

You get what you play for

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YOU GET WHAT YOU PLAY FOR: A MULTIPLE-BASELINE EXPERIMENTAL DESIGN ON CHILD-DIRECTED PLAY FOR PARENTS OF AUTISTIC CHILDREN

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Parents of children with autism spectrum disorder (ASD) face many challenges which lead to low levels of psychological well-being, partly caused by inability to parent in accordance with one's values. Child-directed play, a moment of being fully attentive and responsive to one's child, has the potential to increase parental values. A non-concurrent multiple-baseline experimental design investigated whether daily exercises of child-directed play improved valued parenting and parental perspective-taking. Eight parents of children with diagnosed or suspected ASD were followed daily for six weeks. The intervention comprehended daily practice of child-directed play and video supervision. Child-directed play increased ratings of parental values for all but one participant (Hedges' $g^* = 1.67$) with effect maintained at follow-up, and increased ratings of parental perspective-taking. A gradual effect indicates the need for greater difference in baseline length between participants. No effects on children, nor on parental well-being were investigated in the present study.

Autism spectrum disorder (ASD) is a neurodevelopmental disorder, usually diagnosed in early childhood. The two most prominent areas in which individuals on the spectrum face challenges are i) persistent deficits in social communication and social interaction, and ii) repetitive and restrictive patterns of behaviours, activities and interests. The latter include stereotyped motor movements, inflexibility in routines, and fixated interests of abnormal intensity for activities and/or sensory aspects of the environment (American Psychological Association, 2013). The symptomatology and the degree of needs and impairments varies greatly among people who receive a diagnosis. Prevalence for ASD in Europe and Northern America is estimated to 0.6-1.0% (Centrum för epidemiologi och samhällsmedicin, 2017) and somewhat higher in Stockholm, Sweden, with percentage of people diagnosed with ASD increasing every year (Centrum för epidemiologi och samhällsmedicin, 2017).

Although there is no known curative treatment for ASD, treatment programs and interventions have been developed in order to reduce symptom severity and increase quality of life, and teach children new skills in those areas where they are lacking (Raichow, Barton, Boyd, & Hume, 2012). Programs have also been developed to decrease parental stress and increase parental acceptance of child problems. Some of these programs and interventions are administered by healthcare professionals, and others by parents themselves in out-of-clinic settings, the most prominent example being *Early intensive behavioural interventions* (EIBI; Eldevik, et al., 2009; Klintwall, Eldevik, & Eikeseth, 2013; Raichow, Barton, Boyd, & Hume, 2012). However, when it comes to ASD research, it is important to mention that while advances are being made in the clinical field of treatment, relatively little interest has been shown in the impact that the diagnosis has on the families of individuals with ASD (Kogan, et al., 2008).

Although guardians and families of children with ASD generally report many joys with their children, they also face many challenges (Hahs, Dixon, & Paliliunas, 2019). Studies have shown that on a group level parental stress is higher in parents of children with ASD, as compared to both typically developing children (Corti, et al., 2018; Hayes & Watson, 2013) and children with other disabilities (e.g., Down syndrome, cerebral palsy, and intellectual disability) (Hayes & Watson, 2013). This can be ascribed to a variety of reasons that go beyond the diagnostic symptom behaviours. First and foremost, children with ASD are at high risk of developing externalising behaviours. Studies identify tantrums, aggression, stereotypy and self-injury as the most common problem behaviours in children with ASD, with many children displaying one or more of these (Horner, Carr, Strain, Todd, & Reed, 2002). Evidence shows that in families with a child with ASD, a child's externalising behaviours add to parental stress, and negatively affect family function and parents' quality of life (McStay, Trembath, & Dissanayake, 2014). High parental stress has been linked to lower levels of happiness, and to a less caring and more authoritative parenting style, including more parent-child conflicts and less support to the child in learning how to deal with and regulate negative emotions (Marklund, 2018). This could lead to a vicious cycle that leaves the child not knowing how to deal with strenuous emotional states that can result in even more externalising behaviours.

In addition, parents of children with ASD have been shown to struggle with effectively communicating with their children (i.e., they feel helpless when failing to get through to their child and understand their needs), and with being involved in their child's lives (i.e., greater distance from one's child and less time spent getting to know them) (Beurkens, Hobson, & Hobson, 2013). Parents of children with ASD are also reported to have high rates of depressive and anxiety disorders (Blackledge & Hayes, 2006), possibly secondary to stress due to the special adjustments that have to be made to the child's needs (Konstantareas, 1990). Moreover, parents tend to be exhausted and pessimistic about the future, with mothers in particular reporting feeling frustrated, anxious, and tense more often than others (Blackledge & Hayes, 2006). Furthermore parents of children with ASD where shown to face more financial, employment, and time burdens, compared with parents of children with other special healthcare needs (Kogan, et al., 2008). As these reported studies show, the array of "secondary challenges" that parents of children with ASD face on a daily basis have a significant impact on their psychological well-being.

Psychological well-being seen through acceptance and commitment therapy

Psychological well-being can be examined through the lenses of acceptance and commitment therapy (ACT; said as one word, not an acronym). ACT is a third-wave cognitive-behavioural therapy form (Hayes, 2019) according to which psychological well-being is reached by fostering valued living (Coyne, McHugh, & Martinez, 2011; Hayes, 2019; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). This is achieved by decreasing attachment to private events (e.g. thought) and attempts at changing and/or minimising them (Coyne, McHugh, & Martinez, 2011; Hayes, Luoma, Bond, Masuda, & Lillis, 2006), while allowing the individual to develop psychological flexibility by being fully in contact with the present moment and thereby purposely changing or persisting with one's own behaviours in the service of chosen values (Hayes, 2006). One pivotal aspect of psychological flexibility is mindfulness practice (Coyne, McHugh, & Martinez, 2011; Fletcher & Hayes, 2005; Hayes, 2019; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). This can be defined as the detached, accepting, non-judgmental attention to the

present moment and to one's private events unfolding in said moment, and as the awareness of being distinct from the content being noticed. Its processes help the person expand one's attention in order to gain access to information in the present moment. By doing so it increases psychological flexibility and empowers valued living and committed action in the direction of value-consistent goals (Fletcher & Hayes, 2005).

The stress, frustration, worry, financial issues, and so forth, that parents of children with ASD experience could, through ACT, be seen as caused by a lack of time, strength, and ability to live in the present moment and to engage in those activities they value as being important to themselves. This could in its turn feed into these negative emotional and psychological states linked to parenting, since parents would fail to look after themselves and recover from distress. Indeed, ACT-treatments have been tested as a treatment option for parents of children with ASD. As a result of literature search, they seem to be the only approach that specifically targets these parents' well-being.

Studies have shown that ACT training on its own increases parental acceptance and understanding of one's child which fosters parental adjustment to the child's needs (Blackledge & Hayes, 2006), and yields significant changes in scores of cognitive emotional regulation (e.g., thought suppression, problem solving, and blame) in the desired direction (i.e., improved coping) (Salimi, Mahdavi, Yeghaneh, Abedin, & Hajhosseini, 2019). It has also been shown to significantly improve parental psychological well-being and scores of ACT-related components (e.g., mindfulness, values, and committed action) (Blackledge & Hayes, 2006; Hahs, Dixon, & Paliliunas, 2019). Psychological well-being had also improved when mindfulness training on its own was added to support and education interventions for parents of adolescents and adults with ASD (Lunsky, et al., 2017). When evaluated as a complement to EIBI, ACT training led to significantly lower scores in parental stress, but also mindfulness awareness abilities, possibly due to increased awareness of disconnect from the present moment, since no significant change was shown in the control group (Corti, et al., 2018). The Swedish ACT-based parenting program *NAVIGATOR ACT* (Marklund, 2018) was shown to help parents change their perception of the child's struggles and to decrease these struggles' impact on the family. Parents showed an increase in psychological flexibility and mindfulness awareness, although no changes in parental stress were observed. Taghvaei, Jahangiri and Bidaki (2019) also showed that ACT led to an increase in the psychological well-being and quality of life of mothers of children with ASD including an increase in psychological flexibility. Moreover, these mothers were shown to become more accepting of their own personal limitations, and of their children's condition.

Mindful parenting

A recurring component in the above-mentioned ACT-programs is *mindful parenting*, defined as practicing mindfulness while interacting with one's child. It can be described as non-judgmentally and calmly paying attention to one's child and one's internal states and reactions, and to how the latter affect one's parenting (Singh, et al., 2006; van der Oord, Bögels, & Peijnenburg, 2012). Mindful parenting entails increased awareness of the present moment when interacting with the child, acceptance of the current situation, and reduced automatic negative reactions to the child. Its five dimensions are i) listening with full attention; ii) non-judgemental acceptance of self and child; iii) emotional awareness of self and child; iv) self-regulation in the parenting relationship; and v)

compassion for self and child (Duncan, Coatsworth, & Greenberg, 2009). In NAVIGATOR ACT, mindful parenting is often assigned as homework when working with values, acceptance of thoughts, feelings and the parent's current situation, and compassion for oneself (Marklund, 2018). Mindful parenting has been shown to improve interactions between mothers and children with ASD, to help mothers act according to their values, to increase their understanding of their children's needs even when they are in conflict with one's own (i.e., perspective-taking) (Singh, et al., 2006), and to increase mindful awareness and reduce stress in parents of children with attention deficit hyperactivity disorder (ADHD) (van der Oord, Bögels, & Peijnenburg, 2012). Moreover, in a meta-analysis across settings, Townshend, Jordan, Stephenson and Tsey (2016) found that mindful parenting reduced parental stress and emotional dismissal of one's children, and increased parents' emotional awareness of their children.

Mindful parenting overlaps with an intervention found in many well-established parent training programs for parents of children who show externalising behaviours. This intervention is most often referred to as *child-directed play* (*Barnets stund* or *Gemensam stund* in Swedish) and is often the first intervention taught to parents of children with ASD when they come in contact with habilitation centres in Sweden. Before describing in detail said intervention, we will give an overview of parent training programs and of the evidence that supports their effect on parental well-being, in order to create a better understanding for the context in which child-directed play has been developed.

Parent training programs

Parent training programs aim to decrease externalising child behaviour, regardless of child diagnosis, by increasing positive parenting, and reinforcing more adaptive and extinguishing problematic child behaviours. Some of these programs have been specifically adapted for children with ASD, ADHD and conduct problems (Cunningham, Bremner, Secord, & Harrison, 2009; Forehand & McMahon, 1981; Forster, Kling, & Sundell 2012; Kaehler, Jacobs, & Jones, 2016; McMahon & Forehand, 2003; Socialstyrelsen, 2019; Webster-Stratton, 1981; 2011). Most of these parent training programs build on the Hanf-model of behavioural management (Kaehler, Jacobs, & Jones, 2016) which consists of two phases. The first phase aims at strengthening the relationship between parent and child. Child-directed play is a prominent component alongside positive parenting and joint attention. The second phase consists of behavioural management interventions aiming at reducing disruptive and increasing desired behaviours.

Although the use of these parent training programs is quite widespread, difficulties have been reported in evaluating their effects, due to bias and lack of control (French & Kennedy, 2018). Nonetheless, evidence supports these programs' effects on disruptive behaviours (Forster, Kling, & Sundell 2012; Leijten, et al., 2019). In their review, Kaminsky and colleagues (2008) showed that parent training programs had an effect on child outcomes (i.e., internalising, externalising, academic and social skills), albeit an even greater effect on general parenting outcomes (i.e., values, self-efficacy, attitudes, knowledge and behaviours). Tonge with colleagues (2006) found indications that parent training programs can increase parents' own health and well-being, also confirmed for parents of children with ASD by Dababnah and Parish (2016), although the authors also recommended that more parental self-care should be added to the program. Moreover,

there is evidence to state that behavioural interventions for ASD have an effect on parental stress (Tarver, et al., 2019).

Child-directed play

As mentioned, a key component in the relationship building phase in parent training programs is child-directed play. The early development of this exercise can also be traced back to Constantine Hanf, in her unpublished work from 1969 on treatment for children with developmental disorders (Kaehler, Jacobs, & Jones, 2016). Child-directed play constitutes a moment of social interaction during which the child leads and directs play, and the adult follows the child in their play (Berg, 2020; Seattle Children's Hospital, 2017). This can be done in clinical, pedagogical (e.g., preschool), and home settings. Since most studies have been conducted on parents, we will further refer to the adult in question as “parent”, if not otherwise stated in the literature. During child-directed play the parent is observant of the child, gives them undivided attention, is fully present in the moment, and interacts based on the child’s needs, rather than their own (Berg, 2020; Seattle Children's Hospital, 2017). The aim is to create a moment of interaction free from the daily demands that are imposed on the child, and from (perceived) needs to perform. Therefore, the parent does not give instructions, ask questions, or praise the child. Instead they take part in play in such a way that is enjoyable for the child (i.e., parallel play, narrating, overdramatising sounds and actions, and physical play), while adapting their involvement and play according to the child’s age, developmental stage, and needs. These guidelines can be applied to almost any interaction with the child, and not only play, as long as no competition, rules, and power struggle are involved. Child-directed play is a versatile intervention: adaptations for interaction with teenagers have been developed (Weisz & Kazdin, 2010), and it is frequently used in popular psychology books (Forster, 2009; Grafström & Kallenbäck, 2018; Karlsson, 2018). As previously mentioned, child-directed play is very similar to mindful parenting. In both cases, parents are fully aware of the present moment during interaction with their child, they find acceptance for the present situation and the child’s needs and interests, and they reduce negative reactions by letting go of demands and performance. However, some differences can be found in the content and execution, and in the theoretical constructs used to describe them. One of the main divergences between the two approaches is that child-directed play calls for greater focus on parent-child interaction, while mindful parenting on internal states.

The objective of child-directed play is often stated as being fostering relationships between parents and children (Berg, 2020; Forster, 2009; Forster, Kling, & Sundell 2012; Grafström & Kallenbäck, 2018; Seattle Children’s Hospital, 2017), in order to create the foundation on which later behavioural management training can be built (Forgatch & Patterson, 2010). Since children with ASD are generally less attentive to social cues, learning is often more challenging than it would be for typically developing children. This, since much of typically developing children’s learning comes from adult-child interaction. As a result, children with ASD might perceive even seemingly simple requests and questions as demands and could tend to associate social interactions with a sense of failure and frustration when not able to comply with said demands. This can lead to a vicious cycle that ends with the child associating any type of social interaction - even with their primary caregivers - with failure and negative feelings. Therefore, what child-directed play aims to do is to break this cycle: the parent learns what the child can do and enjoys doing, thereby taking their child’s perspective and learning how to interact on the

child's own terms (Berg, 2020). This would result in the child appreciating interaction with the parent and being more responsive/paying more attention to them. The latter would then experience an enjoyable and meaningful interaction with the child, while the child would realise how fun and rewarding the interaction with the parent can be, and trust is strengthened. As a result, the child will later be more willing and ready to comply with demands when needed. This represents another similarity with mindful parenting since, as previously mentioned, it has also been shown to positively affect mother-child interactions (Singh, et al., 2006). In other words, the two main parent-related goals of child-directed play are to establish the parent as a reinforcer for the child (i.e., something they enjoy and that motivates them) by forming fun interactions with no demands, and to increase parents' perspective-taking, by teaching them to be more aware and better understanding of their children's needs and wants.

Very little research has been carried out on child-directed play as an individual intervention. Although child-directed play has been evaluated as part of relationship enhancing components in parent training programs, it has not been examined separately from behavioural management components (Kaehler, Jacobs, & Jones, 2016; Kaminsky, Valle, Filene, & Boyle, 2008). Some evidence can however be reported. First and foremost, it is important to mention that although behaviour management skills on their own have been shown to be effective, greater effect has been found in comprehensive programs that include relationship enhancing components (Kaminsky, Valle, Filene, & Boyle, 2008). One possible explanation for this can be found in Garoff's work (2011), who demonstrated that practising child-directed play positively influenced how much parents practised behavioural changing homework, although no direct correlation between child-directed play and decrease in disruptive behaviour was shown. More specifically, Kaminsky and colleagues (2008) describe a stronger effect of positive interaction on externalizing child behaviours rather than on parent behaviours, while the opposite was reported for emotional communication and practice with one's child. However, in a meta-analysis that only considered child-related outcomes, Leijten with colleagues (2018) found a greater effect of programs that include relationship enhancing only when these were conducted in treatment compared to prevention settings, although effect was not sustained at follow-up. Furthermore, in two interview studies that evaluated the qualitative experience of child-directed play, parents reported more insight in their interaction with their child after the introduction of child-directed play (Henricsson & Karlberg, 2008; Häger & Rossling, 2020). Parents felt as they had gained greater understanding for their children and as result changed their way of parenting to better adapt to their children's needs and interests, and had thereby managed to develop a base of positive interaction which allowed them to balance out the weight of demands set on the child, in those situations where demands are needed. In line with these results, parents of children with ASD saw child-directed play as a critical aspect in the parent training program *The Incredible Years*, deserving to be allocated more focus in order to allow more time for their children to adapt (Dababnah & Parish, 2016). Lastly, in a clinical study for internet delivered cognitive behavioural therapy (CBT) for anxiety disorders in a paediatric population, participants assigned to the control condition were instructed to carry out child-directed play, which was then found to significantly lower symptoms of anxiety (Jolstedt, et al., 2018). We can speculate that this could be due to child-directed play strengthening the child's relationship to their primary caregivers and consequently helping them develop a sense of safety and security that could mitigate worry and feelings

of uncertainty. These findings collectively show the importance of including relationship enhancing components, and child-directed play specifically, in parenting programs, at least in treatment settings, since they can benefit both parents and children.

In summary, parents of children with ASD face challenges in their everyday life that go beyond their children's primary symptom behaviours. Mindful parenting is often included in ACT-programs aimed at increasing parental psychological well-being and valued living in parents of children with ASD. Mindful parenting is similar to child-directed play, an exercise in the relationship enhancing component of many evidence-based parent training programs. This intervention aims at fostering parent-child relationships by letting parents interact with their children on the latter's terms. Evidence shows that ACT and parent training programs positively effect parental well-being. However, very little research has been carried out on child-directed play separately. This, coupled with the fact that it is frequently recommended and used in parental programs and clinical settings, makes it all the more important to investigate this intervention's working mechanisms.

Research hypothesis

Based on the similarities between mindful parenting and child-directed play, and since they both see parents as fully attentive and responsive to their children, we hypothesised that daily exercising child-directed play will have a positive impact on how parents experience how well they act in accordance with their values. Furthermore, parent centred programs offer a perspective of strengthened and improved parent-child relationships and positive interaction by practising child-directed play. Similar outcomes are also offered by mindful parenting, with the addition of increased psychological flexibility. The latter leads to increased parenting-related perspective-taking and consequently to increase adjustments to one's child's needs. Therefore, we hypothesised that child-directed play would also increase parents' ability to take their child's perspective.

Of interest for the present study was therefore child-directed play and its effects on valued living and perspective-taking in parents of young children with newly diagnosed or suspected ASD. Our primary aim was to investigate whether child-directed play would influence the extent to which parents act in agreement with their parental values. Within this, we were also interested to see whether parents would engage in committed action and whether that would lead to a generalisation of valued living to more daily situations that those in which they practiced. Our secondary aim was to investigate whether child-directed play would affect parents' ability to take their child's perspective.

Method

Design

A non-concurrent, multiple-baseline single-case experimental design (SCED) across eight individuals was chosen to investigate our hypotheses. SCED's (or *n*-of-1 trials) are widely applied within psychology and autism research (Kazdin, 1982; Horner, May, & Kennedy, 2004; Morley, 2018; Smith, 2012; Tate, et al., 2013), and allow for scientific rigour using only few subjects since these serve as their own control (Kazdin, 1982; Horner, Swaminathan, Sugai, & Smolkowski, 2012). Reviews of *n*-of-1 trials are suggested amongst the designs that would likely provide best evidence when investigating

a treatment positive and negative effects (OCEBM Levels of Evidence Working Group, 2011).

SCED must include at least two different phases and measures taken repeatedly and frequently during all phases (Kazdin, 1982; Horner, Swaminathan, Sugai, & Smolkowski, 2012; Morley, 2018; Nock, Michel, & Photos, 2007; Tate, et al., 2013). The present study consisted of three phases: a baseline phase (varying from 6 to 17 days), an intervention period (25 to 36 days) and a follow-up phase three weeks after completion of the intervention period (3 days). Participants were therefore followed daily for a total of 42 days, and then another 3 days at follow-up.

A multiple-baseline design entails that the transition between baseline and intervention phases was replicated across individuals at different times (Kazdin, 1982; Horner, Swaminathan, Sugai, & Smolkowski, 2012; Morgan & Morgan, 2009b). Replication of experimental effects across individuals can provide evidence with rigour comparable to that of randomised controlled trials (RCT; Morley, 2018; Porcino, et al., 2017; Watson & Workman, 1981). In the present study, eight participants were included in order to achieve a systematic intersubject replication. The intervention was introduced when the baseline measures had stabilised. Data was deemed stabilised when a confident prediction of the pattern of future responding based on the current pattern could be made (Horner, Swaminathan, Sugai, & Smolkowski, 2012; De Young & Bottera, 2018). The introduction of the intervention phase aimed at the collection of baselines of different lengths, which means that it was initiated at different times across subjects based on baseline stability, rather than on a predefined or randomised order. This was done by monitoring the data in order to identify stability in the baselines.

The onset of data collection occurred non-concurrently over a period of 22 days, meaning that no two baselines were started simultaneously. Even though observations have not been taken concurrently, the treatment intervention rather than history can be deemed accountable for the eventual changes in target measures since they would occur in concomitance with treatment procedures (Kratochwill, et al., 2010; Harvey, May, & Kennedy, 2004; Morgan & Morgan, 2009b, Watson & Workman, 1981). No two intervention were initiated on the same calendar day either. Due to the characteristics of the study and the observed measures, blinding could not be achieved.

The choice of SCED is particularly advised when evidence is limited (Geist & Hitchcock, 2014) and when large RCT's are not feasible due to small-incidence population (Horner, Swaminathan, Sugai, & Smolkowski, 2012; Porcino, et al., 2017; Morley, 2018), making it particularly suitable for the present study. Moreover, SCED can be individualised to the participant through idiographic (i.e., tailored) measures (Morgan & Morgan, 2009a; Morley, 2018). This means that outcome measures are formulated based on the singular concerns presented by the study participant and what they seek help for (Morley, 2018), allowing different participants to choose different measures. Idiographic advances help draw conclusions at the individual level, while replication of the study across individuals allows for the identification of a general principle through establishing the generality of the finding (Morgan & Morgan, 2009a). SCED's individualised measures and intensive data collection grant the ability to follow individual changes in more detail, so to identify when and why the intervention does or does not work (Rizvi & Nock, 2008).

Prior to the present study, a small pilot study consisting of one-week baseline and one-week intervention was carried out with two parents. Its aim was to test the inclusion interview guide, the process of identifying target measures and situations to observe, data collection via text messages, and the implementation of the intervention. Adjustments were made to the interview process, specifically in the formulation of the outcome measure and the identification of the situation to be observed.

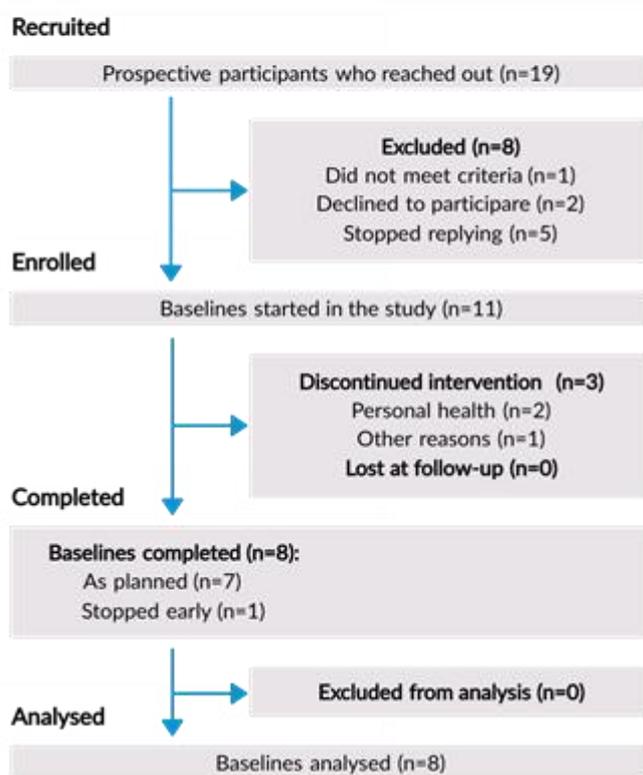
Participants

The recruitment and inclusion process will be reported, followed by a description of the included parents' characteristics.

Selection criteria.

Participants are parents of young children (2-6 years old) with newly diagnosed or suspected ASD. The age criterium was based on child-directed play being one of the first interventions that habilitation centres in Sweden teach families of children diagnosed with ASD. Therefore, families who had yet to come in contact with habilitation centres were of particular interest. The extension of inclusion to parents of children with suspected ASD was based on the assumption that these would still show similar behavioural patterns that would make child-directed play a valuable intervention. What was deemed as primarily of interest was the parents' experience of interaction as challenging, rather than the diagnosis per se. The following inclusion criteria were applied: i) the child had to be between the age of 2 and 6 years old; ii) the child had to have been diagnosed with ASD, had to be under assessment, or had to be waiting for an assessment; iii) the child had not to have started treatment for ASD; and iv) at least one guardian (who would then become the study participant) met the child every day. Inclusion criteria were checked with the participating parents. No proof of diagnosis or age has been requested. Exclusion criteria applied during participation were: i) no reported data for more than three days in a row; ii) non-compliance with carrying out the intervention at least five times a week; and iii) refusal/inability to participate in weekly supervision sessions. This was applied if no alternative agreement had been made between the participant and the responsible author to accommodate the families' specific needs (e.g., illness).

The project was advertised with a flyer in two child and adolescent psychiatry clinics (BUP) within the Stockholm region in Sweden, in a private practice in Stockholm, and in four community Facebook groups aimed at parents of children who have been diagnosed with ASD, or who show symptoms but have not received a diagnosis. We have both also shared the information flyer via their Facebook and LinkedIn profiles, which was then reshared by several more people. Advertisement via social media has allowed for a broader recruitment ground beyond the Stockholm region, with parents participating from all over the country. A total of 19 prospective participants (Fig. 1) contacted us via email. Of these, two later declined participation in order to focus on an ongoing ASD assessment; five stopped replying to emails with no reason given; and 12 agreed to take part in the next part of the process, an assessment interview (Appendix I). The aim for the assessment interview was to doublecheck the fulfilment of inclusion criteria; to ensure that the prospective participants had understood in full what participation entailed; and to

Figure 1*Flowchart of Participants*

gather demographic information about the parents and about the current extent of parent-child interaction. At this stage parents were also asked to answer the Modified Checklist for Autism in Toddlers, Revised (M-CHAT-R; Robinson, Fein, Barton, & Green, 2001; Robins, et al., 2014), in order to ensure that children showed some risk for ASD, and as a way to initiate conversation about the child's needs. One parent did not meet the inclusion criteria (i.e., the child was too young, and they had already started working with child-directed play and behavioural interventions) and was accordingly excluded at this stage (Fig. 1). Of the 11 included parents two discontinued participation because of personal health reasons, while a third because of family issues. Each author was responsible for four of the remaining eight participants.

Participants' characteristics.

Eight parents participated in the present study, all women.

Demographic information about the participants and their children is reported in Table 1. The names of all parents have been changed in order to maintain confidentiality. When screened at time of assessment all children showed at least medium risk for ASD according to M-CHAT-R.

Approvals

Approval for this study was obtained from Stockholm University's Department of Psychology, Stockholm, Sweden. All prospective participants received a digital copy of the informed consent form when they communicated interest in the study. They were given time to read through it without signing it, and the chance to discuss the form and sign it in conjunction with the assessment interview. To thank them for their participation, parents received a copy of the book where the instructions for child-directed play were taken from (Klintwall & Olofsgård Jegéus, 2020).

Ethics

Prior to the study, ethical considerations were made, including the aspect of offering the intervention to all parents who met the inclusion criteria, the risk being that too many could have expressed interest. In case of more interested and eligible participants than what was possible to include in the present study, we had planned to provide them with the instruction chapter, in order to not completely deprive them from the intervention.

Table 1*Sociodemographic Characteristics of Participants*

Parent	Age	Marital status ^a	Education ^b	Employment type	Location ^c	Child's age	Child's diagnosis	M-CHAT-R ^d	Other children
Hild	28	Single	Upper secondary school	Part-time, 75%	Large town	4	AST	9	0
Eir	35	Partnered	MSc	Parental leave	Town	4.5	AST	9	1
Embla	35	Partnered	MSc	Part-time, 75%	Large city	3.5	AST	12	1
Saga	39	Partnered	MSc	Full time	Large town	4	-	6	0
Idun	29	Partnered	BA/BSc	Parental leave	Large town	5.5	AST	11	1
Lofn	41	Partnered	BA/BSc	Unemployed	Large city	3	AST	11	0
Siv	30	Partnered	Upper secondary school	Sick leave	Village	3	-	8	0
Freja	36	Partnered	Vocational university	Full time	Large town	3	-	13	3

^a P: Partnered; S: Single

^b BA/BSc: Bachelor's degree; MSc: Master's degree

^c Large city: 300,000 to 1 million people; Large town: 20,000 to 100,000; Town: 1,000 to 20,000; Village: less than 1,000

^d Low risk: 0-2; Medium risk: 3-7; High risk: 8-20

Moreover, taking part in child-directed play was not deemed as compromising future treatment. Lastly, storage of data was taken into consideration. All participating parents were given an anonymous study-ID and all information was stored using that specific number rather than the participants' details. Furthermore, personal information was stored in an encrypted file, separated from the files containing the study data.

Measures

In order to investigate the present study's aims, the following dependent variables were chosen: daily idiographic value-ratings, the pre-mentalizing subscale of the Parent Reflective Functioning Questionnaire (PRFQ), and an exit interview.

Idiographic value-ratings.

Parental values were chosen as the primary dependent variable. Together with the responsible researcher, parents would also decide on a situation that occurred daily at a stable time, for which the value was relevant. The situation chosen was preferably separate from the intervention-situation (i.e.; child-directed play), in order to better assess for committed action. In order to formulate values and define observations, parents were asked during the assessment interview to think about how they wished to be in their role as parents in relation to their children (i.e., parental values), and to indicate those situations in which they felt lacking. They were then asked to rate for each situation how much they perceived themselves as acting in line with the value on a scale from 1 to 10, 1 being "Not all" and 10 being "Completely". This resulted in one to three values, with one or more situations each (e.g., "I want to be friendly during breakfast"). A feasibility discussion was then carried out between the authors and the thesis supervisor, in order to choose suitable dependent variables. The rule of thumb was to choose a situation that was deemed likely to occur daily regardless of external events, and that was rated between 2 and 5, in order to allow room for improvement once the intervention had been introduced. Thereafter, the responsible author would suggest the value and situation to the participant, which would be agreed upon. A breakdown of target measures, their description, and the chosen situations is presented in Table 2. A clear description of the situation and its timeframe would then be specified. Lastly, the day for baseline onset and time for sending text messages would be agreed upon. Participants were then encouraged to carry on as usual with the chosen activity.

These self-assessment measures were collected daily via text message. The participant would receive the following text at the previously decided time every day: "How [*value*] did you feel today during [*situation*] on a scale from 1-10?", (e.g., "How friendly did you feel today during breakfast on a scale from 1-10?"). Parents were instructed to answer with a rating from 1 to 10, or with the word "No" in case the chosen situation had not occurred on that specific day. The aim was to report daily measures, but since these were idiographic and highly individualised, they were reported at least every other day (or equivalent). Strays from this design were done upon agreement between the participant and the responsible author, and in case of illness or other restrictions from taking part in the chosen situation (e.g., the outbreak of SARS-CoV-2 preventing one participant from walking to preschool with her child). The measures were recorded as close to the actual situation as possible, often straight after the situation had ended, making the type of idiographic measures employed a form of ecological momentary assessment (EMA; Stone & Shiffman, 2002). If no reply was received within a prespecified time - most often

one hour - a reminder text message was sent. All observations were carried out by the participants in their own homes, with the exception of Lofn whose observations took place during the walk to the child's preschool.

Table 2

Idiographic Target Measures and Observed Situations

Parent	Parental value	Description of value	Observed situation
Hild	“Pedagogical”	Keeping calm in explaining things to the child/asking the child to do something, without letting frustration take over when it doesn't go as desired and being able to explain instructions again.	Bedtime
Eir	Attentive	Keeping focus on the child during playtime, participating in play by commenting or enhancing events and not getting distracted by other things.	Afternoon playtime
Embla	Playful	Being spontaneous, imaginative, “childish”, and inventive during play, while being fully present and not caring about seeming silly.	Afternoon playtime
Saga	Content	Having a rewarding interaction, without letting disappointment or anxiety take over. Being patient, accepting of one's role as parent, and enjoying time spent together.	Afternoon free time (1h)
Idun	Calm	Not letting feeling of anger and frustration take over when the child is “clingy” and carrying on with the chosen activity while adopting a low arousal approach.	Making dinner
Lofn	Fully present	Being naturally engaged in the walk, noticing events in the environment that are interesting and rewarding for the child, making the walk more enjoyable.	Morning walk to preschool
Siv	“Pedagogical”	Finding solutions/being able to adapt to, create a more fun and enjoyable bath time, with less conflicts.	Evening bath
Freja	Attentive	Taking the time to notice and give attention to the child by engaging in activities the child enjoys.	Free time after dinner (1h)

Value ratings are subjective and therefore can lack validity since they are not observable behaviours operationally described. They also lack reliability, since they cannot be assessed by others than the subject in question. Hence, the data collected represents how much the individual *believes* they are acting in accordance with one's own values, rather than an “objective truth”. To maximize validity, the meaning of the chosen value had been described by each and every participant in the beginning of the study (Tab. 2). This aimed at helping the participants create a clearer idea of what the value meant to them, which can lead to a higher validity. Description of the value has also been gathered at the end of the study during the exit interview, and the two descriptions matched for every participant. Moreover, the collection of real-world data through EMA enhances ecological validity and minimises the risk for recall bias and mood-congruent memory recollection (Stone & Shiffman, 2002). Lastly, participants were also instructed to delete text messages as soon as they had sent them, in order to minimise the risk of being influenced by previous ratings

Parent Reflective Functioning Questionnaire (PRFQ; Luyten, Mayes, Nijssens, & Fonagy, 2017).

In order to investigate the effects of child-directed play on perspective-taking, the pre-mentalizing subscale of PRFQ was chosen as a secondary dependent variable. PRFQ is an 18-item questionnaire with responses given using a 7-point Likert-type scale. The questionnaire is composed by three subscales comprised of 6 questions each (Luyten, Nijssens, Fonagy, & Mayes, 2017):

(i) Pre-mentalizing model (PM), which assesses the inability to enter the subjective world of the child and take their perspective. Low scores mean therefore ability to mentalize.

(ii) Certainty about Mental States (CM), which assesses the parent's ability to recognise the opacity of the child's mental states and in a way one's own limitations in understanding those. High scores indicate being overly certain (“hypermentalizing”), while low scores indicate total uncertainty (“hypomentalizing”).

(iii) Interest and Curiosity in mental states (IC), which assesses the parent's interest in understanding the child's mental states. High scores can indicate intrusive mentalizing, while low scores an absence of interest.

Due to the aim for the present study, PM was the only subscale included in the analysis, since child-directed play requires parents to reflect on one's understanding of one's child, possibly causing them to hypomentalize (CM), and since it stresses the importance of non-judgemental curiosity for the child, possibly leading to heightened interest in one's child's mental states, and therefore to intrusive mentalizing (IC). PRFQ was however administered as a whole. The scale was administered as probes, meaning that it was not administered continuously during the study, but rather at three different points in time: before the first idiographic measure was recorded, the day before intervention onset, and in conjunction with the last measurement of the intervention phase. No administration was carried out at follow-up. PM was utilised in this investigation with an illustrative purpose, and therefore no analysis of statistical inference was conducted on the data.

PRFQ has been validated across different samples (Luyten, Mayes, Nijssens, & Fonagy, 2017). Chronbach's α for the individual subscales has been computed to .70, .82, and .75 respectively, which indicates good internal validity.

Exit interviews.

After completed intervention, a short exit interview was also carried out with each participant in order to gather their thoughts and opinions on child-directed play and its effects. The interviews followed an interview guide (Appendix II), lasted 20-30 minutes, and was not recorded. Notes of what was said during the interview were taken and summarised to the participants. This was done in order to ensure correct understanding of what was brought up. The aim for the interview was to develop a deeper qualitative understanding of the quantitative data and what was not described in it. This was deemed necessary considering the high individual character of the idiographic parental values, and the limitations in interpreting another person's experience of living according to their own values. These interviews were also important to gather information on potential adverse effects of practising child-directed play. The information gathered from these interviews will be summarised and reported individually for each participant. No qualitative analysis has been carried out due to the small amount of information collected.

Equipment

The order to carry out the intervention written instructions and digital aids were employed.

Written instructions for child-directed play.

A book chapter on child-directed play (Berg, 2020) was used as the main source of instructions, tips and examples. Said chapter was an extract from “Leka, prata äta - Övningar för barn med särskilda behov” (Klintwall & Olofsgård Jegéus, 2020).

Do it later - Message automation.

A mobile application called “Do it later - Message automation” (Kant., 2019), was employed. The application is only available for mobile phones with an Android operating system, and allowed for text messages to be sent automatically from the mobile phone according to the prearranged schedule. The reminder function in the app was used to prompt the sending of a reminder text to the participants if so needed. In case of reply the text message would be received into the mobile phone’s inbox and would not go through the application. According to the app’s own developer no data (i.e., participants’ phone numbers) is stored in the app, nor is it retrievable (Kant., personal communication, March 12, 2020).

Zoom.

Supervision sessions (*see* Interventions) have been carried out via the website <https://zoom.us/>. Zoom Video Communications is a digital platform that allows for remote conferencing services, compatible with most modern browsers. A Zoom mobile application is also available for iOS and Android operating system. The service provided for the present study was one of video calls. An invitation to join the video call was emailed to the participant from the responsible author before every session. An access code that would allow participants to join the video call was also reported in the email. All video calls have been end-to-end encrypted using the TLS 1.2 with Advanced Encryption Standard (AES) 256-bit algorithm, in order to maximise data security (Zoom Video Communications, Inc., 2020). AES is included in the ISO/IEC 18033-3 standards for information technology, security techniques, and encryption algorithms (International Organization for Standardization, 2012).

Interventions

Parents were required to practice child-directed play 5 to 20 minutes per day, in their home environment, at least 5 days a week, if no other agreement had been made. As per the book chapter utilised as the source for instruction, the three main components of the intervention were:

(i) Observing the child in their play in an inquisitive way, taking note of the behaviours of the child, what they like or don't like, what they choose to play with, and so forth.

(ii) Finding the right physical distance to initiate interaction, according to the child's preference, by slowly getting closer, observing the child's reaction, and stepping back if needed.

(iii) Taking part in play activities on the child's own terms. Core components at this stage are verbally describing what the child does, refraining from asking questions, parallel play, imitating the child's play, overdramatising the game (i.e., making more dramatic sounds and/or body movements), and playing physical games.

Participants received the previously mentioned book chapter on child-directed play in the mail. They were instructed to communicate when they had received it, and to refrain from reading it until further notice. The original plan was to send the chapter just before intervention onset in order to have more control. This was done for the first few participants. However, different mailing times across the country meant that it took too long for some parents to receive the chapter, compromising the plan of action and preventing parents to start practicing when they were supposed to. To avoid such delays, chapters were sent to the remaining parents a few days prior to the planned intervention onset. When the intervention was initiated for that parent, they were instructed to read the chapter and to start practicing at once. In accordance with the instructions, participants were allowed and encouraged to use the same principles in other activities other than play (e.g., when cooking with their child, walking to preschool, reading a book, etc.) and in other environments, and to avoid power struggles, competitions, and games with rules.

Starting from a few days after the onset of the intervention, weekly supervision sessions via video call were offered to the participating parents. The aims of these sessions were to help parents find ways to introduce the intervention in their everyday life, to answer any clarifying questions from the participants, to give specific feedback and tips, and to ensure procedural fidelity (i.e., child-directed play was carried out as it was meant to according to the instructions). The structure for these sessions was always the same (Appendix III), but the content was adapted to the participants' specific needs. The session would start with a short agenda, followed by a short practice of child-directed play with the responsible author as an observer, general child-directed play related inquiries from the participants, to then conclude with specific feedback on the observed practice. However, some adjustments had to be made when the child did not want to play during the supervision session, or when supervision as planned was not possible (e.g., video call was not possible, illness, travels, and so on). In the case of the former, supervision was offered without observing child-directed play but by prompting with questions to gather more information. In the case of the latter, telephone check-ins covering all parts of the supervision sessions without the practical exercises, were carried out.

We carried out supervision sessions only with the participants we were responsible for. In order to ensure consistency in the sessions' structure and in our execution, the very first session was carried out by the second author, while the first author would observe. We both penned down our thoughts on the parent-child interaction, which questions we would ask, and what feedback we would give. After the session was completed, comparing notes showed complete agreement. Moreover, we have both practiced child-directed play and have received supervision by the instruction chapter's author in carrying out both child-directed play and supervision.

Analysis

The primary analytic strategy chosen for the present study was *visual analysis*, the standard within SCED research (Horner, Swaminathan, Sugai, & Smolkowski, 2012; Kazdin, 1982; Kratochwill, et al., 2010, 2013). Visual analysis was carried out individually for each participant in order to visually establish the effect of intervention. Prior to that, we have both been certified in visual analysis by the Authorised Continuing Education (ACE) provider Foxylearning (ACE provider number: OP-10-2021) (Behavior Analyst Certification Board, 2020)¹.

In order to aid with the visual analysis to determine whether the effect of intervention had occurred or not, the following steps were taken. We visualised a trend line based on the baseline data, which was then projected into the intervention phase, in order to observe whether intervention data was a continuation of the predicted baseline trend. In other words, we wanted to see whether the intervention data points followed in the same trajectory as the baseline data points. This scenario would have meant no effect of intervention, since the data would have followed the same trend even without the introduction of the intervention (Gast & Spriggs, 2009; Horner, Swaminathan, Sugai, & Smolkowski, 2012; Wolfe & Slocum, 2015-2020). In order to facilitate said process, trend lines were established by tracing a line between the first and last datapoint in a set of data. Two additional lines, one between the highest and one between the lowest data points, were also traced. The original trend line would then be adjusted so to make it as central and parallel as possible compared to the other two. The adjusted line would constitute the baseline trend (Wolfe & Slocum, 2015-2020). This was done to interpret whether the data points of the intervention phase would follow upon the predicted baseline trajectory, or whether the pattern changed indicating an effect. Eventual outliers were excluded when deemed necessary to accomplish this process. In some cases, the trend was so clear that this process was not needed.

If change in trend had been established, an analysis of level was carried out as a second step to determine the effect of intervention. To visualize levels, a line amidst the data set and parallel to the x-axis was imagined, much like establishing a visual line of the phases' median values (Gast & Spriggs, 2009). High data variability meant the broadening of the level line for better data inclusion, and it was therefore imagined as a band covering a range of values on the y-axis (Wolfe & Slocum, 2015-2020). For example, low variability data could yield a level of 4, while high variability data a level of 3-5. The observed level

¹ Certification number: Filippa Andreasson 34129–1584594293; Axel D'Angelo Gentile 34126–1584526701

at baseline was then compared to the intervention level: a higher intervention level would imply an effect of intervention.

Due to the subjective nature of the measures, changes in variability between phases were also taken into consideration when analysing the data, since such changes could indicate treatment effect even if no changes in trends and/or levels are observed (Horner, Swaminathan, Sugai, & Smolkowski, 2012). A change in data from highly variable during baseline to more consistently stable during intervention could be deemed as a sign of effect. No analyses of immediacy of effect or consistency of data patterns (Horner, Swaminathan, Sugai, & Smolkowski, 2012; Kazdin, 1982; Kratochwill, et al., 2010, 2013) were carried out. In the case of the former, it was due to the expected latency of intervention effect, which led to a longer intervention phase as recommended by Horner and colleagues (2012). In the case of the latter, it was due to the value measures' highly individual nature which meant that a recognisable pattern of action across participants could not be expected.

Prior to carrying out the visual analysis, we practiced identifying trends and levels independently, and then compared the results. Upon disagreement, consensus was reached by discussion, which led to an agreement on evaluation guidelines. The same process was carried out for the study's baselines. Agreement was reached directly without need for discussion in all cases, apart from minor details, with the exception of Lofn's dataset which required more thorough discussion.

Taking into consideration visual analysis limitations (Campbell & Herzinger, 2009), the calculation of standardised mean difference effect size was also employed in order to complement the visual findings, since this is considered an important standard for SCED analysis (Horner, Swaminathan, Sugai, & Smolkowski, 2012). This was done both for individual baselines and for the study as a whole. Initially, an analysis of overlap was considered (Horner, Swaminathan, Sugai, & Smolkowski, 2012; Kazdin, 1982; Kratochwill, et al., 2010, 2013), but the idea was soon abandoned due to the high variability presented in most datasets. Upon further inspection we noticed a strong agreement between the estimated levels and the mean values for each phase in the study. For this reason, a standardised mean difference (SMD) was chosen as effect size for individual baselines, as advised by Olive and Smith (2005). Since the idiographic measures were thought to gain more stability towards the end of baseline, and that the intervention was assumed to yield results in a more gradual fashion, SMD_3 (Olive & Smith, 2005) was chosen as a measure. This entails the computation of the mean of the last three data points at baseline (M_{b3}), the mean of the last three data points at intervention (M_{i3}), and the standard deviation of baseline data (SD_b). The following formula was followed to determine effect size for each individual participant.

$$SMD_3 = \frac{(M_{i3} - M_{b3})}{SD_b}$$

Hedges' g was chosen as the effect size measure at study level, in accordance with Shadish, Rindskopf and Hedges (2008). However, this was corrected for a small sample size. Firstly, the mean of intervention (M_i) and of baseline (M_b) observations for each participant were computed. These means were then treated as raw data points at study

level, which means that mean and standard deviation were computed for the intervention (M_i ; SD_{M_i}) and the baseline means (M_b ; SD_{M_b}). The classic standardized mean difference statistic using a weighted pooled SD was then applied. Hedges' g was then corrected for small sample size (Lakens, 2013), in order to compute g^* (corrected g):

$$\text{Hedges' } g^* = \frac{(M_i - M_b)}{SD_{pooled}^*} \times \left(1 - \frac{3}{4(n_1 + n_2) - 9}\right)$$

SMD_3 and Hedges' g effect sizes are both comparable to Cohen's d (Olive & Smith, 2005; Shadish, Rindskopf, & Hedges, 2008), and were interpreted according to Sawilowsky (2009).

Pre and post-intervention PM scores were compared for each individual, in order to draw conclusions on the intervention's effect on perspective-taking. Scores were also compared between intake and pre-intervention, since that change filled a control function. Mean values for the subscale have also been computed. No analysis of statistical inference was carried out due to the small sample size.

Results

All eight participating parents were included in the analysis. Computation of effect size at study level based on the data reported in Table 3 indicated a very large effect size ($g^* = 1.67$), which suggests a strong effect of child-directed play on valued living on a group level. Hereinafter we will present, individually for each participant, a visual representation (Fig. 2) and a description of the data collected. SMD_3 , mean values, and percentage of measures received "on time" (i.e., after the first text sent by the responsible author) are reported in Table 3. Information about how often and how long child-directed play has been practiced, supervision sessions, results from the exit interview, and any information worthy of notice will be reported individually.

PM scores have been reversed in order to facilitate the interpretation of the findings, meaning that high scores represent greater mentalizing ability. Comparing PM values on a group level (intake, $m = 5.5$; pre-intervention, $m = 5.69$; post-intervention, $m = 6.25$) points to an effect of intervention. PM values for each participant will be reported as probes in each individual graph (Fig. 2).

Hild

Hild's original situation was changed after six days due to high measurements, which left less room for variation during the intervention phase. As seen in Figure 2 idiographic measures quickly reached a stable, flat trend at baseline. With the introduction of the intervention, an increase in level (Tab. 3) and a slight increase in the trend could be observed. Data became more variable during intervention. Changes in trend and level show an effect of intervention. Statistical analysis showed a huge effect size of change in idiographic measures ($SMD_3=4.48$) post intervention onset. Improvements were kept at follow-up and showed a slight increase in level. Hild's child had fallen ill during the last week of the study. Hild practiced child-directed play almost every day ($m=15$ min) and gradually introduced child-directed play in more situations towards the end of the study.

Figure 2

Graphic representation of repeated idiographic measures and score of the pre-mentalizing subscale of PRFQ

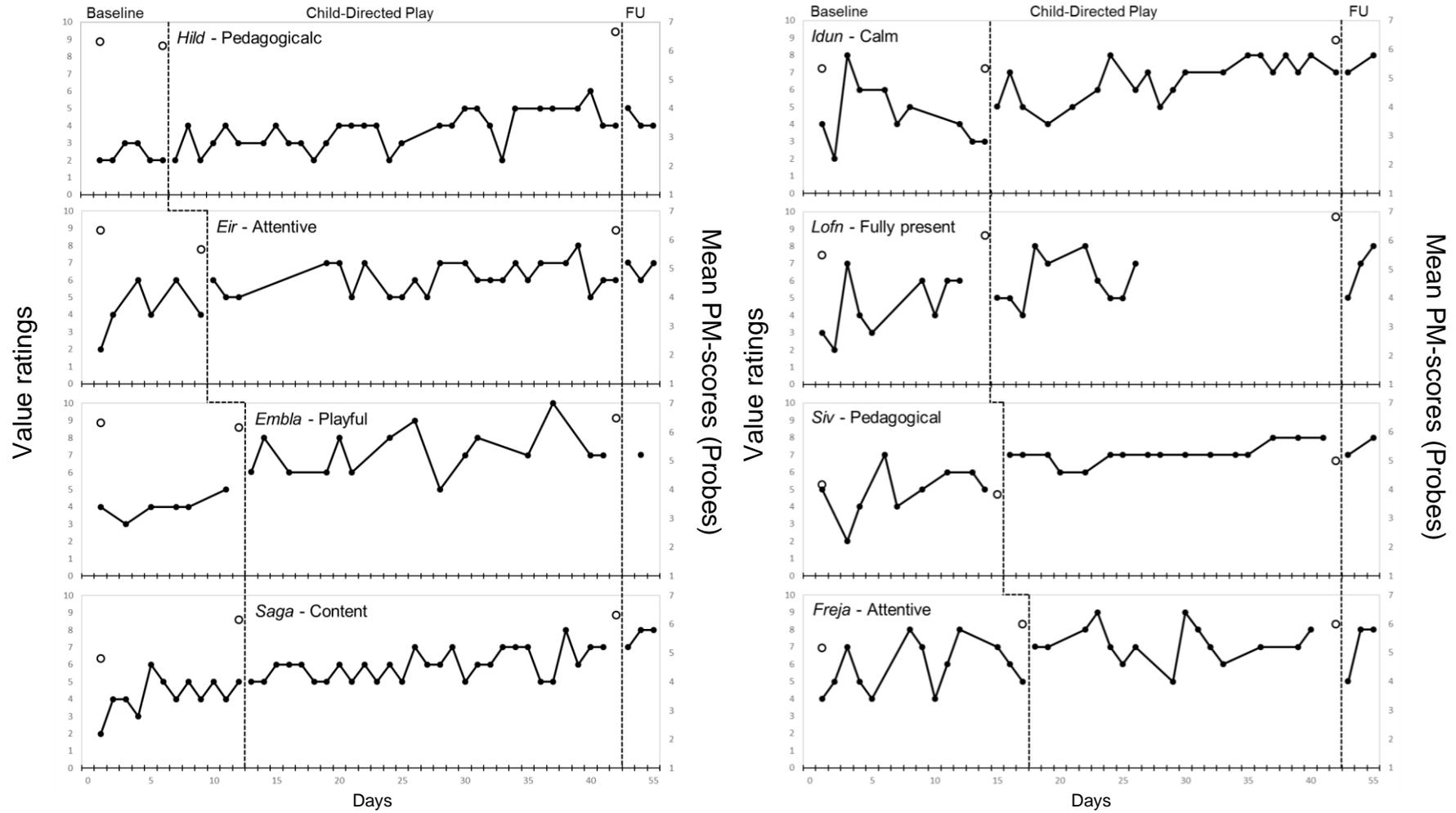


Table 3

Valued living data - Levels used for visual analysis, mean values used for the computation of effect size, and percentage of ratings receive on time ^a.

Parent	Lvl _b	Lvl _i	Lvl _{fu}	M _b	M _i	M _{b3}	M _{i3}	SMD ₃	Ratings on time (%)
Hild	2.5	4	4.5	2.33	3.71	2.34	4.67	4.48	84
Eir	5	6	6.5	4.33	6.13	4.67	5.67	0.66	93
Embla	4	7	7	4.00	7.20	4.33	8	5.83	67
Saga	4	6	7.6	4.25	5.97	4.67	6.67	1.33	97
Idun	3–6	4–8	7.5	4.50	6.55	3.34	7.33	2.01	90
Lofn	(3–6)	(5–7)	(7)	4.56	6.00	-	-	-	95
Siv	5	7	7.5	4.89	7.06	5.67	8	1.92	88
Freja	5	6–8	7	5.85	7.20	6	7.33	0.95	96
			M	4.34	6.2				
			SD	0.99	1.15				

Notes. Lvl = level; M = mean; b = baseline; i = intervention; fu = follow-up

^a Received before having to send a reminder

The first week after intervention and before follow-up Hild practiced child-directed play multiple times per day, in different situations. During week two and three both Hild and her child were sick, and they did not practice. She received three supervision sessions (m=27 min), and one telephone check-in (15 min).

During the exit interview, Hild described how she become both aware of the amount of questions she asks her child, and understanding of her child's interests/needs. She found acceptance for her parenting and her child could appreciate more her presence during play. At the end of the study she could use tools from child-directed play during bedtime.

Eir

Eir's baseline quite quickly stabilised in a flat trend, consistent with that of the intervention phase (Fig. 2). There was however a change in level at intervention (Tab. 3), indicating effect. There was some variability in the idiographic measures throughout both baseline and intervention. The variability was somewhat stabilised towards the final part of the intervention. Statistical analysis showed a moderate effect size of change in idiographic measure (SMD₃=0.66) post intervention. Improvements were kept at follow-up and showed an additional slight increase in level. The missing data points from day 14

to 19 were due to the child's illness, during which no idiographic measures were taken. Eir practised child-directed play almost every day with exception of some sick days ($m=15-20$ min). She received supervision thrice ($m=30$ min). Between intervention phase and follow-up, Eir practised child-directed play most days for 10-20 minutes.

During the exit interview Eir described how she had gained awareness for what her child perceives as demands and for how much the child appreciates interaction. Thus, she found it valuable to focus more on interaction without demands than on teaching new skills. This led her to feel more attentive during interaction.

Embla

Idiographic measures (Fig. 2) at baseline were stable and followed a flat trend. A very slight increase in trend and a noticeable change in level were observed during the intervention phase (Tab. 3). More variability in idiographic measures was shown when practicing child-directed play. The changes in trend and level show an effect of intervention. Statistical analysis showed a huge effect size of change in idiographic measures ($SMD_3=5.83$) post intervention onset. The level of the intervention phase was also kept at follow-up, showing maintenance of treatment effect. Measures for day 5 and day 30 were reported the respective following morning. These were however included since they were deemed to be congruent with the adjacent measures. Both mother and child had the flu during week 5. Embla had practised child-directed play during the observed situation according to the time suggested in the instructions and had spontaneously started using relevant techniques in other everyday situations. An average of time spent on child-directed play couldn't be computed. Between intervention and follow-up, child-directed play had been practiced twice per week. Embla received one supervision session (33 min).

During the exit interview, Embla reported that she had become more responsive, focused and attentive during play, which also become more fun. She saw an increase in playfulness and light-heartedness with her child even in other situations. She became accepting of the fact that she does her best to foster interactions with her child.

Saga

Saga's reported measures (Fig. 2) stabilised during the last week of baseline, leaving a flat trend. A minimal increase in trend at intervention and a change in levels (Tab. 3) show an effect of intervention. Variability of data had overall slightly decreased during intervention compared to baseline, with an increase towards the end of the second phase. Statistical analysis showed a very large effect size of change in idiographic measures ($SMD_3=1.33$) post intervention onset. Effect of intervention was kept at follow-up, with an increase in level. Saga's child had fallen ill between the third and the fifth week. The last two weeks of the intervention phase the whole family had stayed home in self-isolation due to the spread of SARS-CoV-2 in the country. Saga practiced in many different situations making computation of the extent of practice not possible. Upon reading the instructions for child-directed play Saga contacted the responsible author saying that she had already practicing acceptance of the situation and the child's needs and letting the child lead. However, she had never come in contact with child-directed play and its practical instructions, which she realised went beyond what she had been doing thus far. Saga wished therefore to continue participation. The family was not

excluded from the study since they had technically not previously practiced child-directed play. Saga received one supervision session (35 min) and a telephone check in.

During the exit interview Saga reported that although the approach was familiar, child-directed play gave her practical tools that helped her relax, be focused in the present situation, stop looking for developmental improvements, and have fun playing on the child's own terms. She described interactions as rewarding, relaxed and happier for both.

Idun

After two initially low measures (Fig. 2), the trend shown in Idun's graph is sharply decreasing, while flat during intervention. Although somewhat overlapping, the level band presented an increase at the intervention phase (Tab. 3). Greater stability can also be observed in the latter phase. Statistical analysis showed a huge effect size of change in idiographic measures ($SMD_3=2.01$) post introduction of intervention. Improvements were kept at follow-up, with a slight increase in level. On day 25 the child was introduced to a new bedtime routine, and according to the participant this change affected the child's mood during the day for a couple of weeks. Idun practiced child-directed play most days, both planned ($m=18$ min) and impromptu ($m=5$ min). The latter form happened gradually more often during the course of the study and up to 5 times a day. Between intervention and follow-up child-directed play was practiced 3 times per week. Idun received 2 supervision sessions ($m=28$ min), of which the second did not include child-directed play since the child did not want to play.

During the exit interview, Idun reported that her child had started initiating play with her for the first time. She was more attentive and present during play, and interactions became more playful and whimsical. Idun had noted more flexibility in adapting to the child's needs, and a calmer approach even when the child started seeking more attention.

Lofn

A slight increase in trend can be seen during baseline (Fig. 2). This increase was consistent during the brief period of measures collected during the intervention phase. Hence, the idiographic measurements at intervention follow the projected trend. No effect of intervention was seen in Lofn's dataset. No statistical analysis was therefore conducted. A level increase can be seen at follow-up, which was conducted after four weeks due to the family being on holiday when follow-up was originally planned. Lofn practised child-directed play most days ($m=5-10$ min) during the intervention phase. Two weeks' worth of data points during the intervention phase are missing due to illness during the SARS-CoV-2 crisis, which made walking to preschool (i.e., the situation to be observed) impossible. Though no measures were collected, Lofn continued to practise throughout the intervention phase. The family was not excluded from the study since at the time of participation there was much uncertainty about how long the situation would have carried on for. It was therefore assumed there could be a chance they would resume their walks within the course of the study. Between the intervention phase and follow-up Lofn practised child-directed play only a few times. Supervision was received twice ($m=22.5$ min).

During the exit interview Lofn described her initial scepticism towards child-directed play, and reported better understanding for the method after the first supervision session.

She described greater attentiveness to the child and self-awareness during child-directed play.

Siv

Data had stabilised during the end of the 15 days baseline period (Fig. 2). There was some variability in the baseline phase, which decreased completely during the intervention phase. Although trend at baseline and intervention are both flat, a change in levels could be observed (Tab. 3), thus showing effect of intervention. Statistical analysis showed a very large effect of change in the idiographic measure ($SMD_3=1.92$) post intervention onset. The effect of intervention was kept at follow-up, with an ulterior increase in level. Siv practised child-directed play every day during intervention, beginning with 5-10 minutes a day increasing throughout the intervention phase up to longer periods and more situations than the original playtime. Between the end of the intervention and follow-up Siv practised child-directed play every day. Siv received three supervision sessions (m=19 min).

During the exit interview, Siv described increased interaction with her child. She reported better understanding of what her child considers to be fun during play, and greater ability to adapt to her child's needs. This is what she believed helped her feeling more secure in how to adapt bath time to her child.

Freja

As seen in Figure 2, the baseline trend is flat, although high variability can be observed. Contrarily, the intervention phase shows a flat trend but with less variability, showing stabilisation of the idiographic measure during intervention. There was also an increase in level from baseline to intervention (Tab. 3). Statistical analysis showed a large effect of idiographic measure ($SMD_3=0.95$) post intervention. The increase was kept at follow-up. Two missing data points were due to Freja herself being ill. Freja practised child-directed play almost every day for 10-15 minutes and received supervision twice (m=25 min). Between intervention phase and follow-up, Freja practised child-directed play a couple of times per week.

During the exit interview, Freja reported greater attentiveness and better understanding for her child. She experienced their relationship as becoming stronger and more defined thanks to increased occurrences and quality of interaction.

Discussion

The first aim of the present study was to investigate whether regularly practicing child-directed play would result in parents engaging to a greater extent in parental valued living. Daily repeated value measures showed an increase in valued living for all but one participant, with a very large effect size at group level. The second aim was to investigate whether child-directed play would increase parents' ability to take their child's perspective. Scores of PM show an increase in parental perspective-taking after the intervention. Our findings show an effect of child-directed play as an individual intervention, when looking at parental outcomes.

Findings' interpretation

When focusing on our first hypothesis, several findings emerged. Changes in levels for all but one participant and some changes in trends from flat to slightly increasing, or decreasing to flat, can be observed. This can be interpreted as regularly practicing child-directed play has had an effect on the extent to which parents act according to their values. This was also confirmed by at least a medium effect size for each individual participant. Though with variation amongst participants, the baseline phase is interpreted as stable for all participants with either a flat or decreasing trend, with the exception of Lofn who had an increasing trend at baseline. Said participant was the only one whose data trend continued upon baseline. Therefore, child-directed play cannot be said to have had an effect in this case. With that said, the data collection from the intervention phase was cut short to half the planned time, leaving us with too few data points to draw any reliable conclusions via visual analysis. Lofn's data was nonetheless included since exclusion could be seen as tampering with the results and therefore as selective reporting.

Lofn's data saw a level increase at follow-up. However, we cannot include this change in our interpretation since the lack of effect makes it impossible to assess whether there has been a change in trend at follow-up. For the remaining seven participants, the intervention's effect was kept at follow-up, with an additional increase in level in five cases. The individual effects of child-directed play are also confirmed by a very large effect size of intervention at study level. Thus, on a group level parents started living more and more according to their values as a consequence of practising child-directed play. These findings are in line with previous research and support the idea of shared commonalities between child-directed play and mindful parenting (Singh, et al., 2006).

When considering our secondary hypothesis, post-intervention scores of PM show an increase for all participants. Individual results show that PM scores between intake and pre-intervention slightly decreased for four participants, remained stable for one, and increased for the remaining three. We hypothesize that the latter is due to the intrinsic nature of the study: being more attentive in the observed situation, even when focusing on oneself, could increase awareness for one's child. Moreover, three of the participants who saw a slight decrease and consequential slight increase were already scoring high to start with, pointing at a possible ceiling effect. All in all, since the increase was greater and more common during intervention, we can confirm the effect of child-directed play on parental perspective-taking, also supported by results at group level. The effect of intervention on perspective-taking was also confirmed during the exit interviews, with some parents reporting better general understanding for their children and their children's perspective, and increased ability to adapt situations and demands to their children's needs (i.e., psychological flexibility). These results are supported by Corti and colleague's research on mindful parenting (2018).

Parents also reported a development in understanding and acceptance of their limitations in their role as parents. This, coupled with increased valued living and perspective-taking have led to improved quality of parent-child interactions: parents could appreciate the interactions and their contributions to them, and at the same time were pleased with the fact that their children also seemed to appreciate interactions more (e.g. by initiating play for the very first time). These results fall in line with previous claims that child-directed play is a relationship building and enhancing intervention (Forster, 2009; Grafström &

Kallenbäck, 2018; Häger & Rossling, 2020; Karlsson, 2018). We speculate that increased valued living and perspective-taking would contribute to improved parental response to one's children's emotions with validation and acceptance, which should increase positive interaction (Evans, Whittingham, & Boyd, 2012; Whittingham, Wee, Sanders, & Boyd, 2013). We argue that this increase would help parents of children with ASD feel more pleased and satisfied with their parenting, which could foster psychological well-being. This is based on our idea that one of the main reasons that lie behind the fact that parents of children with ASD tend to have lower psychological well-being than other parents, is the difficulty in developing positive interpersonal interactions with their children.

In light of our results we could argue that the participating parents could more easily come in contact with reinforcers (e.g.; child's response, positive interaction) and accept the current situation for what it is, which motivated them to carry on with the intervention. We speculate that this process, together with increased valued living, could make parents feel more comfortable and motivated to work with behavioural interventions and teach their children new skills, even when tiring or stressful. Moreover, by being able to take their child's perspective, parents could become increasingly better at identifying the right time to practice behavioural interventions, and what works as a reinforcer for their own child. These findings could explain how child-directed play mediates how much parents practice behavioural homework (Garoff, 2011), and how it increases the effect of parent training programs when coupled with other relationship enhancing components (Kaminsky, Valle, Filene, & Boyle, 2008; Leijten, et al., 2019). This supports the notion that child-directed play is a foundation on which later behavioural management training can be built (Forgatch & Patterson, 2010).

Child-directed play as a process.

When looking at the participants' individual graphs, we can see a slow increase in valued living during the intervention phase. From this stems the hypothesis that child-directed play is more of a process than a tool in itself, as it could be argued being the case of mindful parenting. When comparing this to previous studies, we find that many mindful parenting-based programs tend to be six to twelve weeks long (Lunsky, et al., 2017; Townshend, Jordan, Stephenson, & Tsey, 2016; van der Oord, Bögels, & Peijnenburg, 2012). This indicates that a mindful approach takes time to be achieved, which would point to the need of practicing child-directed play for a longer period of time. Lunsky and colleagues (2017) propose that personal experience of mindfulness and the embodiment of its foundations take time and effort. As a matter of fact, improvement in mindfulness skills is often foreshadowed by a period of increased awareness of disconnect, which can be interpreted as an initial lower occurrence of mindfulness-based behaviours (Singh, et al., 2006). In other words, one experiences oneself as getting more easily distracted during training when they first start practicing, while in actuality they simply become better at noticing when they get distracted. As a testament to that, many participants have reported becoming more aware of the amount of questions they asked or of how much they took the lead during interaction with their children. We could speculate that those parents who chose "classic" mindfulness values (i.e., attentive and present) for their observed situation, could have had a harder task on their hands. The mere fact of being aware of one's (in)attention and (non-)presence, can shift one's focus from being attentive and present. This strengthens even more the idea that child-directed play and mindful parenting alike constitute processes that require time and practice.

Indeed, mindfulness is often referred to as a process (Hayes, Luoma, Bond, Masuda, & Lillis, 2006), a process goal (Hayes and Wilson; 2003) or a practice (Fletcher & Hayes, 2005), pointing at the need for a continuous application of mindfulness related techniques over a longer period of time. We can speculate that this is also mirrored in the fact that for five of our eight participants, an increase in level was seen at follow-up. As a matter of fact, increase could be seen for those participants who practiced child-directed play at least three times per week between intervention and follow-up, with the exception of Hild who had started, but had to pause.

Moreover, most intervention trends are either flat or slightly increasing. Hence, although effective on its own, more interventions might need to be added to child-directed play in order to achieve a steeper increase. ACT practice usually contains a wide range of interventions including different aspects of psychological well-being (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Therefore, more facets of well-being, self-care, and acceptance than what child-directed play alone can offer, might be needed. Mindfulness can be defined as the combination of acceptance, defusion (i.e., detachment from private events), present moment, and seeing oneself as the context where private events unfold (Fletcher & Hayes, 2005). We could hypothesise that child-directed play allows parents to directly tackle acceptance and present moment, while other interventions could be useful to boost the processes of defusion and self-as-context.

Considerations on the effect of possible moderators.

When looking at the effect of child-directed play for each participant it is interesting to inspect the relationship between said effect and other possibly moderating variables. Although the initial aim was to choose a situation to observe which was different from the child-directed play situation in order to assess for committed action, this was not always possible due to the families' routines and needs. Embla, for example, wanted to be more playful and showed the greatest effect size and level change. This is not surprising considering that child-directed play was mainly practiced during the observed situation and that the value itself is inherent to the nature of intervention. She also quite quickly started practicing in other situations. Saga also practiced during the observed situation, amongst many others, and her value of being content with the interaction encompassed all that child-directed play is about. However, although very large, the effect size was considerably lower than Embla's. On the other hand, we have Hild and Siv who wanted to be "pedagogical" and Idun who wanted to be calmer, who also showed at least large effect size. These mothers, however, did not practice child-directed play during the observed situations, and the values themselves are only inherent to child-directed play to a certain extent. This could point to committed action and therefore the generalisation of the effect of the intervention to other everyday situations involving the child. They did however start practicing child-directed play more and more impromptu in different situations. Interestingly enough, Freja and Eir who wanted to be more attentive and who practiced child-directed play during the observed situation saw a smaller effect of intervention. This could be imputed to the initial increase of distractions and inattentiveness one experiences during practice, making the effect of child-directed play a more gradual one. Later on, they also started adopting a more child-directed mindset in other situations. Lastly, Lofn wanted to be more present and practiced child-directed play in a different situation from what was observed, during a specific playtime. In her case no effect was reported. In conclusion, there is no clear pattern of interaction

between these potentially moderating variables and effect. Thus, we cannot draw too many conclusions on which values are specifically targeted from the intervention and whether committed action was undertaken by everyone.

Nonetheless, mothers who had spontaneously started using techniques from child-directed play in other everyday situations had better intervention effects than those who did not. Some mothers expanded the scope of application straight away, while others waited until they felt more comfortable and gained more understanding for what child-directed play really entails. However, a possible explanation to this phenomenon could be that parents who started to notice an effect of child-directed play started using the techniques in other situations, and by doing so showed increased intervention effects. Nonetheless, these findings could point to the importance of practicing child-directed play in many different situations. This could be especially feasible in case parents received at least one initial supervision session after having practiced on their own, in order to better comprehend how to carry out child-directed play in multiple settings by being more reflective during the intervention.

On the matter of supervision, although no evident relationship between the amount of supervision sessions received and effect is shown in the data, parents gave qualitative descriptions of how supervision sessions were helpful to fully understand the differences between child-directed and “ordinary” play. This was usually achieved during the first session when concrete feedback on implementing instruction was given. This suggests that at least one session of supervision might be beneficial for parents to be able to better understand how child-directed play differs from ordinary play, and how to practically apply the instructions. It would be interesting to compare supervision to informative videos on child-directed play and see whether they would lead to different outcomes.

Due to the format of the study it is not to be excluded that our involvement might have had an effect per se, which could have possibly led to higher ratings from the parents. This is particularly important to acknowledge, considering that we have regularly been in contact with the parents (e.g., sending text messages daily, supervision session). We cannot help but wonder whether parents have felt our involvement as support in itself. While giving supervision, we made a point of validating and reinforcing parents’ positive behaviours. This approach could have had an effect by its very nature, especially considering that validation and positive reinforcement are key instruments in a cognitive behavioural psychologist’s toolbox. It would have been interesting to see whether the combination instructions-supervision would yield different results from instructions only.

Our involvement could have had a placebo effect, by eliciting expectations, beliefs, meaning, and hope for improvement (Beauregard, 2007; Wampold, Minami, Callen Tierney, Baskin, & Bhati, 2005). Credible attention placebo is reported as one of the possible placebo options in psychotherapy (Wampold, et al., 2005). Attention placebo control (APC) could generally be described as an intervention that mimics the theoretically inactive but not the active elements of a treatment program or an intervention (Popp & Schneider, 2015), as attention, validation, and positive reinforcement. Even though APC was shown to match CBT when measuring for delusions and anxiety (O'Connor, et al., 2007)), psychological placebos need to be properly designed in order to be as effective as psychotherapy, and there are many limitations to their use, making

them an unreliable approach (Kirsch, 2005; Wampold, et al., 2005). Moreover, although expectancy of treatment effect has been shown to have a great impact (Beauregard, 2007), Kirsch (2005) argues that it mediates any psychotherapeutic outcome. The author claims that placebo effects tell us less about whether an intervention works or not, and more about why and how it works. Overall, we do not believe that our involvement, validation, and positive reinforcement could meet the standards for a well-designed psychological placebo. However, in case they have affected the outcome of the study in some way, we could probably learn something about the effects of child-directed play. We could hypothesise that a big part of what is effective in this intervention is parents doing their best, feeling validated in what they are doing, and coming in contact with those positive experiences that they had been missing when interacting with their children.

Limitations

Albeit promising results, this study does not come without its limitations. These will further be discussed.

Time constraint.

Within SCED literature it is reported that when conducting a multiple-baseline study, intervention for each participant should only be introduced when effect has been shown for the previous (Kazdin, 1982; Morley, 2018). This was not achievable in the present study due to the somewhat limited time provided. We wanted to make sure that all participants had enough time to practice child-directed play, which meant keeping the difference between baseline phases fairly small (with some participants having equal baseline length). A solution to this could have been the inclusion of fewer participants. However, due to the risk of drop-out, more participants have been included.. We could also speculate that the longer the participation and/or baseline period, the higher the chances for drop-out. This could have left us with very few data, especially considering the higher levels of distress and demands that parents of children with ASD generally experience in their everyday life.

Another aspect influenced by time constraints was follow-up. Although it allowed us to see whether effects were sustained after the intervention period and is therefore per se a strength for this study, our follow-up only included three days and in certain cases only one datapoint. This is seen as a potential limitation since considering general data variability, a week would have probably been more appropriate. Yet, considering the gradually increasing effect of child-directed play, it would be hard for us to say whether four extra data points could have added valuable information to our final measurements..

Methodological limitations.

One important methodological limitation is the absence of blinding, which could possibly have led to observer-expectancy effect and social desirability bias, at least to some extent (Kratochwill, et al., 2010). Due to the nature of the study, blinding could not be achieved. Boutron with colleagues (2007) report sham procedures (i.e., placebo), blinding of the assessor, and blinding to study hypotheses as feasible blinding techniques for SCED. Sham procedures were not deemed ethical since we did not want to deprive parents from the opportunity to receive the intervention, and administering it after study completion was not deemed feasible due to the time constraints of the present study. Blinding of the assessors was also unfeasible, since the participants themselves were the

assessors. Blinding of hypotheses was somewhat achieved, since the participants were informed that the aim of the study was to measure the effects of child-directed play on parent-child relationships (i.e., partial information given to the participants). However, considering the process of identifying values and situations, we cannot claim that blinding of hypotheses was fully achieved, although “perspective-taking” was never mentioned to the participants throughout the study.

An additional limitation is the lack of randomisation, which is otherwise considered a way to control for history and maturation biases (Tate, et al., 2016a). We have opted for a data-driven intervention onset, reason being the very individual nature of the idiographic measures. Having conducted a pilot study we knew that value scores tend to vary from day to day, and are not comparable to those of problem behaviours, which tend to be more stable. Hence, intervention onset based on baseline stabilisation, rather than on a random order, allowed for more experimental control. Moreover, a multiple-baseline design across eight participants intrinsically controls for history and maturation (Kratochwill, et al., 2010), even when said design is non-concurrent (Watson & Workman, 1981).

Furthermore, having the study being conducted in a non-controlled environment, it has been hard to be entirely sure on the extent and quality of child-directed play practice. Thus, a precise score of fidelity is impossible to report. Our validating and reinforcing approach was also adopted in order to encourage parents to ask questions and be open in case of “shortcomings”. This, together with observing child-directed play during supervision, was done with the aim to get a better idea of what parents were doing and to give appropriate feedback. The downfall is that we have not given supervision every week as planned, due to the participating families’ needs. However, we argue that our process would not be too different from that of learning from a practitioner, practicing at home, and then getting feedback during a later session. It could have been interesting to have face-to-face supervision, although that would have required resources unavailable to us.

The study design also meant a lack of control of the observed situation, and of external factors that could influence said situations. We cannot entirely rule out the risk for missing low ratings for those days when parents did not participate in the chosen situation because of a very stressful day at work, illness, lack of motivation, and so forth. This could have generated a higher average score of parental valued living. The opposite pattern could also have occurred, especially considering that some parents have reported taking part in the chosen situation despite illness. This means that for some parents’ low ratings might have been left out, while for others lower ratings have been included but might have been affected by other circumstances, without us necessarily being aware of them. This lack of control could be a limitation to how reliable the results of this study are. However, since the variation that occurs in everyday life has not been discounted from this study, and considering the many challenges faced by parents of children with ASD, we argue that our results have high ecological validity. We believe that it is of greater interest to know how child-directed play could affect valued living and perspective-taking in everyday life, rather than in a controlled lab-environment.

On the topic of lack of control, one prominent aspect to shed a light on is the absence of a control group. It could be speculated that simply playing with one's child daily would yield the same results as the ones observed in our study. Comparing our participant group

to parents who are only required to spend the same amount of time with their child without following child-directed play's instructions, could help determine the effectiveness of the intervention. Although the idea that "normal" playtime could yield the same results has some foundation, we would like to argue against it. Some of our participants had chosen playtime as the observed situation. This means that their baseline measurements acted as a control - which is what they are meant for. During baseline, these participants did not see an increase in their idiographic measures, which were deemed as stabilised, and an effect of intervention could be established. If by only playing with one's child daily one could affect valued living, the opposite would have been observed. We do not want to discount the possibility that playing with one's child can affect one's values. We mean that child-directed play could be valuable in order to start living according to one's values more rapidly and to a greater extent.

Outcome measures.

One of the main limitations of this study is the use of idiographic value measures. These are not objective, nor observable, meaning that no other assessor can be involved in scoring them, making inter-rater agreement impossible and therefore decreasing their reliability. Further, considering that values are subjective and true only to the specific participant, their meaning can tend to change through time, even for the participant themselves. For example, in conjunction with improved valued living, the values could also change their significance for the individual and could for example be associated with more positive images. In order to counteract this, we had asked our participants to describe their values and how they noticed that they were acting according to them, both in the beginning and at the end of participation. In this way we could compare the two descriptions and see whether they matched, which they did. Even if not a proper reliability measure, this was a measure taken in order to ensure some consistency. However, we cannot be sure that parents have rated their idiographic value-measure in exactly the same way every day, which could entail a risk for instrumentation. Moreover, we asked parents to delete the text messages as soon as they had sent them, in order not to be influenced by measurements from the previous days. It is hard to say whether this practice was always observed, but we believe that this has raised reliability.

After conducting the pilot study, we were aware that value ratings would have likely varied from day to day. This is what led to the original plan to have up to 14 days baseline. We thought that although the foreseen variation in reported measures, giving parents more time to adjust could have led to a more standardised subjective measure. During the study, however, it became clear that the idiographic measures were not stabilising as quickly for everyone, and that we could not expect a similar pattern of response across participants. This, together with the fact that we had originally planned for the inclusion of only 5-6 participants, brought us to stray from the original 14-days baseline plan and to extend the limit of baseline days to 17. This can have possibly influenced us in starting some interventions before the time was appropriate, as for Lofn.

Although the way values were measured implies some limitations, we would argue that our study design takes into account best practice in order to carry out the study, and balances it with simplicity for the sake of the participating parents. Considering the premise of the study (i.e., parents of children with ASD and lower psychological well-

being) it would have felt hypocritical to burden our participants with a “workload” of, for example, operationalised checklists to fill in every day for 6 weeks.

Concerning our secondary outcome measure, the adoption of PRFQ also comes with some limitations. Although only PM was included, the entire questionnaire was administered to keep its reliability and face validity. Yet, a concern regarding its applicability in the present study must be raised. Children with ASD tend to experience more difficulty with expressing themselves and/or engaging in social interactions than typically developing children. Thus, on a group level, we could expect their parents to be more curious or eager to understand their children. Therefore, the validity the questionnaire holds might be lower in this particular cohort. Thus, although valuable for our research, we question whether PRFQ is a valid questionnaire for parents of children with ASD and, therefore, whether a more appropriate questionnaire could have been chosen instead.

Considering the lack of knowledge on and evidence for child-directed play, more in-depth exit interviews followed by qualitative analysis could have helped us better understand child-directed play’s working mechanisms, and how these affect valued living and perspective-taking. This approach was however not chosen since it would have required more time than what available. Considering the number of participants, a qualitative approach would have arguably been better suited for a separate study altogether. This would allow for a better in-depth analysis of the data, be that SCED idiographic measures or interviews, so that no approach would overshadow the other. Nonetheless, one limitation of the present study remains the fact that although short exit interviews were carried out, no systematic analysis was implemented. This was deemed not feasible considering the small amount of information gathered and the time constraints for the study. The information was therefore summarised and reported individually for each participant. We would argue that this was the best approach when considering what was of most relevance for the present study.

A further aspect that could have been valuable to take into consideration is parental well-being. Although we can speculate about child-directed play’s effects on psychological well-being based on its similarities with mindful parenting (Townshend, Jordan, Stephenson, & Tsey, 2016), no real inferences can be drawn. This is due to the lack of systematic measurement of parental psychological well-being (e.g., mental health and/or stress) in the present study. Including such measures had initially been considered. However, we decided to opt out from assessing such components since valued living and perspective-taking were deemed as of main interest for the present study. Moreover, we did not want to overburden parents with things to do, and we did not want to risk creating a chaotic study that left us with more data than what we had time to analyse. As both parent training programs and mindful parenting have been shown to improve parental psychological well-being, not assessing child-directed play’s effect on the latter could be seen as a limitation. However, the present study’s results could lie as a foundation for future research, where the relationship between child-directed play and psychological well-being is the focal point.

Lastly, although not an outcome measure, we find it important to discuss the employment of M-CHAT-R as part of the screening process. This checklist is used to assess the risk for ASD in toddlers (16-30 months), yet the target group for this study was parents of

children aged 2 to 6 years old. Although the checklist might have not been age-appropriate for all the participants, we chose it as an illustrative measure to see whether children showed risk for ASD, and not as a clinical instrument to diagnose children or exclude participants. It also filled the purpose of gathering information about the child's needs. Being M-CHAT-R designed with the development stage of younger children in mind, we could speculate that the only real downside of using it with older children would possibly be lower scores. In other words: a more age-appropriate instrument could have shown higher risk for ASD in older children.

Analysis.

Our unfamiliarity with visual analysis prior to conducting the present study, could entail a threat to reliability. In order to counteract this, we both followed a course and got certified in carrying out visual analysis, and we have practiced on example cases and worked together in order to reach agreement when analysing the study data. The process was the same as a normal inter-rater agreement. Agreement was reached directly without need for discussion in all cases, apart from minor details that would have not compromised the results (e.g., the degree of increase of the intervention data points), and with the exception of Lofn. Therefore, we argue that although an initial lack of expertise, our approach to this technique has granted high analytical reliability. Moreover, getting more familiar with the method only at the end of the study can have decreased the risk for experimenter-expectancy effect bias, since we were less aware of eventual slight changes in data during the study. This can have minimised the risk of influencing the measurements by indirectly praising the participants or naming improvements. A possible downside to this could be having started Lofn's intervention too early, possibly due to our inexperience which led us to interpret the trend line as flattening.

In order to measure effect size for the single participants, SMD_3 was employed. Olive and Smith (2005) mean that SMD_3 can give an inflated result. However, when compared against SMD_{all} (i.e., calculating the mean out of all the data points within a phase), we could see that although there were some changes between the values, they did not have much qualitative difference. For two participants SMD_3 values were qualitative higher than SMD_{all} (i.e., very large and huge, instead of large), while for two more they were qualitative lower (i.e., medium instead of very large, and small instead of large). In spite of its possible downfalls, we believe that SMD_3 is a more representative measure for what could also be observed in the visual analysis.

Applicability

The present study has been reported following the Single-Case Reporting guideline In BEhavioural Interventions (SCRIBE; Tate, et al., 2016a, 2016b), which allows for an accurate, clear, complete, and transparent paper, facilitating replication and evaluation of scientific quality. Based on the Risk-of-Bias in N-of-1 Trials (RoBiNT) Scale (Tate, et al., 2013) which assesses rigor of SCED methodology, and following an algorithm that takes into consideration the internal validity items of the RoBiNT scale (Perdices, Tate, & Rosenkoetter, 2019), we can say that the present study has a fair strength of methodological rigor. The level of strength was brought down by the fact that blinding, randomisation, inter-rater agreement and treatment adherence could not be achieved as per the scale's standards. These are all factors related to the type of idiographic measures employed and discussed in our limitations section. When looking at the external validity

items of the RoBiNT scale, we can see that the present study fairs quite well scoring 13/16 points, seeing the lack of description of therapeutic settings as the main shortcoming. The combination of fair methodological rigor and high external validity would suggest a strong level of generalisability and, therefore, applicability. This is especially true considering that replication is often considered as the most important design standard to be met (Kratochwill, et al., 2013), and that we could show six successful attempts at demonstrating replication of the intervention's effect (i.e., effect was shown for seven participants), at five different points in time. Replication of effect indicates causal inference. Considering that the golden standard is three replications of effect (Kratochwill, et al., 2013; Tate, et al., 2013), we can assert that the evidence provided demonstrates a causal relation between child-directed play and valued living. However, since we also report a demonstration of non-effect, the level of evidence is considered as moderate (Kratochwill, et al., 2013). Nonetheless, we would argue that the number of successful replications would increase credibility, generalisability, and applicability of our data.

When it comes to generalisability it is important to take different aspects into consideration. The group of participants is somewhat heterogeneous. The participating parents differ in many demographic characteristics (i.e., age, location, employment and education). However, our sample was only composed by mothers. Thus, some uncertainty is found when considering the generalisability of our findings to, for example, fathers or other caregivers. Despite that, we have yet to come in contact with evidence that would suggest such a differential effect, even though it has to be noted that the exclusive inclusion of mothers is a recurring issue in studies on these subjects. Moreover, since no information on the children's level of functioning and disability was included in this study, we cannot be sure about how the extent and the characteristics of the effect of child-directed play might differ based on the child's needs. We believe that for parents of children with higher levels of impairment, extra support might be needed, and that affecting valued-living and perspective-taking could take longer. This could possibly be due to natural reinforcers being harder to perceive, and to increased psychological and emotional strains. For these reasons collectively, we argue that our results could be widely generalised, although some adjustments might need to be taken into consideration.

Theoretical implications.

In light of our results, we would like to argue the overlap between child-directed play and mindful parenting, highlighting the former as a way for parents to see and understand their children's disabilities without trying to change them. By being attentive and responsive, parents can comprehend how their children differ from normally developing children, which leads to better adaptation and flexibility. During the course of the study, we have been exposed first hand to parents' accounts of initial disappointment and discouragement when the expectations and reality of having a child do not match; frustration and shame when understanding one's own child and knowing how to relate to them shows itself as being an arduous task; and worry for one's child's future. These experiences could likely affect parents' well-being. Therefore, child-directed play could possibly help increase parents' health and reduce psychological distress by helping them better understand their children, and increasing parental valued living. Lunsy and colleagues (2017) describe how mindful parenting and psychological acceptance are associated with reduced psychological distress for parents of children with ASD and

developmental disorders. We can speculate that this might happen even when practising child-directed play, though this interaction is for future research to confirm. However, we do hypothesise that the relationship enhancing effect child-directed play is said to have, is a secondary effect of parents' increased detachment from private events and attentiveness to their children. In this way they can more easily adapt to their children, making interactions more rewarding both for parent and child.

Clinical implications.

For further use of child-directed play, it can be worth looking into those aspects that our participants reported as challenging. Parents in this study found it challenging to restrain from asking questions and teaching new skills during practice. Since this is a central component of child-directed play, this should be noted when instructing parents. Some participants reported finding time to practice as somewhat stressful in the beginning, and others the fact that their children "do not play" as other children do. In the book chapter that parents received it was reported that a variety of things can be perceived as play for children with ASD. However, we realised that parents will nonetheless tend to react to the word "play". Thus, clinicians who teach child-directed play, should take time to help families identify appropriate play situations. By learning how to do so families will be able to identify other situations in which to practice, even outside of play.

As previously stated, the amount of supervision did not seem to influence the effect of the intervention. However, parents seemed to appreciate someone who could help them fully understand child-directed play and finetune their behaviours during practice. Although supervision does not seem necessary for child-directed play to be effective, it can be of great benefit, especially for parents who feel unsure. A scope of application could be to teach parents child-directed play as soon as their children are diagnosed with ASD, and to then offer a follow-up supervision session where parents themselves can ask questions and practitioners can validate, reinforce, and give constructive feedback. As a matter of fact, we would argue that child-directed play could constitute a relatively easy and feasible first intervention to be offered already in assessment centres. Although similar services are offered by habilitation centres, we have learnt from participants that the wait to get access to them is in some cases longer than a year. An early access to child-directed play could be important when considering the potential effects that the intervention could have on psychological well-being.

Future research

Being child-directed play somewhat uncharted territory, it is important to see the present study's results as the first step into developing evidence for this intervention, rather than solid evidence per se. Replication of this study and more research in this field are needed. Since no conclusions can be drawn on the effects of child-directed play on parental well-being, future studies should focus on this interaction. Moreover, considering the reported limitations, it would be interesting to see replications of the present study taking into consideration an even more heterogeneous pool of participants followed for a longer period of time, and with longer difference in baseline lengths. Studies with a control group design could also be valuable. Investigating the comparison between child-directed play and mindful parenting would also be of interest, as well as an in-depth qualitative approach to fully understand parents' experience of child-directed play.

In light of child-directed play being an intervention that should benefit children in the first place, more research is needed to evaluate its effects on children with ASD. Although our participants have brought up the fact that their children have started to appreciate interaction with their parents to a greater extent following the introduction of the intervention, more rigorous knowledge is needed on the topic. Future research should focus on how child-directed play affects children, with a special focus on well-being and how they experience changes in relationships and interaction (e.g., by measuring the amount of initiative taken during play with their parent/caregiver). Lastly, studies should be carried out in order to investigate in what way practicing child-directed play facilitates and/or enhances other behavioural interventions (e.g., if it buffers conflicts, helps parents identifying when to practice, or improves neutral everyday situations motivating parents and children to carry out behavioural exercises).

Conclusions

The novel results of the present study suggest that child-directed play might be an effective method to help parents of children with ASD to live accordingly to their parental values to a greater extent. The results also show that the intervention has the potential to help these parents increase their ability to take their children's perspective, and to a certain extent develop psychological flexibility, which constitutes a solid ground for improved positive relationships and future behavioural training. These results could make child-directed play a valuable first intervention to be taught to parents as soon as their children receive an ASD diagnosis. To our knowledge, this study was the first to evaluate the effects of child-directed play as a single intervention, even though its results fall in line with previous results for mindful parenting, establishing a connection between these two methods. More research in this field, as proposed above, is warranted.

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Protocol

To decrease the risk of type-I error by exploratory data analysis, this study was pre-registered at AsPredicted.org, under the title "Child-directed play - SCED, Stockholm University, 2020" (2020-01-10). Study protocol is however not yet available.

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Competing interests

The authors have no competing interests in the present study. The thesis supervisor, Lars Klintwall, has a financial interest in this study since he is the editor of the book from which the chapter on child-directed play was taken and might therefore hold financial gain from a positive outcome of this study. However, he did not take part in the data analysis, nor has he expressed opinions on its interpretation.

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GUIDE FOR ASSESSMEN INTERVIEW

Det vi vill testa är en metod som vi vet stärker samspel mellan barn och förälder, men vi vill även veta hur din upplevelse av relationen påverkas.

Presentation av upplägg och genomgång av samtycke.

Bekräfta att familjen förstår att det gäller en studie och att data kommer samlas in konfidentiellt.

Bekräfta även att en och samma vårdnadshavare (under hela studiens gång) har tid att genomföra interventionen ca 5-20 minuter om dagen med start om ca 1 vecka (eller annat enligt överenskommelse).

Beskriv inledningsvis interventionen endast som samvaro med barnet genom lek, på barnets villkor. Förtydliga att det krävs att vårdnadshavaren har möjlighet att lägga hela sin uppmärksamhet på barnet vid den här stunden.

Om vårdnadshavaren godkänner kommer hen att få utförligare instruktioner genom ett bok-kapitel och handledning via telefon när interventionen startar. Förklara även att vi vill förstå hur ni har det innan interventionen för att vi vill mäta om det blir någon skillnad.

Vid verbalt godkännande av samtycke fullföljes intervjun.

- Är du den vårdnadshavare som är tänkt att vara ansvarig under studiens gång? -
Om inte be att få samtala med den andre vårdnadshavaren.

Frågor om familjesituation:

- Vilka ingår i hushållet?
- Bostadsort?

Förälder

- Högsta utbildning hos förälder?
- Ålder på förälder?
- Arbetar du heltid/deltid/ eller föräldraledig/annan frånvaro?

Barnet

- Hur gammal är barnet? (*stämmer ålder med inklusionskriterie 2-6 år*)
- Har barnet fått en diagnos? vilken/vilka
- Har ni fått någon hjälp/insatser? - Vilka?
- Går barnet på förskola?
- M-CHAT-R - jag skulle vilja ställa några frågor om ditt barn...

Syskon

- Syskon- med/utan funktionsvariationer?

Appendix I

Frågor om samspel

- Träffar du barnet dagligen?
- Vad brukar du och barnet göra tillsammans?
- Finns det tid för gemensam lek i vardagen just nu? - ses ni främst till maten och andra omvårdnadssituationer? - deltar du i barnets lek i dagsläget, tex. Sitter med om barnet ser på tv, deltar i bygglekar eller liknande? – Brukar du som vårdnadshavare initiera aktiviteter, som att gå ut eller andra lekar?
- Vad tycker barnet om att leka?

Presentera upplägget med att hitta en värdering - hur skulle du vilja vara med ditt barn? (neutral situation med interaktion)

- Hur skulle du vilja vara som förälder i relationen med ditt barn? Hur är du när du upplever dig så?
- Kan du tänka på en situation när du inte upplever dig själv så?
- Om du skulle skatta med en siffra 1-10 där 1 är inte alls... och 10 är väldigt..., hur skulle du skatta denna situation?
- (Om inte 4-6 fråga om andra situationer, t.ex. Finns det situationer då du skulle skatta lite högre/lägre?)
- (Använd föräldrarnas förslag som ankarpunkter för att göra en "halv-hierarki")

Sammanfatta de situationer som föräldern beskrivit. Beskriv upplägget med datainsamling där någon av situationerna kommer att formuleras som en skattningsbar fråga, där den värdering som föräldern valt kommer att skattas från 1-10. Tacka och be om att få återkomma gällande detta. Förklara att du ska diskutera beskrivna situationer med de andra ansvariga för studien, för att det ska bli så bra jämförelser som möjligt i förhållande till de andra deltagarna. Boka in en tid för att ringa upp när detta är gjort och ställ nedan frågor om datainsamling. Jag kommer att skicka en enkät (PRFQ) direkt efter samtalet som du gärna får svara på under dagen. Jag kommer även skicka den två gånger till. Jag vet att det kan vara lätt att tänka på hur du skattat tidigare när en får enkäten igen, men försök att inte göra det utan att bara svara utifrån hur det känns just nu när du svarar.

(Be föräldern skriva på samtycket under tiden)

Samtal #2

Återge kort: val av neutral situation till förälder.

- Skulle det här xxx kunna vara en fråga jag skulle kunna ställa till dig varje dag, som du får skatta från 1-10?
- Vilken tidpunkt skulle passa för dig att få ett sms med den här frågan (så nära i tid till situationen som möjligt - nämn om det som kommit fram i pilotstudien, dvs att det är lätt att glömma om det går mycket tid mellan situation och skattning)?
- Efter hur lång tid vill du att vi skickar ett påminnelse-sms?

Appendix I

Sammanfattande avslutning: Tacka för medverkan. Informera att smsen med frågor kommer börja skickas efter överenskommet datum, varje dag vid kl.XX och i fall du inte svarar skickar jag en påminnelse vid kl.XX. Det är väldigt viktigt att svara inom tidsramarna. Svar som kommer in för sent eller dagen efter kan vi inte räkna in som data och kan leda till att en får vara med i studien längre. Berätta att de gärna får radera sina egna sms när de är skickade. Viktigt att fortsätta göra som vanligt, även om det är lätt att börja vara mer uppmärksam och börja ändra på beteenden. Informera även om att instruktionerna till interventionen kommer att skickas ut inom x veckor. När de har skickats får föräldern gärna ringa upp för att ställa frågor om materialet. Om föräldern inte ringer upp själv med några frågor kommer vi att ringa inom 3 dagar. (Information om telefonhandledning av metoden kommer att ges vid detta samtal). Passa på och be om adress.

GUIDE FOR EXIT INTERVIEW

Egna tankar om Barnets Stund:

- Du har varit med i studien och övat på BS i x antal veckor. Vad har du för generella tankar kring Barnets Stund? Hur gick det att öva? Känns det som något du skulle kunna fortsätta göra i framtiden?

Skillnader före och efter:

- Jag tänkte vi skulle titta på hur det var innan du började med BS och hur det är nu. Vi kan börja med positiva effekter:
- Vilka positiva effekter kan du se att Barnets stund har haft för dig och ditt barn?
 - Hur har det påverkat dig att ha barnets stund?
 - Hur har det påverkat ditt barn att ha Barnets stund?
 - Har det påverkat er relation på något sätt?
- Har du märkt av några negativa effekter av att ha barnets stund?
- Är det något som har blivit sämre i er vardag eller i relationen mellan dig och ditt barn?
- Är det något som har varit svårt med att öva på Barnets stund?

Skattningar:

Om vi tänker på skattningarna som du har fått skicka via sms de senaste veckorna sedan du började läsa kapitlet:

- Vad tror du kan ha påverkat dina skattningar (under intervention)?
- Vad tänker du att det är som har gjort att dina skattningar har ändrats sedan du började med barnets stund? (OBS! Vi kan behöva berätta hur skattningar har förändrats)

Uppföljning

Vi undrar också om det skulle vara okej för dig att delta i en kort uppföljning?

Detta innebär isf att vi kommer skicka samma sms som tidigare om 3 veckor igen under tre kvällar?

BONUS:

Vad innebär xxx (värdering) för dig? Hur märker du att du är xxx? (Ej direkt barnets beteende)

Appendix III

GUIDE FOR SUPERVISION SESSIONS

Upplägg:

- Berätta om upplägg
- Barnets Stund 5-10 min
- Generellt om Barnets Stund
 - Hur har det gått att genomföra?
 - Hur ofta har ni övat?
 - Hur länge varje gång? (Genomsnitt)
 - Vad finns det för hinder? (Problemlösa)
- Specifik om övning
 - Frågor och funderingar föräldern kommer med
 - Feedback, tips och råd

Att göra:

- Under handledning
 - Stäng av kameran under övningen. Sätt på den igen när det är dags att runda av/avsluta. Säg till föräldern att detta kommer göras
 - Om det går be föräldern att ha handledning själv, och inte med barnet i närheten. Förklara varför (t.ex. uppmärksamhet)
 - Lyfta max 3 utvecklingsmöjligheter
- Efter handledning
 - Mejla föräldern en sammanfattning av de viktiga punkterna
 - Fyll i fälten i "Datainsamlings" filen under fliken "Handledning" (Deltagare, datum, hur ofta de har övat, längd på handledning)

Bonus:

- Vad har du lärt dig om ditt barn hittills? Hur kan du applicera denna kunskap till andra sammanhang?