this thesis will provide a good foundation for further research and also for dissemination of information to those who need it.

5.2. Summary, links to other research and suggestions for further research

Chapter 2 of this thesis has shown that a wide range of well-tested, evidence-supported non-violent discipline tools exist, that they are effective even with severely challenging behavior, and that they show many important positive outcomes for child development. Previous research on components (Kaminski et al., 2008; Leijten, Gardner, Melendez-Torres, van Aar, et al., 2018) or tools (e.g., Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008; Heyvaert, Saenen, Campbell, Maes, & Onghena, 2014; Wong et al., 2015; Leijten, Gardner, Melendez-Torres, Knerr, & Overbeek, 2018; Farrington & Ttofi, 2009) has been valuable, but specialized and thus limited in range, focussing on only a few tools or a limited target population such as children with autism, or specific target behavior such as bullying or non-compliance. This research builds on and expands previous research by using

a rigorous and systematic method and at the same time using broad inclusion criteria to collect information relevant to a much wider population, range of tools and target behaviors.

Gaps in the research were highlighted, such as the lack of research on certain skills and shortage of research on the use of discipline tools in typical home settings. The lack of evidence on tools to de-escalate explosive or aggressive situations stands out as 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.

. Chapter 3 explored evidence suggesting that discipline tools should be used with attunement. The concept of attunement has, to the best of our knowledge, not been systematically investigated in relation to discipline tools before. Our investigation, although limited, highlights the need for research to be conducted on attunement in discipline and in the use and effectiveness of discipline tools.

Aside from directly examining attunement in discipline, research is needed to examine the role of discipline in changes in attachment security, and specifically on the effects of attuned or misattuned discipline on attachment security.

Chapter 4 discussed practical examples and points relevant to practice of attuned discipline by caregivers and teachers. These real examples show application of the model suggested in chapter 3 of “attunement plus options”.

5.3. Implications for policy and practice

The research reported on in this thesis has some important implications for policy and practice. 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 and other harsh forms of discipline. 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. Since legislation alone has limited effects, policy should also support caregivers and teachers to learn these non-violent alternatives. 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.

Attunement needs to be researched further in relation to discipline, as it may be a better predictor of efficacy and social validity than use of any particular positive discipline tool. Our limited investigation into the kind of understanding and matching that could be classed as attunement in discipline suggests that it would be reasonable to advise caregivers and teachers to employ a model of “attunement plus options” when using discipline tools. In this approach, interventions would not be considered effective in themselves, but rather evaluated according to their fit with the situation at hand, and the needs and signals of each child.

5.4. Conclusion

In closing, it seems fitting to quote Mary Ainsworth (1967, p. 457-458): “Science has been so successful that we have arrogant expectations of it; and yet the practical answers, especially, are slow to come.” In the field of non-violent discipline, despite their importance for violence prevention and child development, answers needed daily by caregivers and teachers have been slow to come. It is hoped that this research will contribute to those practical answers.

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Appendices

[Web-appendix A](#): Search strategy

[Web-appendix B](#): References of included reviews

[Web-appendix C](#): References of excluded reviews

[Web-appendix D](#): Data extraction form

[Web-appendix E](#): Review characteristics table

[Web-appendix F](#): Overlap table

[Web-appendix G](#): Narrative summary of data

[Web-appendix H](#): Amstar scores