

Confident parents for easier children

**Strengthening parental self-efficacy to reduce young
children's externalizing behavior**

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Abstract

By interacting with their child, parents build their own sense of competence as a parent. This parental self-efficacy relates to each parent's representation of a "good parent", an ideal parent-child relationship and the belief that he is doing a good job or not as a parent. What if the child is being difficult, non-compliant, aggressive or agitated?

This dissertation presents an innovative parenting program called *Confident Parents* designed for parents of young children displaying difficult behavior such as agitation, non-compliance or aggressiveness. The innovation of this program is twofold: it is focused and exclusively cognitive, as it intends to specifically focus on parental self-efficacy enhancement. Effects of this intervention on both parent and child behaviors are measured through both questionnaires and observations. Its effects are discussed taking into account child initial behavior severity, socio-economic status and child temperament as predictors of the effects of this parental self-efficacy program.

Résumé

Au quotidien avec leur enfant, les parents construisent leur sentiment de compétence en tant que parent. Celui-ci concerne la représentation que se fait chaque parent de ce qu'est "être un bon parent" et une relation parent-enfant idéale ainsi que la croyance qu'il fait ou non du bon travail en tant que parent. Mais si l'enfant est difficile, n'obéit pas, est agité ou agressif ?

Cette thèse présente un programme parental innovant appelé *Confident Parents* conçu pour des parents d'enfants présentant des comportements difficiles (agitation, opposition, agressivité, etc.). L'innovation de ce programme est double: Il est focalisé et cognitif à part entière, étant centré exclusivement sur l'amélioration du sentiment de compétence parental. Les effets de ce programme sur les comportements de l'enfant et du parent sont mesurés en s'appuyant tant sur des questionnaires que sur des observations. Ces effets sont discutés en prenant en compte la sévérité initiale des difficultés chez l'enfant, le niveau socio-économique de la famille et le tempérament de l'enfant comme prédicteurs de l'efficacité de ce programme parental sur le sentiment de compétence.

A celle qui a relancé le jeu de ma vie un bel après-midi d'avril,
A celle sans qui cette thèse n'aurait sans doute jamais été écrite,
A Iris

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General introduction

General introduction

This section is adapted from the following book section:

Loop, L., Mouton, B., & Roskam I. (2015), Comment intervenir auprès des parents d'enfants difficiles ? In I. Roskam & M. Mikolajczak (eds). Psychologie de la parentalité tome II: Thématiques contemporaines, Stress et défis de la parentalité, De Boeck.

Anyone can raise a child. Having a child who walks, talks, interacts with peers and adults, is healthy and growing is almost an obvious fact, as if children grew spontaneously and raising a child were natural. Yet, some parents experience parenting as one of the most demanding tasks they face in their adulthood. By watching their child grow and by interacting with him, most parents build their own sense of competence as a parent. It relates to each parent's conception of his parenting role, the goals and means of a successful education, and a "good parent" or an ideal parent-child relationship's characteristics (Roskam, Meunier, & Stievenart, 2011). Their belief that they are doing a good job is implicitly created and challenged every day. Comments they receive from other parents or close people influence this belief. What if the way the child grows is different from what the parent expected, what if there is a discrepancy between the energy and time engaged by the parent and how the child evolves? What if the child is being difficult, in the eyes of the parent and comments from others are negative?

Parenting is described by most parents as gratifying and fulfilling but demanding and challenging as well. This is particularly the case with children that show difficult behavior, such as agitation, non-compliance or aggressiveness. When parents of young children request help from clinicians, they often do so because of the difficult behavior of their child. They consult health professionals when their physical and psychological resources are drained, when guilt and sometimes helplessness have become overwhelming.

This dissertation presents an innovative parenting program called *Confident Parents* designed for parents of young children displaying difficult behavior. The innovation of this program is twofold: it is focused and exclusively cognitive, as it intends to specifically focus on parental self-efficacy enhancement. Effects of this intervention are measured using a multi-informant and multi-method approach, based on questionnaires and observations.

Child externalizing behavior

Definition and risk factors

Children's agitation, inattention, opposition, defiance, aggressiveness or non-compliance are described in child development research as «externalizing behavior» or EB (Achenbach & Rescorla, 2000). This behavior is externalizing because it is addressed at others, compared to self-directed "internalizing behavior" (i.e. depression, withdrawal,

anxiety or eating disorders). A certain level of externalizing behavior is considered to be typical in preschoolers. It can be measured on a continuum, from a low level to clinical level (Wakschlag et al., 2007) and is relative to the perception of the person who measures it. Some parents may be more tolerant of their child difficult behavior than others, according to their own temperament, their level of stress, their educational resources or their conditions of living. But persistent high levels of EB may impede children's social adjustment increasing the risk of poor mental health issues in adolescence and adulthood (Miner & Clarke-Stewart, 2008; Owens & Shaw, 2003), delinquency or risky behavior (Roskam, Meunier, et al., 2011). Intervention is therefore a major issue in development psychopathology.

Research has tried to identify risk factors that potentially increase the likelihood of externalizing behavior or maintain it at a high level (Wakschlag & Keenan, 2001). The relationship between individual or environmental factors and such behavior has been explored. In particular, the relationship between young children's EB and parenting has been widely documented (Aunola & Nurmi, 2005; Smeekens, Riksen-Walraven, & van Bakel, 2007).

This dissertation is part of a collaborative research project called H2M (Hard-to-Manage children) launched in 2004 by the Psychological Sciences Research Institute of the University of Louvain in Louvain-la-Neuve. In the first phase of this study (2004-2011), several risk factors were identified, including child language, social cognition and executive functioning impairment, as well as parenting practices, were identified (Roskam, Meunier, et al., 2011; Roskam, Stievenart, Meunier, & Noël, 2014; Stievenart, Roskam, Meunier, & van de Moortele, 2011). In the second phase of H2M, five interventions were conceived and experimentally tested to overcome these risk factors. Two of them were child-oriented and dedicated either to increase inhibition (Volckaert & Noël, 2015) or to improve social cognition (Houssa & Nader-Grosbois, 2016). The other three were parent-oriented and dedicated to improve parent-child communication (Brassart & Schelstraete, 2015), to develop parental strategies to coach their child's emotions (Loop, Mouton, Stievenart, & Roskam, submitted) or to enhance parental self-efficacy (Mouton, Loop, Stievenart, & Roskam, submitted-b). The latter is the focus of this dissertation.

Parenting and child externalizing behavior

Many studies have investigated the relationship between parenting and child externalizing behavior. But, mostly correlational, these studies are not sufficient to identify what is the cause or the consequence of parenting and child behavior (van Ijzendoorn & Bakermans-Kranenburg, 2012). They have demonstrated the existence of a link between the two but they do not document the direction in which this link is operating (Patterson, Forgatch, & DeGarmo, 2010). Current research frequently concludes that child and parent influence one another in a bidirectional direction in which they are interdependent (Long, Gurka, & Blackman, 2008; Patterson & Yoerger, 2002). A parent facing a difficult child will tend to adopt harsh discipline that will contribute to increased child externalizing behavior that in turn worsens parental stress, inconsistency and self-

doubts of parents. In Sameroff's model (2010), the influences of the child's biological heritage and life experience are combined in a dynamic system. In particular, the behavior of the child is seen as a function of how the parent reacts, not as an intrinsic characteristic of the child. The author describes a three-part sequence: 1) children stimulate their parents; 2) parents impose some meaning system on the input; and 3) parents then react with some form of caregiving. Where relationships are problematic, intervention should be directed at one or more of these three parts.

The use of negative control and authoritative and inconsistent discipline by the parent is particularly illustrative of this cascading effect, through the persistence or even reinforcement of child externalizing behavior. When a parent uses physical negative punishment such as smacking, it can increase the child's tendency to use physical aggression to express his or her own frustration. When parents use inconsistent discipline by threatening the child with sanctions without implementing them, children learn that parents' verbal injunctions are worthless. They do not listen to them or do not care. In such context, vicious cycles between parent and child become automatic and resistant to change (Patterson, 1982, 2002).

By documenting this link between child externalizing behavior and parenting, research has opened the way to interventions designed not only for children directly but also for parents.

Parenting programs

Among the different therapeutic approaches to child externalizing behavior, some interventions target parents rather than the child directly. The aim is to accompany parents for several months, in the form of weekly individual or group sessions. These interventions (called programs in this dissertation) use directive change processes, by explaining to parents how to educate their child. In several countries, parenting programs have developed rapidly over the last two decades and expanded internationally such as the American Incredible Years program (Webster-Stratton, Rinaldi, & Reid, 2011) or the Australian Triple-P (Dretzke et al., 2009; Sanders, Markie-Dadds, Tully, & Bor, 2000; Sanders, Stallman, & McHale, 2011). These programmes contributed to a real transformation in the concept itself of child externalizing behavior treatment. This way, clinicians moved from a child behavior-focused treatment towards a program-focused one, prioritized on parental needs. This evolution is related to a better understanding of processes through which parents contribute to the development and persistence of their child's externalizing behavior as mentioned earlier (Boeldt et al., 2012; Galambos, Barker, & Almeida, 2003; Meteyer & Perry-Jenkins, 2009; Meunier, Roskam, & Browne, 2011).

Abundant literature has been devoted to these programs illustrated by the meta-analytic review presented in Part I (Mouton, Loop, Stievenart, & Roskam, submitted-c). Several empirical studies have documented these programs' benefits on child EB (Bodenmann, Cina, Ledermann, & Sanders, 2008; Evans et al., 2003; Feng & Fine, 2000; Turner, Sanders, & Lutzker, 2006). Nevertheless, some issues remain unresolved and these

approaches have become somehow controversial. Their drawbacks would be to convey the idea that there is a “good parent” prototype, to have a limited cost-effectiveness and eventually to contribute only partly to the understanding of processes at stake in parent-child interactions because of their multi-modal nature. They also under-explore potential negative effects on other parenting covariates.

First, these programs convey, sometimes implicitly, the idea according to which there would be a way to be a « good parent ». Clinicians who conceive and implement such programs take a coach-like role, instructing parents on the way to best parent difficult children. This contributes to reinforcing two false beliefs. First, some parental practices and attitudes would guarantee child positive outcomes. By learning them and implementing them, parents would protect themselves for ever from any relational and educative difficulty. Second, parents would be the main actors responsible for the onset or for at least the persistence of their child externalizing behavior. This point of view minimizes strongly the influence of child characteristics such as temperament or cognitive abilities, with the risk of an excessive guilt in parents. Contrary to these programs, the approach adopted in this dissertation is non-directive and builds on parental self-empowerment, as discussed in Part II.

Second, the cost-effectiveness of these programs is not so obvious. For parents, participation in one of these programs can generate high costs for enrolling, travelling or babysitting costs. Besides financial aspects, the time investment is often high as programs are delivered over several weeks or even several months, and the time demands would inevitably reduce family time (Hood & Eyberg, 2003). These constraints can seem unrealistic for many families trying to combine private and family life. For clinicians, training costs are also high. They have to be certified and training costs are expensive.

These costs would not be compensated by the benefits gained by the programs’ implementation. Efficacy studies showed positive but limited effects as we will confirm in our meta-analytic review presented in part I (Lundahl, Risser, & Lovejoy, 2006; Reyno & McGrath, 2006). According to a previous meta-analysis from Serketich and Dumas (1996), these programs would not be efficacious for all children or all families. Two types of participants’ characteristics would moderate parenting programs. First, families’ socio-economic status: low revenues and education and precarious job situations would diminish potential benefits. Yet, socio-economic status constitutes a risk factor in child externalizing behavior’s occurring and development (Coleman & Karraker, 2003). On the other hand, the initial EB severity would predict best parenting programs’ efficacy (Leijten, Raaijmakers, Orobio de Castro, & Matthys, 2013). Also, children would benefit differently from parenting programs depending on their temperament (Belsky & van Ijzendoorn, 2015). This issue of child differential sensitivity to parenting will be discussed in the last of our empirical studies in Part II (Mouton, Loop, Stievenart, & Roskam, submitted-a).

The cost-benefit issue can also be discussed with another meta-analysis in which programs were compared according to their duration (Marian J. Bakermans-Kranenburg, van Ijzendoorn, & Juffer, 2003). Authors compared 88 programs targeting parental

sensibility and child attachment security. They established that a moderate number of sessions was sufficient and that short interventions focusing on a unique therapeutic objective, were more efficacious than longer programs.

Some programs' effects can also be detrimental to parents but this is rarely documented in literature. When only one of the two parents participates in a program, this can bring positive change for one but it could also induce misunderstanding within the parental couple. Their coparenting, defined as the way parents cooperate in a predictable and non-contradictory manner, could be altered. This is important considering that literature shows that a positive coparenting, a low intensity of parental conflicts or a flexible communication in the family are associated to positive child development (Feinberg, 2003; McHale & Lindahl, 2011; Schoppe-Sullivan, Mangelsdorf, & Frosch, 2001). The possible negative effects of the *Confident Parents* program discussed in this dissertation will be explored in our third study presented in part II (Mouton, Loop, Stievenart, Brassart, & Roskam, 2015).

Another critique of the parenting programs relates to the evaluation of programs' effects. Most empirical studies use questionnaires completed by the participating parent to describe child behavior. A parent report bias could be expected from the parent who makes the effort to participate to a program and hopes to obtain a benefit from it. The observation of the child, put in a standardized parent-child interaction situation provides rich and complementary information to questionnaires. As detailed in the meta-analytic review in Part I, effects size of programs depends on who is describing the child (mother, father, teacher, observer) and how (questionnaire or observation). Teachers' reports tend to show smaller effects than direct observation or parents' reports. Parents participating in the intervention perceive more change in the children than the non-participating parent. This highlights the need for multi-method and multi-informant ratings of effects.

This is the reason why all empirical studies presented in this dissertation have used both questionnaires and observation of parent and child behaviors. Direct observation of parent-child interaction is often described as a more conservative approach to examining effects but several studies demonstrated that observed behavior was more sensitive to intervention effects than parent ratings of behaviors (Gardner, Burton, & Klimes, 2006; Menting, Orobio de Castro, & Matthys, 2013). The validation of the observation paradigm used in our studies is presented in Part I. It provides evidence of its external validity and consistency as well as its discriminant properties for externalizing behavior children (Loop, Mouton, Brassart, & Roskam, revised). Based on data collected on 137 dyads, this shows that the Crowell procedure can be used as an observational paradigm to assess both children and parent behavior. Depending on the research question and the level of precision needed, global or specific scores can be used. In our experimental study, a mean score of all scales was computed for the entire procedure, one for the parent and one for the child to document general behavioral outcomes. In the *Confident Parents* intervention study, scores were calculated separately for free play and frustration tasks. In the Child differential sensitivity, scores were calculated separately for positive and negative observed behaviors, both for the child and the parent.

Finally, if proving that programs are evidence-based is necessary (Kazdin, 2015; Weisz & Kazdin, 2003), it seems even more important to be able to explain through which processes these programs contribute to child behavior improvement (Dekovic, 2012). Yet, most programs simultaneously activate the three components of parenting: parental behavior (child-rearing practices), parental cognitions (i.e. self-efficacy, attributions) and environmental elements (coparenting, family well-being). Their conception itself prevents the possibility of detecting which component should be targeted in priority. Moreover, this conception can imply that efficacy depends directly on the number of components the program includes (Dekovic, 2012). This has not been confirmed yet in recent research. By intervening on various risk and protection factors at the same time (Howe, Beach, & Brody, 2010), these programs' conception leads to a complexity that does not allow a thorough understanding of the processes at stake in child behavior modification (Collins, 2014).

In this dissertation, we will attempt to overcome this complexity by isolating the effects of parental cognitions, more specifically parental self-efficacy, on child behavior's improvement. This way, our studies could contribute to determining to what extent parental self-efficacy stimulation can be considered an efficacious and sufficient component of parenting intervention programs. By identifying the most efficacious components through a focused approach, these programs could be improved.

Research pathways to improve parenting programs

To improve parenting programs, two main ways will be explored in this dissertation: the focus on one specific parenting variable and the analysis of moderation effects. Moreover, the use of a multi-method and multi-informant methodology and the analysis of negative effects will also be discussed as complementary ways to improve parenting programs efficacy.

The first way consists of focusing on the most effective components of parenting programs. Experimental studies can contribute to identifying these by testing the effects of the modification of one specific parenting variable on child behavior. Micro-trials (Howe et al., 2010) are a good methodological pathway to understand better underlying mechanisms at stake in the relationship between parenting and child behavior. This method, used here in this dissertation, aims at measuring the effects of a standardized focused manipulation of one specific parenting variable. This method has various assets. First, it makes it possible to test the malleability of a risk or protection factor. For instance, we can analyze if a specific parental cognition modification is possible. By modifying one parenting variable only, this method is a way to measure the specific influence on child behavior. Finally, comparison between such micro-trials could also provide key information to identify the most interesting variables to be integrated in parenting programs with the goal of increasing their efficacy and adequacy (Dekovic, 2012). It becomes possible then to focus on the most needed component and put aside the ones that have the least effect.

As detailed below, experimentation, and even more interventions, targeting parental self-efficacy beliefs (SEB) are scarce. In this dissertation, the malleable characteristic of parental self-efficacy and its causal influence on child behavior are tested in two empirical studies presented in Part II. The first is a laboratory experiment; the second called *Confident Parents* is an intervention study.

Another way is to identify for whom these parenting interventions work best. In other words which characteristics of both children and parents contribute to explaining child behavior improvement or unfortunately its maintenance or deterioration? In the current thesis, this question will be analyzed in two ways. First, the moderating role of socio-economic risk and child initial severity of externalizing behavior are analyzed in the *Confident Parents* study describing the effects of the self-efficacy intervention. Second, the specific issue of differential sensitivity, measured through child temperament, is tested and presented in part II. Children react differently to a change in their environment. According to the differential susceptibility hypothesis (Belsky & van Ijzendoorn, 2015), children with difficult temperament, with high levels of negative emotionality and activity, may be more sensitive to changes, implying that they take more benefit from a parenting intervention which improves their parent's self-efficacy. This hypothesis will be tested and discussed in Part II (Mouton et al., submitted-a).

Focus on parental self-efficacy

In line with the first strategy, this dissertation focuses on one specific cognitive component of parenting. Among the various parenting variables that could be isolated, the cognition of parental self-efficacy is a good candidate to explore. It is defined as parents' perceived self-competence in their role, in other words beliefs that parents have about their ability to positively influence their child's development. It covers beliefs, thoughts, values and expectations which are activated when one is in charge of a child's upbringing (Coleman & Karraker, 2003; Meunier & Roskam, 2007). SEB is an adequate variable to study among other parenting variables for three main reasons. First, it plays a key role in explaining parents' and children's behavior, second because a strong theoretical background provides effective ways to manipulate it and third because the experimental manipulation of this variable has been scarce so far.

Based on the Social Learning Theory of Bandura (1977), self-efficacy is a key concept that helps understand the transaction between an individual and his environment. It relates to the concept of human agency, defined as an intentional behavior reflecting one's general feeling to be able to influence his environment (Bandura, 1989b). As such, self-efficacy contributes to predicting behavior and persistence in case of adversity, "the stronger the perceived self-efficacy, the more active the efforts" (Bandura, 1997, p. 194). This is of particular interest in the field of parenting where parents may encounter difficulty with their child, which is the case with externalizing children. It is an indicator of parental engagement, satisfaction and adjustment in parenting tasks (Meunier & Roskam, 2009a).

In opposition to the ideas of a maternal instinct or a personality characteristics, self-efficacy is related to experiences lived by the parent with his child. It is not acquired once and for all but it is questioned continuously. In the social learning theory (Bandura, 1989a), four factors influence parental self-efficacy beliefs. First, performance accomplishments gather all past and present successes and failures experienced by the parent in the relationship with his child. Compared to the other three, this factor is considered as the most influential (Kendall & Bloomfield, 2005). The second factor relates to vicarious experiences, an evaluation process based on observing other parents engaged in similar parenting tasks. By comparison with these « models », who may strive or succeed as well, the parent evaluates his own capacity to overcome difficulties. The most influential models often belong to the family and close social networks. The third factor is verbal persuasion based on feed-back received by parents from close and significant people. These comments deal with the way they practice their parenting, their child's characteristics and quality of their interactions. For instance, negative statements from the school teacher about their child's difficult behavior in class contribute to weakening parental self-efficacy. On the contrary, receiving positive comments about this same child from a friend will contribute to strengthening it. The influence of verbal persuasion varies according to the feed-back's provider's characteristics: the more legitimate, competent, reliable and close to the parent, the more his influence. The fourth and last factor relates to parent emotional and physiological states. Anger, irritation or frustration felt anticipatively toward an interaction with the child makes parental self-efficacy susceptible to diminish. For instance, a parent daily confronted to tensions at bath time, can anticipatively feel a cardiac acceleration or stomachache. The anxious anticipation of a negative interaction with the child, felt at the physiological level, reduces the perception that a parent has of his own skills to overcome difficulties in this situation.

Self-efficacy beliefs in the field of parenting can be considered as domain-specific. Parenting is a multidimensional construct which covers a wide variety of activities such as providing instrumental care to children, playing with them, giving them affection, teaching them new things, explaining rules, etc. According to Bandura's conception (1977), the most valid approach for determining self-efficacy in parenting is achieved by combining the efficacy information conveyed by several behaviorally specific assessments. The domains selected in this dissertation are related to five key parenting domains as suggested by Meunier and Roskam (2009a) and Coleman and Karraker (2003): discipline (providing clear and consistent rules), nurturance (affection), playing (creating and sharing playing time), instrumental care (feeding, nursing, putting to sleep, etc.) and teaching (explaining how the world and society function and teaching skills to the child).

The link between a high parental self-efficacy and positive parenting practices has been largely documented (Coleman & Karraker, 2003). Parents who feel competent more often provides a positive educative environment characterized by a high level of support and a low level of negative control. Support relates to affection, warmth, engagement and support provided by the parent, while negative control relates to psychological control, harsh punishment, ignorance, guilt induction and inconsistent discipline. Parents will use

less harsh punitive practices and prefer a consistent and predictable discipline (Trifan, 2015). Parents who feel competent engage more in educative tasks and interactions with their child. Their satisfaction is higher, their stress reduced, and their persistence stronger when they face difficult situations (Deković et al., 2010).

Thanks to its influence on parental behavior, self-efficacy also affects indirectly child behavior. It can be seen as distal variable that directly influences parents' behavior and then indirectly affects child's behavior. A high parental self-efficacy favors the use of positive parenting, which in turn favors a child behavioral adjustment. Moreover, child's positive behavior, in a retroactive cycle, contributes to reinforcing parental self-efficacy. On the contrary, when a child presents externalizing behavior, this retroactive cycle causes parental self-efficacy to deteriorate. For instance, a parent facing each day his child's non-compliance, agitation or aggressiveness, comes to doubt his ability to reach his parenting goals and to positively influence his child's development. Parents develop a more and more negative perception of their own skills, and this influence directly their behavior.

A direct relationship between parental self-efficacy and child behavior has also been documented. Studies have shown that the more a parent feels competent and believes in his educative power, the more positive is his child's development (Coleman & Karraker, 2003; Hoza & Owens, 2000; Jones & Prinz, 2005; Primack et al., 2012; Slagt, Deković, de Haan, van den Akker, & Prinzie, 2012). But as mentioned earlier, most of these studies are correlational and do not provide evidence on the direction of this relationship. A difficult child may weaken parental self-efficacy and vice-versa, a parent with low self-efficacy may use negative parenting practices.

Research on the mechanisms explaining this link between parental self-efficacy and child behavior in parenting programs has unsurprisingly demonstrated parenting behaviors are involved in this process, playing a mediational role. The study of the Home-Start program (Deković et al., 2010) concluded that participating in the program was related to the changes in the parental self-efficacy, which in turn predicted changes in parenting. This program provided support to mothers with young children who experienced difficulties in childrearing and lead to enhanced self-efficacy. In a following study on another parenting intervention for adolescents called Multisystemic Therapy, Deković et al. (2012) confirmed that the improvements in parental self-efficacy during the intervention lead to more positive discipline and resulted in a decrease of adolescents' externalizing behavior. For the authors, these results affirm the importance of directly targeting parental self-efficacy in future interventions.

This is also consistent with the study of Trifan (2015) on harsh parenting parental, in which she showed that self-efficacy was the mechanism of change, in terms of reduction of harsh practices following intervention.

Teti and colleagues had showed early on how parental self-efficacy serves as the "final common pathway" in the prediction of parenting behavior and parental sensitivity towards the child in particular (Teti, O'Connell, & Reiner, 1996). On this basis, these authors recommended that "although the construct of self-efficacy in clinical

experimental research is well established (Bandura, 1986), its importance as a determinant of parenting behavior, and as a primary target of intervention in its own right, is still evolving. This is a positive trend and one that we hope continues.” (p247).

Despite these recommendations, parenting programs focusing on self-efficacy remain scarce. This will be investigated further in the meta-analytic review in Part I.

These gaps in the existing literature confirm the interest to explore further the causal relationship between parental self-efficacy and child behavior and focus on parental self-efficacy in intervention.

Exploration of predictors of parenting programs’ efficacy

In line with the second strategy to improve parenting programs, this dissertation will explore several predictors: socio-economic risk (SES), child EB initial severity and child temperament. The reason why these predictors were selected is because socio-economic risk and child EB initial severity (Callahan & Eyberg, 2010; Leijten et al., 2013) are described in many studies as highly related to both child behavior and parenting.

Concerning socio-economic status, several studies have shown that parents with a low level of education and income benefit less from parenting programs (Lundahl et al., 2006; Reyno & McGrath, 2006). However, there is a controversy on this issue. For McGilloway et al. (2012), Beauchaine, Webster-Stratton and Reid (2005) and Gardner et al. (2010), children of at-risk families derive considerable benefits from programs, while other research has shown that moderation effects of SES risk are not visible at post-test but only at follow-up (Menting et al., 2013).

Concerning initial severity of child behavior, some reviews (Leijten et al., 2013), such as the review of the Incredible Years program by Menting, Orobio de Castro and Matthys (2013), suggest that the level of children’s EB at baseline is a main predictor of the intervention’s effect on children. The more agitated, oppositional or aggressive children are, the more effective parenting interventions are on decreasing child’s EB. But others have concluded that there is no systematic effect of initial severity (Shelleby & Shaw, 2014). Therefore, the predicting role of the level of children’s EB at baseline is uncertain.

In the meta-analytic review in Part I, the moderating role of both initial severity and SES on parenting intervention efficacy will therefore be explored. In any case, the effects of these factors have not previously been investigated in the case of programs focusing on parental cognitions, in particular self-efficacy.

A third important predictor is child temperament. It refers to constitutionally-based individual differences in reactivity and self-regulation in the domain of affect, activity and attention (Rothbart & Bates, 2006). In parenting research, it relates also to the issue of differential susceptibility which states that children are differently affected by their environment, whether it is favorable (for better) or detrimental (for worse). Several models of individual differences in environmental sensitivity postulate that some children

may have an increased sensitivity to negative stressful environments (diathesis stress) (Caspi et al., 2002), some to favorable environments (vantage sensitivity) (Pluess & Belsky, 2013), or to both types of environment (differential susceptibility) (Belsky & Pluess, 2009). Slagt (Slagt, Dubas, Deković, & van Aken, in press) recently analyzed 84 longitudinal studies that reported on a parenting-by-temperament interaction predicting child adjustment. Results show that children higher on negative emotionality, compared to children lower on this trait, are more vulnerable to negative parenting but also profited more from positive parenting, supporting the differential susceptibility model. This was however only present when emotionality was assessed during infancy. It was also more pronounced when parenting was assessed using observation compared to questionnaires.

Research questions and hypotheses

Research questions and explanatory model

In this dissertation, we will try to contribute to current research on parenting intervention by looking at the most efficacious means to help parents of externalizing preschoolers. We will test empirically if and to what extent the parental cognition of self-efficacy leads to an improvement of child behavior.

Two hypotheses underlie this work. The first relates to the causality link between parental self-efficacy and child behavior. The second focuses on the elements that influence this causality link.

As an attempt to respond to these questions, two empirical studies will be presented and discussed in Part II. They have been carried out with two samples: parents of normally developing children and parents of at-risk and clinical children for externalizing behavior. Predictors of parental self-efficacy enhancement effects and possible negative effects of intervention are discussed.

As detailed earlier, most studies analyze the relation between parental behavior and child behavior, with parental SEB analyzed as a moderator or a mediator (Deković, Asscher, et al., 2012), with the assumption that parental self-efficacy is a stable element of parenting to control for (figure 1). Self-efficacy has also been described as a mediator between parent-child characteristics, socio-contextual factors (maternal depression and child health risk) and parenting behavior (Teti et al., 1996). The reciprocal relationship between parent and child behavior has also been widely documented (Sameroff, 2010). This model has already been challenged by Deković and colleagues who made major contributions to research on parental self-efficacy (Slagt et al., 2012) by describing parental self-efficacy as a predictor of parenting behavior that influences then child behavior.

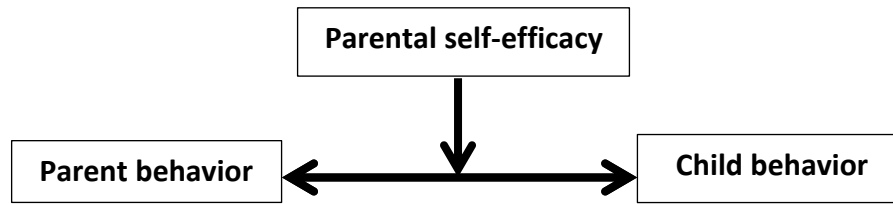


Figure 1: Bidirectional model of parent and child behaviors with parental self-efficacy as a moderator

In this dissertation, we will follow-up on this change of perspective which turned the figure around by putting parental self-efficacy at the start of the model. Our contribution lies in the conception that self-efficacy can be a predictor to modify, and not just only as a predictor to assess. The relation between parental self-efficacy and child behavior will be at the heart of this dissertation, focusing on the direct link between parental SEB and child behavior (figure 2). The indirect relation between parental self-efficacy and child behavior will also be looked at through the effect of parental self-efficacy on parenting behavior.

In this dissertation, the causal relation of parent self-efficacy on child behavior and parent behavior will be tested through both experimental and intervention micro-trials as well as a meta-analytical review. The influence of three predictors on this relation will be detailed, i.e. child EB initial severity, socio-economic risk and child temperament.

Parental self-efficacy and child externalizing behavior

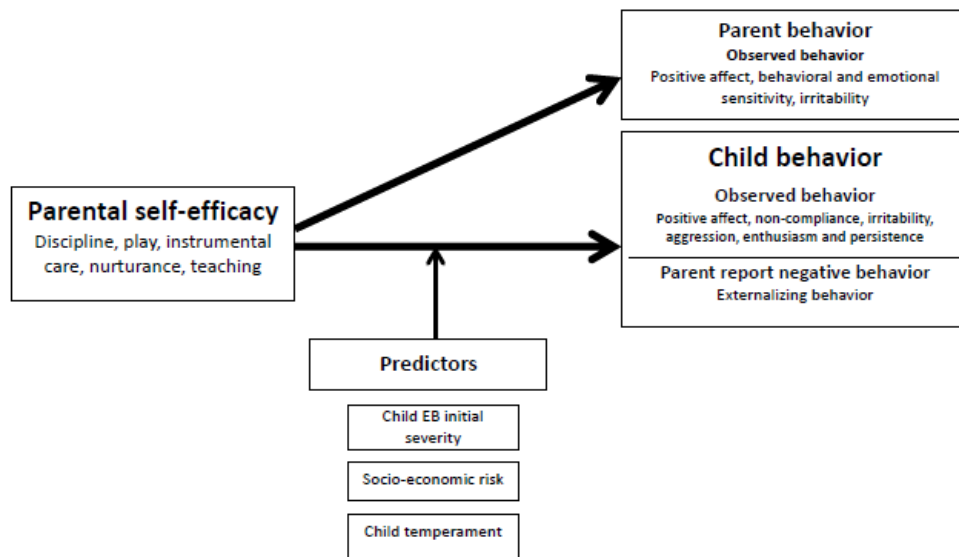


Figure 2: Dissertation causality model of parental self-efficacy on child behavior

Hypotheses

The main hypothesis tested in this dissertation is the following: an improved parental self-efficacy has a positive impact on child behavior. A positive effect of parental self-efficacy's enhancement on parent's behavior is also expected.

The secondary hypothesis details the impact of predictors on this causality link between parental self-efficacy and child behavior. Three predictors have been identified in previous research: child EB initial severity, socio-economic risk and child temperament.

Based on the existing contradictory findings in literature, no hypotheses were elaborated on the effect of socio-economic risk and initial EB severity. Finally, children would be affected differently by the parenting intervention according to their temperament, confirming a differential sensitivity. Children with high levels of negative emotionality would benefit more from the intervention than other children.

Choice of populations

In this thesis, two types of population will be analyzed: community on one side, at risk and clinical populations on the other side. As mentioned earlier, externalizing behavior is a relative disorder that can be present in most children, at various levels of severity. First, the causality link will be tested with parents of normally-developing children with a low level of EB, coming from families with low levels of SES risk. Then, a parenting intervention will be tested with parents of at risk and clinical children with higher levels of EB and SES risk. This way, a wide variety in EB severity and socio-economic status allows us to cover a wide range of EB measured on a continuum and test the predictive role of both initial EB severity and SES risk on intervention effects.

Dissertation content

First, part I is dedicated to two key theoretical and methodological issues for this dissertation. A meta-analytical study reviews 35 parenting intervention programs aimed at reducing preschoolers' externalizing behavior, with the goal of identifying existing cognitive interventions and comparing their effects to other interventions on the basis of their behavioral or combined behavioral-cognitive orientation. Then, considering the importance to use different informants and instruments to assess child behavior, an observation paradigm was used in all our empirical studies. The validation of this observation paradigm of parent-child interaction is described and discussed.

In part II, two empirical studies are presented and their results discussed. The first study, called *Confident mothers*, is a micro-trial testing the causality link between parental self-efficacy and child behavior, in a community sample of mothers. Based on this first study's results, the second study describes an innovative parenting intervention called *Confident Parents* manipulating parental self-efficacy to improve child behavior in at-risk and clinical samples. It includes a hierarchical multi-level analysis looking at various predictors of intervention effects, e.g. socio-economic risk and EB initial severity. The

moderating role of child temperament is analyzed in a specific study through regression and Regions of Significance analyses to test child differential sensitivity to parenting. Last, other effects of parenting intervention, including unexpected negative effects, are also analyzed in the last study of this section, looking in particular at the coparenting dimension of parenting.

Next, results of these various studies are discussed in the final part of this dissertation, illustrated by clinical vignettes. Limitations and suggestions for future research are detailed. In annex, the main questionnaires used in our studies are presented.

Some studies of this dissertation have been prepared in close collaboration with other colleagues of the H2M study. This collaboration contributed to make possible within a doctoral thesis the carrying out of a meta-analysis, an experimental study and an intervention study and the close cooperation in another experimental study and another intervention study. This explains why one of the articles included in this dissertation on the validation of the observation paradigm has been primarily written by Laurie Loop.

Part I Literature review and methodological elements

Meta-analytic review of parenting programs to reduce child externalizing behavior

This meta-analytic review evaluates 35 parenting programs to analyze their effectiveness at reducing preschoolers' externalizing behavior (EB), looking in particular at whether their behavioral or cognitive orientation moderates their effect. It confirms that parenting interventions are effective at decreasing preschoolers' EB but no moderation effect was found for specific orientation. No exclusively cognitive intervention was identified. This illustrates the current difficulty in comparing programs on the basis of their theoretical background and processes, which are often inadequately described in literature. This prevents a thorough understanding of which are the most efficient parenting variables to manipulate and which change processes are actually at stake.

Keywords: Meta-analysis; Parenting; preschoolers; intervention; externalizing behavior.

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Parenting programs to reduce preschoolers' externalizing behavior

A meta-analytic review of their behavioral or cognitive orientation

Introduction

Most young children exhibit externalizing behavior (EB) defined as aggressive, noncompliant, oppositional or agitation behaviors, at a low level (Brennan & Shaw, 2013). Five to 14% display a moderate to clinical level of EB, raising concerns among parents and school or mental health professionals about their social and academic development (Nixon, 2002; Reyno & McGrath, 2006). These concerns are confirmed by many longitudinal studies demonstrating the negative impact of the early onset of externalized behavior on child's development (Campbell, Shaw, & Gilliom, 2000). Behavior problems in children predict an increased risk of substance dependence, delinquency and criminal behavior in adulthood, poor psycho-social outcomes (in terms of work, financial and marital outcomes) as well as persistent antisocial behavior (Moffitt, Caspi, Harrington, & Milne, 2002).

This preschool period is a sensitive developmental time for children (Diamond, 2013). Their executive functioning is progressively gaining complexity, as well as their language skills and social competence. Children develop these various skills through their first experiences of being in a group, often in preschool. But at the same time, parenting remains one of their main sources for understanding the world and adapting to it, notably through parental modeling.

To limit the potential negative outcomes of early EB and because of the importance of parenting at that age, clinical interventions have been developed for parents since the 1970s (Lundahl et al., 2006; Shelleby & Shaw, 2014). Parenting intervention here refers to interventions aiming at reducing preschoolers' EB through individual or group support to parents to improve their parenting. They treat parents as primary agents for change because of their closeness to their children through their daily interaction and focus intervention sessions on them, on the basis of the theoretical framework of Patterson (2010) and Mc Mahon and Forehand (2003). Most parenting programs are behavior-oriented. They consist of teaching parents how to manage their children's behavior, through positive reinforcement of appropriate behavior, in particular prosocial behavior, ignoring slightly maladaptive behavior and using appropriate discipline strategies like quiet time or time-out. Some interventions are also cognitive-oriented. They aim to modify parental cognitions such as causal attributions, parental perceptions of their children (Renk, 2011), self-efficacy or emotional states related to parenting such as stress

(Kazdin & Whitley, 2003; Mackler et al., 2015), all related to the management of children's behavior. At first, individual support was provided to families, and then group work became popular in the 1990s. Concerning the group parenting programs' organization, most are based on weekly group sessions of two hours taking place during from 1 to 24 weeks of treatment. A few of these parenting intervention programmes have been standardized and widely implemented across the world in several diverse cultural contexts such as Incredible Years (Webster-Stratton & Herman, 2010), Parent Child Interaction Therapy or PCIT (Eyberg, Nelson, & Boggs, 2008) and Triple P- Positive Parenting Program (Sanders, 1999).

How effective are these parenting interventions? The term effectiveness is considered here along a continuum measured by effect size (ES) rather than distinct categories (effective versus ineffective) and relates to the reduction of child's EB (Menting et al., 2013). Since the 2000s, meta-analyses and systematic reviews have reported small to moderate average effects of parenting programs ($d=0.35 - 0.53$) (Lundahl et al., 2006; McGilloway et al., 2012; Piquero, Farrington, Welsh, Tremblay, & Jennings, 2009). Some meta-analytic reviews looked exclusively at one specific programme such as Incredible Years implemented in 50 studies (Menting et al., 2013) or Triple P in 55 studies (Nowak & Heinrichs, 2008) with effect size of respectively 0.27 and 0.35. This focus on one specific program limits the generalization of conclusions to other programs. Another drawback of existing meta-analyses is that they often cover wide child age range and do not focus on preschoolers, although it is a critical period for EB.

Beyond efficacy measured by mean effect, a key issue is also to analyze for whom and at what dosage these programs are effective. Many studies tested the global effectiveness of parent programs, but the participants' and programs' characteristics vary greatly. Some of these elements are moderators (conditions under which a treatment may be more or less effective, such as treatment characteristics - number of sessions, parents' involvement in the intervention or treatment fidelity), others are predictors (preexisting variables not linked to the treatment and having a main effect regardless of group, such as children's or parents' gender or temperament). Established for years in a global manner, this influence of factors on intervention effect has become the focus of recent studies looking at specific factors or methodological issues (La Greca, Silverman, & Lochman, 2009; Shelleby & Kolko, 2015). These factors cover three aspects: participants' characteristics (i.e. child's EB level at baseline, child's gender and age); methods of evaluation (i.e. type and number of informants: parents, teachers or observer) and interventions' characteristics (i.e. programs' components and delivery methods).

Participants characteristics

Child's age or gender are not predictive of intervention effectiveness (Lundahl et al., 2006; Shelleby & Shaw, 2014). Concerning initial severity of child behavior, some reviews, such as the review of the Incredible Years program by Menting et al. (2013), suggest that the level of children's EB at baseline is a main predictor of the intervention's effect on children. The more agitated, oppositional or aggressive children are, the more effective

parenting interventions are on decreasing child's EB (Leijten et al., 2013). But others have concluded that there is no systematic effect of initial severity (Shelleby & Shaw, 2014). Therefore, the predicting role of the level of children's EB at baseline is uncertain.

Methods of evaluation

Effects size also depends on who is describing the child's behavior (Stephen. Scott, 2001). According to the informant (parent, observer or teacher) and the use of questionnaires or observation, effects of the intervention can vary (Nowak & Heinrichs, 2008). Teacher reports tend to show smaller effects than direct observation or parent reports. Teachers report on children behavior from a different setting from the family's or the lab and there is relatively little data to support the transfer of effects of parenting intervention to the school setting. Direct observation of parent-child interaction is often described as a more conservative approach to examining effects but several studies demonstrated that observed behavior was more sensitive to intervention effects than parent ratings of behavior (Gardner et al., 2006; Menting et al., 2013). The meta-analytic study of variations across informants in particular between the parent participating to the program and other informant, i.e. the other parent or the teacher, remains an important topic with regard to methodological and clinical issues.

Intervention characteristics

Regarding interventions' characteristics, the length or number of sessions is generally not relevant to explain effect differences (Beauchaine, Webster-Stratton, & Reid, 2005; Serketich & Dumas, 1996). This has led some authors to conclude that lengthy interventions were not always necessary to produce higher effectiveness, considering that "less" can "be more" (Marian J. Bakermans-Kranenburg et al., 2003). This is also true regarding the number of intervention components, for which reviews show that stacking intervention in a programme does not always provide better outcomes (Beauchaine et al., 2005; Kaminski, Valle, Filene, & Boyle, 2008). Another meta-analytic review (Kaminski et al., 2008) tried to determine which program components and delivery methods were reliably associated with more successful outcomes in terms of parenting (skills, knowledge, self-efficacy, attitudes) and preschoolers' behavior (externalizing and internalizing, as well as school and social outcomes). The authors looked at 18 key ingredients of the programs, but not their theoretical mechanisms. Some components were related to parenting behavioral skills (child development knowledge, care, use of time out, emotional communication), while others covered techniques to improve these skills (role play, modeling, parents practicing with their own child, etc.) as well as ancillary services (such as mental health or substance abuse services, social support or educational assistance). No cognitive components were included in their selection. Through a regression analysis taking into account indicators of the interventions' methodological rigor, this meta-analysis showed that four components of parental child-rearing behavior were associated with a greater effect size on child's EB: positive interactions with the child, time out, consistent responding to the child's behavior and parents practicing with their own child at home. Authors concluded that actively including parents in creating

positive interactions with their child and practicing new skills is more efficient than modeling or teaching, in which parents are less active. While this meta-analysis made an important contribution to the field, it listed exclusively behavioral components, leaving out cognitive or combined ones (cognitive and behavioral).

Actually, these past meta-analyses have not looked at what is actually at stake in parenting interventions. In behavior-oriented interventions, the main change process is based on parenting modeling. Trainers or practitioners leading the intervention show parents vignettes of “good parenting practice”, use role playing techniques and provide practical exercises with instructions to implement at home with their children, in view of decreasing their non-compliance, opposition or aggressiveness. As explained by Serketich & Dumas (1996), these programs aim at establishing a shift in social contingencies, by using differential reinforcement, a shift towards prosocial behavior in children leading to positive parental reinforcement as opposed to aversive behavior that is punished or randomly ignored by parents.

Some programs also include an explicit cognitive orientation. They induce a modification in parents’ perception of their children and their behavior, without any focus on parenting practices. Rather than modeling behaviors, they enhance parental self-efficacy by focusing parents’ attention on positive experiences with their child, and modify expectations towards children or reduce stress (Kazdin & Whitley, 2003). Cedar and Levant (1990) examined 26 studies on a non-behavioral program called Parent Effectiveness Training focusing on positive communication, active listening and appropriate assertiveness. Authors found no effect on child behavior but positive changes in parental attitudes and communication with their child. But the narrow focus of this study on a single program precluded a thorough analysis of the variety of treatment variables on child outcomes and generalization to other programs.

Parenting programs do not always stipulate clearly which specific parenting variables are manipulated, what is their orientation, whether they are of a behavioral or cognitive nature, and what change processes they intend to activate (Beauchaine et al., 2005; Kaminski et al., 2008). Consequently, meta-analytic reviews rarely differentiate parenting interventions according to their focus and orientation, as confirmed by Lundhal and colleagues (2006) who concluded that it was difficult to compare behavioral with non-behavioral interventions. This makes it difficult to understand which orientations are likely candidates for success. In order to do so, it could be helpful to clarify what these focuses and change processes are. Without such information, how can the programme be replicated or adapted in a focused version concentrating on potentially effective focuses and to tailor it to the needs of families? The question is not only to document an isolated causal relation between a specific orientation and child EB but rather to investigate to what extent it is better to activate cognitive, behavioral or both theoretical mechanisms to reduce preschoolers’ externalizing behavior. Therefore, updated research studying the effectiveness of program at reducing children’s EB according to their orientation is necessary (Eisenberg, Champion, & Ma, 2004).

Current study

In view of these gaps, the main objective here was to compare the immediate effect of parenting programs on EB in preschoolers (3-7 years old) according to their orientation. The selection of this age range was based on its critical nature for EB, both in terms of child's executive functioning, language and social skills development, and of the importance of parenting at that age. Even though parenting is the manipulated variable, it was decided to focus here on child's EB exclusively as the outcome, without analyzing interventions' effect on parenting, for several reasons. First, EB was the core issue of the selected studies. Second, EB's measurement is usually based on a limited number of instruments (i.e. CBCL or ECBI scales) and therefore easily comparable. This is less often the case for parenting which is measured through a wide variety of tools (various questionnaires, observational measures based on various paradigms). Therefore, we focused our analysis on child's EB in order to maintain a good level of homogeneity in our studies' sample.

In this meta-analytic review, we had a particular interest in identifying whether these programs were behavior-oriented, cognitive-oriented, or both. On the basis of the differences described above, we hypothesized that behavioral and cognitive programs would have different effects on children's EB.

Materials and method

Inclusion and exclusion criteria

To fulfil our objective of analyzing the immediate effect of parenting programs on preschoolers' EB, we included the following studies in our selection: randomized control trials studies published in French, English, German or Spanish for either children displaying a clinical level of EB or non-referred children and aged 3 to 7 years old. The included parenting interventions had to explicitly stimulate parenting variables: either behaviors (e.g. praise or reward) or cognitions (e.g. self-efficacy beliefs or methods of dealing with stress). Concretely, they had to implement specific activities to modify these behaviors or cognitions and not only aiming at these goals in a global manner. The included studies had to report the immediate change in children's EB after program attendance, using a pre-post-test research design and compare it to a control group (no-intervention, waiting-list or treatment-as-usual). Finally, the programs had to be attended exclusively by biological parents. We excluded programs designed for preschool teachers or siblings and studies with children or parents displaying mental health problems such as autism, mental disability or depression. Studies with specific samples such as adoptees, foster care children or teenage mothers were excluded as well, in order to avoid other risk factors variables having an impact on children's EB.

Document search, review and retrieval

Four independent investigators carried out the document search, review and retrieval. The search was conducted between September 2014 and February 2015 and limited to

publications from 1990 onward. This year milestone was chosen because previous meta-analyses already covered the years before 1990, such as Serketich and Dumas' (1996). Several databases were used: Eric, Francis, Psycarticles, PsycINFO, Scopus, and Medline. The search terms used related to program descriptors, program targets, program outcomes, and beneficiaries' age. For the program descriptors, the keywords were *intervention*, *program*, *manipulation*, *training* and *treatment*. For program targets, the keywords were *parent* (or *parenting*) *behavior*, *childrearing*, *cognitions*, *skills* and *competence*. For the program outcomes, they were *externalizing* (or *externalized*) *behavior* (or *behavior*), *ADHD* (or *hyperactivity* or *agitation* or *arousal*), *conduct disorder* (or *disorders*), *opposition* and *aggressiveness* (or *aggressive*). For beneficiaries' age, they were *preschoolers* (or *children*) with a mean age ranging from 3.5 to 5.5 years. The number of unduplicated studies was 1,172. After a first selection based on abstracts, 176 articles were retrieved. After the full reading of the 176 articles, 59 were found to be eligible. A second in-depth reading led to 24 more studies being excluded because of multiple published reports (two or more publications included results from the same sample on the same measures), or comparison of two programs without a no-intervention or waiting list group, or lack of inclusion of the necessary statistics for meta-analytic computation. The final set encompassed 35 studies with a total of 3,201 participants (1,475 controls and 1,726 participants in a parenting program).

Data abstraction

Coding forms were used to collect information about participants, intervention, outcomes, and results. In particular, information about participants included boys' percentage, pathological level of EB (with a score above a clinical cut-off point on a standardized EB scale), as well as participating parents' gender. Note that in the vast majority of studies, mothers participated in the program, sometimes a percentage was indicated. None was specifically dedicated to fathers only. When both mothers and fathers attended the program, the studies did not indicate whether they attended as couples or not, or what the percentage of mothers and fathers was. Therefore, this information was no longer kept in the analyses because of the difficulty of obtaining systematic and comparable information within the selected studies. A categorization of studies would have been necessary to analyze this information, with all the methodological limitations this involves (Shelleby & Shaw, 2014). Information about interventions included program duration (in weeks) and program delivery format (group sessions, individually or self-administered). Note that group sessions were combined with individual contact with participants through telephone calls or individual meetings in a majority of studies. Note also that in self-administered programs, the duration was calculated as the number of weeks between the pre- and the post-assessment. We also coded whether the program stimulated parenting behaviors only, cognitions only, or both. Information about programs was extracted from the studies' "treatment" or "intervention" section of the published articles as well as from original manuals or official program websites. Those that reported explicitly to stimulate parents' discipline, management strategies, skills, practices, behaviors, instructions, or problem-solving

techniques were coded as intervention on behaviors (B). Those that reported explicitly to stimulate parents' beliefs, confidence, attributions, thoughts, expectations, sense of responsibility, representations or methods of dealing with stress were coded as intervention on cognitions (C). Programs mentioning activities and processes belonging to both these categories were coded as behavioral and cognitive (CB). Programs that modified parenting behaviors and in which cognitions were only modified indirectly and not explicitly or when cognition modification was only implied were categorized as behavioral (B), not cognitive and behavioral (CB).

Our sample of studies is composed by a majority of studies implementing standardized intervention programs such as Triple P (n=12), Incredible Years (n=9), and to a lesser extend Parent Child Interaction Therapy (n=3), Tuning in to kids (n=2) and Parent Management Training (n=2). Seven studies evaluate parenting interventions, not yet replicated. For standardized interventions, several variants often exist, in particular for Triple P studies for which five levels of intervention exist. Most selected articles do not mention explicitly the level of Triple P that is implemented, reason why we decided not to report this information. These programs can vary on the setting (group versus individual), the number of sessions (short versus long version), the way they are administered (self-administered based on books, on line, television viewing or supervised by a professional) and their orientation (exclusively behavior- or with a cognitive-behavior oriented), which explains why some of the Triple P programs are behavioral and others cognitive-behavioral, as described in Table 1. A cross-coding was done by two different coders, with an intercoder score of 94.3%. After discussion, both coders agreed on the final code of the only two studies on which there was a disagreement.

With regard to information about outcomes, children's EB was the primary outcome of interest. In all 35 selected studies, the main outcome was reported by the participating parent. In addition, in a subsample of studies (n=16), children's EB was also reported by another informant (the other parent, a preschool teacher or investigator's observation). Finally, information about the results provided the necessary statistical information for meta-analysis statistics, in particular the number of subjects attending the parent program, the immediate post-test mean and standard deviations in control and treatment groups. Variables coded for program participants, intervention type and outcomes are described in Table 2.

Table 1. Behavioral (B) and cognitive-behavioral (CB) orientation of the programs

Citation	Name of programme	Parenting behaviors (B), cognitions (C) or both (CB) stimulated	Coding
(Axberg & Broberg, 2012)	Incredible Years	Interventions that foster a more secure child–parent relationship reduce harsh and inconsistent parenting and poor monitoring, decrease the child’s association with deviant peers, and promote the child’s positive bonding to school. (...) Principles for how the child can best be handled, based on the specific theme, are outlined. In role play sessions the parents practice how they can interact with their child in accordance with these principles, and in addition the parents get a weekly assignment to practice their newly acquired skills at home.	CB
(Bor, Sanders, & Markie-Dadds, 2002)	Triple P	Standard behavioral family intervention composed of 17 core child management strategies. Ten are designed to promote children’s competence and development: quality time, talking with children, physical affection, praise, attention-engaging activities, setting a good example, ask, say, do, incidental teaching, behavior charts. Seven strategies help parents manage misbehavior: setting rules, directed discussion, planned ignoring, clear, direct instructions, logical consequences, quiet time, time-out. In addition, parents are taught a 6-step planned activities routine to enhance the generalization and maintenance of parenting skills.	B
(Connell, Sanders, & Markie-Dadds, 1997)	Triple P : self-directed behavioral family intervention	Behavioral family intervention in a self-directed format. Acquisition of skills known to influence children’s development, including creating a safe and engaging environment providing opportunities to explore, discover and learn, creating a responsive environment including incidental teaching, using positive encouragement and attention to motivate children to learn new behaviors and skills, using consistent and assertive discipline encouraging children to accept limits and develop self-control, development of realistic, age-appropriate expectations and beliefs about children and their behaviors. Parents prompted to self-monitor their own and their child’s behavior, to self-select goals and specific behaviors for change, to select strategies to use to identify their own and their child’s strengths and areas for improvement.	CB
(Day, Michelson, Thomson, Penney, & Draper, 2012)	EPEC: Empowering parents, empowering communities	Improving parent-child relationships, reducing behavioral problems in the child, increasing participants’ confidence in their parenting abilities.	CB
(Enebrink, Högström, Forster, & Ghaderi,	Parent management	Positive parenting, communication, positive reinforcement, information and work about punishment of problematic child behavior	B

2012)	treatment internet-based		
(Gardner et al., 2006)	Incredible Years	Parent-child play, praise, incentives, limit-setting, problem-solving and discipline	CB
(Griffin, Guerin, Sharry, & Drumm, 2010)	Parent Plus Early Years programme	Play, special time, encouragement, supporting children's learning and language, clear instructions, distractions, routines, consequence, assertive parenting, ...	CB
(Hahlweg, Heinrichs, Kuschel, & Feldmann, 2008)	Triple P self-directed with therapist assistance	Encouraging the parents' own problem-solving skills (...) rather than relying on the therapist for solutions. ... advice and support to promote responsibility for changing parents' own and their children's behavior. Discussions are restricted to behavior problems of the target children and elaboration of concepts nominated by the parent.	CB
(Hahlweg, Heinrichs, Kuschel, Bertram, & Naumann, 2010)	Triple P	4 sessions on 17 core child management strategies. 10 are designed to promote children's competence and development: quality time, talking with children, physical affection, praise, attention, engaging activities, setting a good example, ask, say, do, incidental teaching, behavior charts. Seven strategies help parents manage misbehavior: setting rules, directed discussion, planned ignoring, clear, direct instructions, logical consequences, quiet time, time-out.	B
(Hautmann, Hanisch, Mayer, Plück, & Döpfner, 2008)	Prevention Programme for Externalized Problems (PEP)	Parents and kindergarten teachers are taught to strengthen their positive relationship with problem children by engaging in positive child-directed play interactions and by paying special attention to the children's competencies and compliance. Further, parents and kindergarten teachers are trained to communicate commands effectively, to reinforce appropriate behavior, and to discipline inappropriate behavior. The treatment also aims to reduce parental stress by empowering parents, helping them to relax, strengthening their ability to anticipate difficult parenting situations, and to plan adequate solutions.	CB
(Havighurst, Wilson, Harley, Prior, & Kehoe, 2010)	Tuning in to Kids	Emphasis was placed on parents becoming aware of their own emotions as well as their children's emotions, including at a physiological level. In the first three sessions, parents were taught to attend to children's lower-intensity emotions, and how to reflect, label and empathize with children's emotions. The fourth session attended to anxiety and problem solving, and the last two focused on more intense emotions, particularly anger, and included emotion regulation. Strategies such as slow breathing, relaxation, self-control using the turtle technique from Promoting Alternative Thinking Strategies, and safe expression of anger. Parents were also taught skills in understanding and regulating their own emotions, and reflected on the influence of family of origin experiences on their beliefs and responses to emotions.	CB

(Joachim, Sanders, & Turner, 2010)	Triple P Brief discussion group (topic specific)	Specific child management strategies are taught that are alternatives to coercive and ineffective discipline practices, specific advice how to manage their child's behavior in the supermarket and how to prevent behavior problems in shopping trips.	B
(Jones, Daley, Hutchings, Bywater, & Eames, 2007)	Incredible Years	Skills taught on the program include (1) how parents can establish a positive relationship with their children through play and child-centered activities (Barth, Blythe, Schinke, & Schilling); (Barth et al.) Encouraging praise, reward and incentives for appropriate child behaviors; (3) guidance in the use of effective limit setting and clear instruction giving; and (4) strategies for managing noncompliance.	CB
(Kling, Forster, Sundell, & Melin, 2010)	Parent Management Training Practitioner assisted	The program consists of eleven sessions with the following content: (1) self-directed play and positive interaction; (2 and 3) preparations before activities, effective commands, and praise; (4 and 5) tokens and rewards; (6) involving school teachers through home-notes; (7) stopping negative behavior; (8 and 9) behavioral contracts; (10) structured problem-solving; and (11) relapse prevention.	B
(Larsson et al., 2009)	Incredible Years	This program teaches parents the use of positive disciplinary strategies, effective parenting skills, strategies for coping with stress, and ways to strengthen children's social skills.	CB
(Leung, Sanders, Leung, Mak, & Lau, 2003)	Triple P	The program introduces positive, nonviolent child management techniques to parents as an alternative to coercive parenting practices. It also emphasizes the importance of changing unrealistic or dysfunctional parental cognitions, specifically attributions and expectations in their child management, and helps parents to identify alternative explanations for their children's behaviors.	CB
(Markie-dadds & Sanders, 2006)	Triple P Self-directed	The program involved teaching parents 17 core child management strategies. 10 of the strategies are designed to promote children's competence and development (i.e. quality time; talking with children; physical affection; praise; attention; engaging activities; setting a good example; Ask, Say, Do; incidental teaching; and behavior charts) and seven strategies are designed to help parents manage misbehavior (i.e. setting rules; directed discussion; planned ignoring; clear direct instructions; logical consequences, quiet-time; and time-out). In addition, parents were taught a 6-step planned activities routine to enhance the generalization and maintenance of parenting skills (i.e. plan ahead; decide on rules; select engaging activities; decide on rewards and consequences; hold a follow-up discussion). Consequently, parents were taught to apply parenting skills to a broad range of target behavior in both home and community settings with the target child and all relevant siblings; Emphasis on parent-self regulation and promotion of parental self-sufficiency.	CB

(Matos, Bauermeister, & Bernal, 2009)	Parent Child Interaction Therapy (PCIT)	Parental coaching during dyadic play. Parents were taught how to direct their children's activity while being instructed in the use of clear, positively stated, direct commands and consistent consequences for behavior (e.g., praise for compliance, timeout in a chair for noncompliance). Parents learned to establish and enforce "house rules" and to manage their children's behavior both at home and in public places.	B
(McGilloway et al., 2012)	Incredible Years	Program topics include play, attention and involvement, listening, problem solving, praise, incentives, and limit setting and other non-aversive discipline strategies. The program promotes positive parenting techniques, such as child-directed play and encouragement, to foster child cooperation and strengthen parent-child relationships. Child problem behaviors are addressed by encouraging parents to reinforce positive prosocial behavior and to use non-aversive discipline strategies (e.g., time-out) to tackle aversive or inappropriate behaviors.	CB
(Morawska, Haslam, Milne & Sanders, 2011)	Triple P Brief intervention (discussion group)	The key points covered in the discussion group included reasons for disobedience, parenting traps, encouraging good behavior, and managing disobedience. To increase parenting skills in promoting social, emotional and behavioral competence in children. To reduce parents' use of coercive and punitive methods of discipline, to improve communication about parenting and reduce parental stress.	CB
(Nixon, Sweeney, Erickson, & Touyz, 2003)	Parent Child Interaction Therapy (PCIT)	Parental coaching during dyadic play. PCIT has two major phases. First, there is a focus on improving the child-parent relationship by teaching parents to play with their children in a positive, nondirective manner and labeled <i>special playtime</i> (Sessions 1 to 5). During this phase, parents are also taught basic skills (e.g., selective ignoring, labeled praise) to help modify unwanted behaviors of their child that would respond to such strategies. The focus of the second phase (labeled <i>discipline skills</i> , Sessions 6 to 12) was to teach parents skills and strategies in behavior management, using clear instructions in terms of commands to children and appropriate consequences for noncompliance (e.g., time-out and withdrawal of privileges).	B
(Patterson et al., 2002)	Incredible Years	The techniques covered included play and positive interaction with the child, clear commands, limit setting, ignoring undesirable behavior, praising and rewarding desirable behavior, and following through on discipline.	CB
(Roskam, 2015)	Lou & us	'Lou & us' attempts to isolate metacognition as the core process that promotes positive parenting. It is based on a self-monitoring, relatively non-directive approach which can help parents to take control of their own development.	CB

		The aim of 'Lou & us' is to offer an insight into how parents reason, thus making them more aware of how they parent and why they parent the way they do. It considers parents as agents who are self-examiners with a metacognitive capacity to reflect about both their thoughts and actions.	
(Sanders, Markie-Dadds, Tully, & Bor, 2000)	Triple P Self-directed	17 core child management strategies. Ten of the strategies are designed to promote children's competence and development (i.e. quality time; talking with children; physical affection; praise; attention; engaging activities; setting a good example; Ask, Say, Do; incidental teaching; and behavior charts) and seven strategies are designed to help parents manage misbehavior (i.e. setting rules; directed discussion; planned ignoring; clear direct instructions; logical consequences, quiet-time; and time-out). In addition, parents were taught a 6-step planned activities routine to enhance the generalization and maintenance of parenting skills (i.e. plan ahead; decide on rules; select engaging activities; decide on rewards and consequences; hold a follow-up discussion).	B
(Sanders, Montgomery, & Brechman-Toussaint, 2000)	Triple P Television viewing "Families" 12-episode TV program	Parenting strategies designed to address common behavioral problems (e.g., whining and tantrums), to prevent problems from occurring, and to teach children new skills and help them master difficult tasks (e.g., brushing teeth). Brief examples of the causes of child behavior problems from a social learning perspective, and information on how to keep track of child behavior problems by monitoring. Strategies of descriptive praise, positive attention, and providing engaging activities to encourage desirable behavior in children. Range of management strategies such as rule setting, directed discussion, planned ignoring, and the provision of clear instructions that are backed up by either logical consequences, quiet time, or time-out. Dealing with sleeping difficulties, whining, disobedience, and temper tantrums, respectively. How to promote children's creativity, and advice on how to encourage children's involvement in sport and physical activity and how to deal with inappropriate sporting behavior. Discussion on the topics of aggressive behavior and encouraging cooperative play; understanding and dealing with children's eating difficulties; and assisting children with homework, respectively.	B
(Sanders, Baker, & Turner, 2012)	Triple P On line Self-directed intensive 8 module	The intervention provides instruction in the use of 17 core positive parenting skills (e.g., descriptive praise, quiet time, time-out). The content is presented in sequenced modules: 1) What is positive parenting?; 2) Encouraging behavior you like; 3) Teaching new skills; 4) Managing misbehavior; 5) Dealing with disobedience; 6) Preventing problems by planning ahead; 7) Making shopping fun; and 8) Raising confident, capable kids. A distinctive feature of this online interactive program is its emphasis on promoting parental self-regulation. This is achieved through sound instructional design, dynamic and demonstration driven video content, teaching parents self-management skills	CB

		(goal setting, self-evaluation). It focuses on increasing parental self-efficacy (beliefs about capacity to execute daily parenting tasks), personal agency (attributing change to one's own efforts) and self-sufficiency (independent problem solving). It also prompts parents' ongoing participation, without the need for personal contact with a clinician. Triple P Online incorporates elements designed to engage participants and improve knowledge acquisition, positive self-efficacy, and behavior activation.	
(Schuhmann, Foote, Eyberg, Boggs, & Algina, 1998)	Parent Child Interaction Therapy (PCIT)	PCIT has two phases, labeled child-directed interaction (CDI) and parent-directed interaction (PDI). In CDI, which focuses on changing the quality of the parent-child relationship, parents learn nondirective play skills similar to those used by traditional play therapists. In PDI, which emphasizes child compliance, parents learn to direct the child's behavior with clear, age-appropriate instructions and consistent consequences: praise for compliance and time-out for noncompliance. Coaching with bug-in-the-ear microphone	B
(Sheeber & Johnson, 1994)	Temperament focused parent training	The initial focus of the program was on familiarizing parents with the nature of child temperament, describing its role in understanding child behavior, and exploring parental feelings and family difficulties related to parenting a difficult child. Techniques for managing temperament related behavior problem.	CB
(Somech & Elizur, 2012)	Hitkashrut	Strategies : 1/ Father involvement/cooperation 2/ Parental self-regulation (3/ Two-stage consequence 4/ Teacher involvement/cooperation Components: 1/ Interaction quality/ time 2/ Parent-child communication skills 3/ Behavior management 4/ Discipline skills 5/ Self-regulation capacity (imagery and relaxation; parental self-reflection; understanding intergenerational parental patterns) 6/ Couple communication skills.	CB
(Taylor, Schmidt, Pepler, & Hodgins, 1998)	Parents and Children series treatment (PACS)	Parents are introduced to a range of topics including how to play with young children, using praise and rewards effectively, setting appropriate limits, ignoring attention-seeking behavior, using time-out, establishing logical consequences, and focusing on preventive strategies.	B
(Turner & Sanders, 2006)	Triple P Brief 4 session	Advice on managing problem behaviors was provided to the parents. Session 1: history and nature of the presenting problems; Session 2: parents' perceptions of the child's behavior; sharing conclusions about the nature of the problem; Session 3: reviewing family's progress, skill rehearsal or introduction of additional parenting strategies; Session 4: progress review, positive feedback and encouragement.	B
(Webster-Stratton & Hammond, 1997)	Incredible Years	Sessions emphasize the importance of play, ways to help children learn, effective praise, use of incentives, limit setting and ways to deal effectively with misbehavior.	CB

(Webster-Stratton, 1990)	Incredible Years self-administered videotapes	The content of the videotapes included a modification of the interactional model focusing on play skills, praise, and tangible rewards. The last half of the program focused on teaching parents non punitive discipline approaches and a specific set of operant techniques and problem-solving approaches.	CB
(Webster-Stratton, 1992)	Incredible Years	The content included teaching parents play and reinforcement skills, effective limit setting and nonviolent discipline techniques, and problem-solving approaches. In addition to the behavioral aspects of the content of the program, the process of the intervention had some cognitive components. (...) These questions (in the parents' manual) focused on helping parents examine their beliefs about children's behaviors and emotional reactions as well as their own responses.	CB
(K. Wilson, Havighurst, & Harley, 2012)	Tuning in to Kids (De Ocampo, Macias, Saylor, & Katikaneni)	Parents are taught five steps of emotion coaching: (a) become aware of the child's emotion, especially if it is at lower intensity, (b) become aware of the child's emotion as an opportunity for intimacy and teaching, (c) communicate understanding and acceptance of the emotion, (d) help the child to use words to describe how they feel, (e) if necessary, assist them with problem-solving	CB

Table 2. Descriptive information on participants, programs and outcomes

Citation	Child gender (% boys)	EB pathological level treatment (T) or prevention (P)	Program duration(in weeks)	Group sessions (G) or individual program only (I)	Parenting behaviors (B), cognitions (C) or both (CB) stimulated	EB measure by participating parent	EB measure by other informant
(Axberg & Broberg, 2012)	83.87	T	13	G	CB	ECBI	ECBI (teacher)
(Bor et al., 2002)	68.00	T	16	I	B	ECBI	Observation
(Connell et al., 1997)	43.47	T	10	I	CB	ECBI	
(Day et al., 2012)	50.00	P	8	G	CB	ECBI	
(Enebrink et al., 2012)	57.70	T	7	I	B	ECBI	
(Gardner et al., 2006)	73.68	T	14	G	CB	ECBI	Observation
(Griffin et al., 2010)	86	T	12	G+I	CB	SDQ	
(Hahlweg et al., 2008)	51.00	P	10	I	CB	CBCL	CBCL (other parent)
(Hahlweg et al., 2010)	51.00	P	4	G	B	CBCL	CBCL (teacher)
(Hautmann et al., 2008)	78.80	T	12	G	CB	CBCL	
(Havighurst et al., 2010)	51.13	P	6	G	CB	ECBI	ECBI (teacher)
(Joachim et al., 2010)	54.34	P	1	G	B	ECBI	

(Jones et al., 2007)	68.00	T	12	G	CB	Conners	
(Kling et al., 2010)	60.00	P	11	G	B	ECBI	Observation
(Larsson et al., 2009)	80.00	T	13	G	CB	ECBI	ECBI (other parent)
(Leung et al., 2003)	63.77	T	8	G	CB	ECBI	
(Markie-dadds & Sanders, 2006)	63.49	T	10	I	CB	ECBI	
(Matos et al., 2009)	NR	T	17	I	B	ECBI	
(McGilloway et al., 2012)	61.07	T	24	G	CB	ECBI	
(Morawska et al., 2011)	55.20	P	1	G	CB	ECBI	
(Nixon et al., 2003)	70.00	T	12	G	B	ECBI	PSA (other parent)
(Patterson et al., 2002)	NR	T	10	G	CB	ECBI	
(Roskam, 2015)	36.30	P	3	I	CB	PSA	
(Sanders, Markie-Dadds, et al., 2000)	69	T	15	I	B	ECBI	Observation
(Sanders, Montgomery, et al., 2000)	58.92	P	24	I	B	ECBI	Observation
(Sanders et al., 2012)	67.24	T	12	I	CB	ECBI	Observation
(Schuhmann et al., 1998)	59.37	T	13	I	B	ECBI	ECBI (other parent)

(Sheeber & Johnson, 1994)	60.00	T	9	G	CB	CBCL	CBCL (other parent)
(Somech & Elizur, 2012)	77.51	T	14	G	CB	ECBI	
(Taylor et al., 1998)	67.18	T	16	G	B	ECBI	
(Turner & Sanders, 2006)	53.33	T	4	I	B	ECBI	
(Webster-Stratton & Hammond, 1997)	74.50	T	24	G	CB	ECBI	PBQ (teacher)
(Webster-Stratton, 1990)	79.06	T	10	I	CB	ECBI	
(Webster-Stratton, 1992)	72.00	T	10	I	CB	ECBI	ECBI (other parent)
(Wilson et al., 2012)	52.00	P	8	G	CB	ECBI	

NR Not reported; CBCL, Child Behavior Checklist-Externalizing Behavior scale; ECBI, Eyberg Child Behavior Inventory-Intensity scale; PSA, Profil Psycho-Affectif-Problèmes externalisés; SDQ, Strengths and Difficulties Questionnaire-Total Problems; PBQ, Problem Behavior Questionnaire; Conners, Abbreviated Parent/Teacher Rating Scale.

Effect size computation

The standardized mean difference statistic (Hedges & Olkin, 1985) is the conventional effect size for treatment outcome investigations. The StatsDirect software was used (Freemantle, 2000). The post-test mean of the comparison group was subtracted from the post-test mean of the treatment group. The result was divided by the pooled standard deviation as in the following formula: $d = g[J(N-2)]$, where

$$g = \frac{u_e - u_a}{\sigma_{pooled}}, \sigma_{pooled} = \frac{\sqrt{\sigma_e^2(n_e-1) + \sigma_a^2(n_a-1)}}{N-2}, \text{ and } J(m) = \frac{\Gamma(m-2)}{\Gamma[\frac{m-1}{2}] \sqrt{\frac{m}{2}}}.$$

When multiple EB outcomes or multiple treatment conditions had been reported within the same study, only one effect size per study was computed and included in the analysis in order to respect the statistical independence assumption. Following Wilson and Lipsey's recommendation (2001), we selected the most appropriate results information according to our inclusion criteria and the main objective of the meta-analysis. For the purposes of cross-informant analysis, a second effect size was calculated for studies giving an assessment of children's EB by parties other than the participating parents.

Results

Both fixed and random effects models were generated. Random effects models assume that treatment effects may differ between studies, allowing generalization of results. Only random effects are therefore reported here. The mean effect size of the final set of 35 studies was 0.84 (95% CI = 0.61 to 1.07), meaning that the true size of effect was at least 0.61 greater for the group receiving the parenting program compared with the control group that did not. Individual effect sizes ranged from -.08 to 3.72. Examination of the set of effect sizes suggested the presence of an outlier. The question of whether the extreme value influenced the results was tested by running all analyses with and without the potential outlier. None of the results patterns changed. Therefore, for clarity of presentation, all results presented in the current section are based on the full set of effect sizes. The effect size meta-analysis plot is presented in Figure 1, with the size of the square being proportional to the precision of the study (sample size).

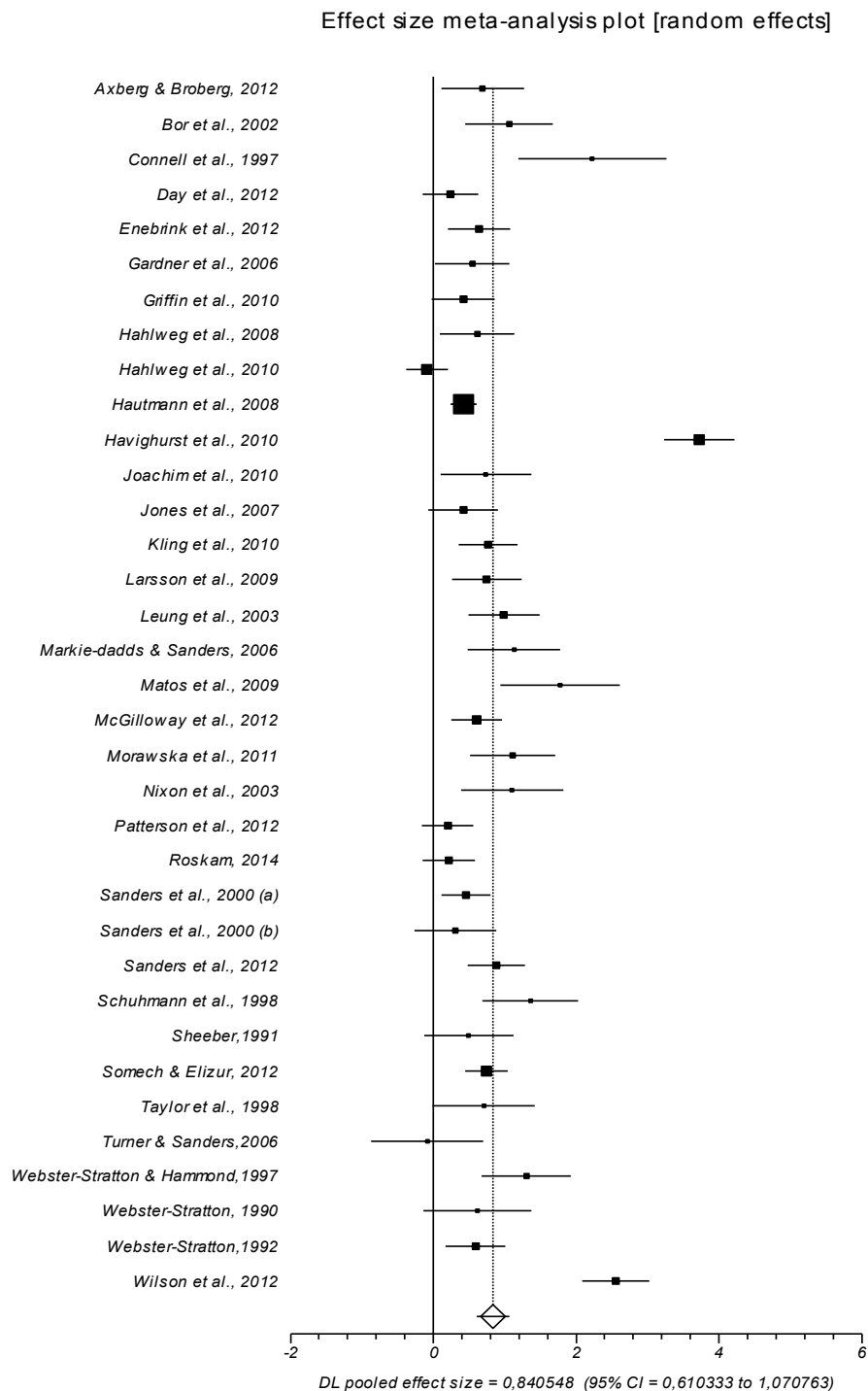


Figure 1. Effect size meta-analysis plot

Homogeneity of results

The Cochran Q test of homogeneity of effect sizes was shown to be significant ($Q[34] = 300.53$, $p < .001$) revealing variability in reported effect size across studies. This result pointed to the need to examine potential moderators of effect size. In addition, variation in standardized mean differences attributable to heterogeneity was assessed with the I^2 statistic, corresponding to the percentage of between-study heterogeneity attributable to variability in the true treatment effect rather than sampling variation. There was evidence for heterogeneity, with $I^2 = 88.7\%$ (95% CI = 85.7% to 90.8%). Such a level of heterogeneity suggests that there are significant differences between studies that cannot be explained by random variations.

Publication bias

Publication bias was assessed with a funnel plot illustrating the relation between sample size and effect sizes. The results are shown in Figure 2. Egger's statistic was computed in order to test if small studies tended to have larger effect sizes than would be expected. The estimated bias coefficient was 3.07, $p = 0.023$, yielding evidence of small-study effects, as is the case in other meta-analyses (P. Wilson et al., 2012).

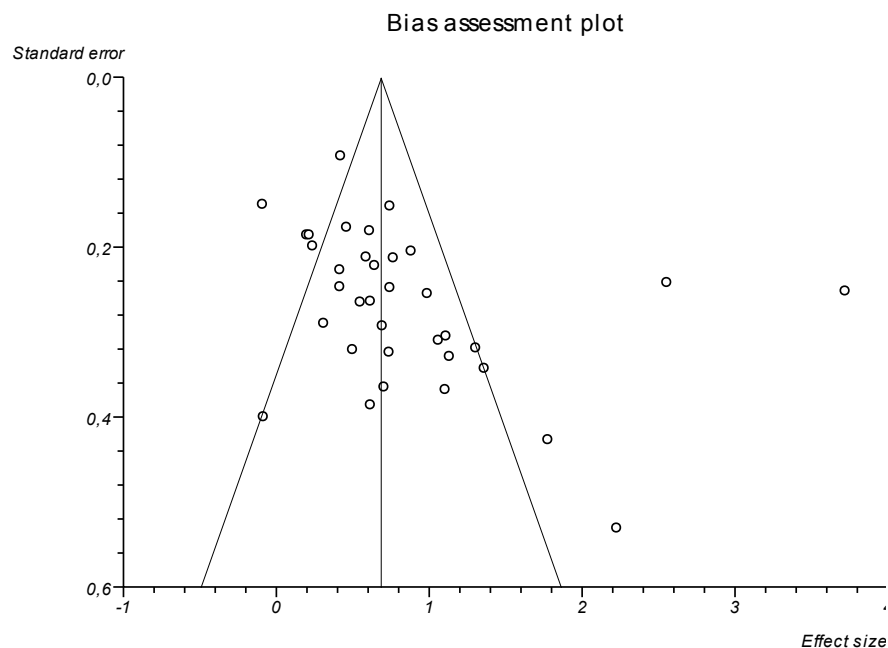


Figure 2. Bias assessment plot

Factors influencing effect size

In a first set of factors, we examined if and to what extent the interventions' orientation was related to effect sizes. Information about the programs orientation indicated that parents' behavior was stimulated exclusively in 12 studies. In the other 23 studies, stimulation addressed both parental behavior and cognition. None of the parenting programs stimulated cognition only. Therefore, we compared behavioral versus cognitive-behavioral programs and found no significant difference ($F(1,33)=.254, p>.05$).

Program duration and delivery format were also analyzed. The correlation between program duration in weeks and effect size was $r=-.01, p>.05$, suggesting that there was no higher effect size related to longer program duration. T-tests were computed also on effect sizes with delivery variables on group vs. individual or self-administered programs. Parenting programs were individual or self-administered programs in 14 studies and delivered in a group in the other 21. No significant difference in effect sizes was found between the two types, $F(1,33)=.02, p>.05$, suggesting that the two types of intervention had similar effect sizes.

Then, we examined if and to what extent participants' characteristics predicted effect size. Concerning gender, the correlation between the percentage of boys and effect size was not significant ($r=-.20, p>.05$). Therefore, interventions could be expected to be equally beneficial for boys and girls, which is consistent with the findings of a recent review by Brennan and Shaw (2013). Concerning age, there was insufficient variance to suggest that children's age had a predicting effect, which is probably due to the focus of this study on preschoolers, with a limited age range (3-7 years old with a mean age between 3.5 and 5.5). Concerning child behavior initial severity, F-tests were computed on effect sizes with children displaying EB, first using dichotomous variable (normal vs. clinical). Children recruited in 11 studies were in the normal EB range, while in the other 24 they were recruited for their pathological level of EB. No significant difference in effect sizes was found between the two groups, $F(1,33)=.57, p>.05$. This suggests that parenting programs have the same effect on normally developing children as on children displaying a clinical level of EB. Second, using continuous variable, we analyzed the children's EB baseline level in a sub-sample of 28 studies reporting child EB at baseline using the Eyberg Child Behavior Inventory (ECBI) -Intensity scale by correlating it with the effect size. The coefficient was $r=-.21, p>.05$, showing no significant relation with baseline EB severity, like for the dichotomous variable. In conclusion, participants' characteristics (gender, age and EB initial severity) seemed to be unable to explain variations in the effect sizes.

In another subsample of 16 studies reporting a post- assessment of children's EB by informants other than the participating parents, a second set of moderators was analyzed. The other parent (father) was the other informant in 6 studies. Observations with investigator's coding were conducted in 6 other studies. Preschool teachers were the informant in the other 4. T-tests for repeated measures were computed on the two effect sizes. A significant difference was revealed, $t(15)=3.04, p<.01$, with effect sizes reported for the participating parent being higher ($M=.81, SD=.86$) than those for the other

informant ($M=.42$, $SD=.60$). This suggests that the parent taking part in the intervention perceived more positive change in the child than the other informers (father, observer or teacher).

In conclusion, the interventions' orientation (behavioral vs combination of cognitive and behavioral stimulation) seemed to be unable to explain variations in effect size, contrary to our hypothesis. The only influencing factor is the informant.

Discussion

The aim of this meta-analytical review was to compare parenting interventions for preschoolers' EB according to their orientation and other influencing factors. Meta-analyses have the advantage that they embrace heterogeneity in effect size in a larger sample. The 35 selected studies concerned more than 3,200 parents and children and covered a good scope of existing parenting interventions.

Mean effectiveness

Results show that parenting interventions are effective at decreasing children's EB, as expected. The mean effect size (0.84) was consistent with earlier meta-analyses looking at this outcome (0.73- 0.85 in Serketich and Dumas (1996), 0.67 in Dretzke et al. (2009), 0.53 in Furlong, McGilloway et al. (2012), 0.35 in Piquero, Farrington et al. (2009), and 0.30 in Kaminski, Valle et al. (2008)). The slightly higher effect size found here could be explained by the fact that the 35 selected studies had to provide data on their orientation (behavioral vs cognitive-behavioral), which was not the case in the aforementioned meta-analyses. Furthermore, the sample includes smaller interventions and not only standardized programmes, which usually show lower effect size (Menting et al., 2013). Partly because of the publication bias, smaller studies were found to have a bigger effect size than larger ones, which is usual in the parenting field (McMahon, Holly, Harrington, Roberts, & Green, 2008). Larger sample studies tend to find smaller effect sizes because they tend to be undertaken on larger scale population. This could be also due to small studies with smaller samples usually failing to report outcomes for participants who drop out before completing the intervention (Serketich & Dumas, 1996). Also, other meta-analytic reviews suggest larger effects for studies conducted by developers-as-evaluators than for independent trials, notably due to better implementation quality in developer-led (Menting et al., 2013). Finally, there might be a selective publishing of small studies with positive results, while larger studies are more likely to be published regardless of their effect size.

No influence of programs' orientation

We were particularly interested in whether programs were behaviorally or cognitively oriented. We postulated that according to which specific parenting variables were addressed, effect size would be different. Our results indicated that there was no difference in ES between behavioral and cognitive-behavioral programs. This could be interpreted as meaning that parenting interventions have a similar positive impact on

children's behavior regardless of their orientation (in terms of behavioral vs. behavioral and cognitive). It might even be taken to imply that focusing on behavior only rather than combining it with cognitive orientation could be sufficient to help limit children's EB. However, this conclusion may be misleading and clearly needs to be nuanced for several reasons. First, it has been difficult to identify specific parenting variables beyond the behavioral ones responsible for EB reduction. Most parenting programs are global and multimodal, which creates methodological difficulties in isolating specific orientations. They stimulate numerous parenting variables simultaneously but do not document on each of them systematically. This is partly because, as Burke and Loeber explain (page 2), "efforts to identify mechanisms of treatment for children with behavioral problems are complicated" (2015). These problems are heterogeneous (opposition, aggressiveness, attention-seeking for instance) and there may be many ways out of EB as there are many ways in, according to the developmental principle of multifinality (Cicchetti & Rogosch, 1996). There is also some comorbidity with internalized behavior (anxiety and depression). Another difficulty lies in the fact that probably no single mechanism will be sufficient to explain the outcomes. "There remains a great level of need regarding evidence as to how these interventions affect outcomes, and whether there are general treatment effects across outcomes, or specific treatment effects on particular mechanisms, which in turn influence particular outcomes", (page 2) (Burke & Loeber, 2015). Another difficulty was that information on orientation was not made explicit in articles or even official manuals or websites on programs, with the assumption that most programs aiming at similar objectives manipulate the same variables and induce the same change processes through similar activities. The way parenting intervention efficacy is reported does not provide sufficient information yet for accurate comparison.

Concerning the other factors, the differences in effect size were not explained by children's gender or EB severity at baseline. This would suggest that parenting intervention has a positive impact on both girls and boys and regardless of the severity of their EB when the program starts. These programs are apparently similarly effective both as prevention and treatment for preschoolers, which is consistent with contradictory results of several recent meta-analytic reviews (Menting et al., 2013; Shelleby & Shaw, 2014). This could also be due to the higher presence of clinical samples (24) compared with non-clinical ones (11) in this review. But, it is interesting to note that other studies that included children rated within the clinical range also found non-significant moderation by baseline child behavior severity (Gardner, Hutchings, Bywater, & Whitaker, 2010; Lavigne et al., 2008; McMahon et al., 2008).

Finally, the only factor identified here as making a difference in effect size between programs is the informant reporting the outcome. The parents participating in the intervention perceived more change in the children than teachers or non-participating parents, as found in other meta-analytic reviews (Menting et al., 2013). This informant bias could be explained by the change in parents' overall representation of their children, induced by the intervention influencing the way these parents actually rate their children's behavior. This could suggest that participating parents overestimate the degree

of change that occurs. It is also possible that change occurs particularly when children interact with participating parents, because they have a more positive parenting style than the non-participating parents. The participating parents may also have improved their ability to observe their child by fine tuning their perception, getting away from a negative systematic bias focusing on difficult behavior. This raises the need for multi-informant ratings of effectiveness, as research shows that there is no Gold Standard Measure of EB. No generalization to other relationships or settings immediately after the program was observed in the compiled studies.

Other moderators probably involved here were not captured by this meta-analytic review. Parents' gender could not be categorized in a methodologically satisfactory way. Change processes (modeling, reinforcement, instruction, metacognition, etc.) were rarely documented in the literature and were often combined in interventions to increase efficacy (Roskam, 2015). Other moderators explaining differences in intervention effectiveness could be the children's language or cognitive profile, in particular in terms of inhibition (Roskam, Meunier, Stievenart, & Noël, 2013) or temperament (Martel, Gremillion, & Roberts, 2012; Rowe & Plomin, 1977), which are known to have an influence on children's EB. It is most likely that these variables contribute to explain why parenting interventions are effective or not. If children have language or cognitive impairments, an intervention on their parents may have a limited effect on the children's behavior.

Limitations and future research

The main limitation of this review, its main conclusion also, is the difficulty to discriminate parenting programs according to their orientation, on the basis of programs' articles and official manuals and websites. Another limitation of this review lies in a possible bias due to treatment fidelity that has not been accounted for here. Unfortunately, not all studies reported such information and the decision was made to not include it in our analysis for homogeneity reasons. Another information not included in this review is the assessment of study quality, recommended by the APA Meta-Analysis Reporting Standards, but which was not a central research question for this review. All of the 35 selected studies were published in peer-reviewed publications that check for study quality.

In conclusion, results clearly illustrate both the need to disentangle programs' orientation and the current difficulty in doing so. One point raised by this micro meta-analytic review is the predominance of cognitive-behavioral parenting programs over programs focusing exclusively on behaviors, and the inexistence of cognitive parenting programs. Nevertheless, if we had limited our classification to what was explicitly documented in the method or intervention section of articles, several programs would have been categorized as behavioral meanwhile they are behavioral and cognitive oriented. By looking at manuals and websites, we were able to capture a clearer view of their orientation. For publication purposes, these articles may have been written in a way to suit evidence-based intervention reporting, putting forward their behavioral dimension.

A few programs have stimulated cognitive processes without reporting it in the article but rather in their wider official documentation.

Another intriguing result of this review is the under-representation of focused cognitive programs, which is not consistent with recent research showing that stimulating process of change such as meta-cognition (Roskam, 2015) or parental cognitive variables such as self-efficacy does in fact impact children's behavior. The latter was documented in a recent randomized controlled micro-trial by Mouton & Roskam (2015) who showed that a change in children's positive behavior could be induced by a cognitive process induced in mothers. Enhancing the cognition of self-efficacy had a positive effect on the children's positive behavior during the interaction with their mothers, with an effect size of 0.64. It also had an impact on their mothers' behavior, with an effect size of 0.63. This type of quasi-experiment focusing on a specific cognitive parenting change process illustrates the need to further investigate the diversity of parenting processes.

This innovative methodology has been conceptualized by (Howe et al., 2010) as micro-trials. These randomized experiments test the effects of relatively brief and focused manipulations designed to suppress specific risk mechanisms or enhance specific protective mechanisms, but do not bring about full treatment or prevention effects in distal outcomes. These trials are not interventions providing a full treatment, but they may contribute to the understanding of the effects of specific variables and change processes on which parenting interventions are built. They analyze immediate effects on proximal child behavior in contrast to traditional randomized control trials that tend to look at distal, long-term effects (Leijten et al., 2015). Micro-trials also differ from traditional intervention studies that are multi-modal and modify several parenting variables because they focus on one specific manipulated variable. This is one among several methodological pathways that can be suggested for going beyond global effectiveness evaluation and an emerging literature is currently developing in this new field of research (Leijten et al., 2015). First, it is necessary to identify the risk or protective factors to focus on. Second, a selection has to be made of specific proximal rather than global long-term distal outcomes by measuring aggressive behavior instead of global EB for instance, without including attention problems, or non-compliance, and multiple informants. Again, manipulating a single parenting risk or protective factor at a time, in an experimental randomized controlled design, be it behavioral (such as praise) or cognitive (such as self-efficacy) or a change process (modeling, reinforcement, instruction, metacognition, etc.), provides clear insight into the relationship between parenting and child behavior. Moreover, the comparison between such micro-trials could increase knowledge in the field of parenting, especially in the parenting process of change.

Analyzing mediation of treatment outcome by parenting behaviors would also add to the understanding of changes in child behavior (Hinshaw, 2002). Preschoolers' development and functioning are strongly influenced by their environment, in particular their relationship with their parents. This meta-analytic review did not analyze this mediation effect of parenting improvement on child behavior, as in other reviews as well, and left it open for further research. This would contribute to throw light on how

treatment change is produced, along with the orientation analysis. “Answering not just whether treatment change is produced, but how it is produced, is the cornerstone of advancing theoretical understanding about mechanisms of change” (La Greca et al., 2009), p.377). Such a move towards tailored parenting interventions would also provide clinicians with the flexibility to adapt to variations in patients’ problems, strengths, contexts or conditions.

In sum, this meta-analytic review confirms that parenting interventions are effective at decreasing preschoolers’ EB, as expected, but it also highlights the current difficulty in comparing interventions on the basis of their specific orientation, preventing a thorough understanding of what is actually at stake for parents and their children in these programs. This could be overcome by a more systematic inclusion of this information in parenting programs studies and the development of micro-trial experiments.

Observation of child and parent behavior

The observation of child behavior has to be made in ecologically valid contexts. Parent-child interaction was thought to be the best candidate among such contexts, since empirical evidence displayed strong associations with children's behavioral outcomes, psychopathology, social relationships and well-being. Using clinical data from 137 caregiver-child dyads, the main goal of the current study is to test the psychometric properties of an adapted version of the Crowell procedure among preschoolers. Despite the interest that the Crowell procedure has aroused, its psychometric properties remain relatively under-documented. This research aims at studying (1) the association between parental and child behavior, (2) the discriminant properties of the Crowell procedure between preschoolers with a clinical level of externalizing behavior and non-clinical children and (3) the correlation between the Crowell procedure and a behavioral checklist. The results support the consistency of both tasks and scales, the discriminant properties, external validity and fidelity of the coding system. The Crowell procedure can therefore be used as an observational paradigm to assess both child and parent behavior in clinical and research contexts. The discriminant analyses revealed that the procedure was effective to differentiate children displaying a clinical level of externalizing behavior from normally developing ones.

Keywords: child behavior, observational paradigm, parent-child interaction, psychometric properties, preschoolers

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The observation of child behavior during parent-child interaction

The psychometric properties of the Crowell Procedure

Introduction

The valid assessment of child behavior remains a central concern for both clinicians and researchers. It is often achieved with questionnaires consisting in behavioral checklists completed by the caregivers such as the widely used Child Behavior Checklist, see Annex IV, (Achenbach & Rescorla, 2000) or the Strengths and Difficulties Questionnaire (Goodman, 2001). However, the use of caregiver reports is somewhat limited by informant bias and recall (De Los Reyes & Kazdin, 2005). An alternative to questionnaires is provided by observational paradigms administered in a standardized manner. Observational paradigms are intentionally structured to increase the likelihood that a range of relevant behaviors will emerge. Strong recommendations were made to consider observation of child behavior in ecologically valid contexts (Lieberman, Silverman, & Pawl, 2000; Sameroff & Fiese, 2000; Sroufe, 1989). And what may be the most relevant context to conduct such observation? According to the epigenetic view of child development, the most relevant context should be the parent-child interaction since it is highly predictive of all subsequent social relationships (Cassidy, 2008; Roskam, Meunier, & Stievenart, 2015), children's behavioral outcomes (Belsky, 1984; Criss, Shaw, & Ingoldsby, 2003), psychopathology (Lieberman, 2004) and well-being (Zeanah, Larrieu, Heller, & Valliere, 2000). In line with these methodological and theoretical recommendations, Crowell and colleagues (Crowell & Feldman, 1988) proposed the Crowell Procedure designed to observe child as well as parent behavior during parent-child interaction. The main goal of the current study is to test the psychometric properties of an adapted version of the Crowell procedure among 137 preschoolers interacting with their mother or their father.

The Crowell procedure (Crowell & Feldman, 1988) was used initially for children from 12 to 60 months of age (Miron et al., 2009; Osofsky et al., 2007). The procedure involves unstructured tasks (such as free play) and structured tasks (teaching tasks like puzzles) allowing the dyad to exhibit their regular relationship patterns and interactional routines. The procedure also ends with a separation-reunion phase. After the meeting, the parents filled in a brief questionnaire to test two things: the extent to which the parents' and the children's behavior in the lab were comparable with daily life, and the extent to which the parents had confidence in the experimenter. Confidence in the experimenter was supposed to limit participants' resistance to the procedure and to increase the probability to observe behaviors which are representative of authentic parent-child interaction. As suggested by Miron et al. (2009), the unstructured free play episode may reveal the familiarity of the dyad with play and their use of the time as fun-oriented. The procedure

also involves transitions designed to induce variety in observational settings and stress into the interaction (Sprang & Craig, 2014). The procedure is videotaped permitting children's and parents' behavior to be coded under blind conditions by independent trained coders. The initial coding system was based on the assessment of nine variables relating to child behavior, i.e. enthusiasm, persistence, self-reliance, affection, negativity, avoidance, controlling behavior, anxiety and compliance. In addition to the child's behavior, the mother's help and support were estimated (Crowell et al., 1988). This coding system has been adapted on several occasions (for an example see Osofsky, Bosquet, Kronenberg, & Hammer, 2003), in particular by Heller, Aoki, and Sheffner (1999). This is based on standardized rating scales, in particular seven child scales, i.e. positive affect, withdrawn/indifference, irritability/anger, non-compliance, aggression, persistence and enthusiasm, and six parent scales, i.e. behavioral responsiveness, emotional responsiveness, positive affect, withdrawn/disinterest, irritability/anger and aggression. The Crowell procedure scales provide an assessment of both child and parent behavior in a particular interactional setting.

Crowell's work has inspired numerous subsequent studies as it has been cited in more than 170 studies published in peer-reviewed journals (source PsycINFO, 2016). These studies have been conducted with toddlers and their parents in community samples (Coleman & Karraker, 2003; Conway et al., 2014; Miller, McDonough, Rosenblum & Sameroff, 2002), high risk samples such as disadvantaged (Aoki et al., 2002) or maltreated children (Malik, Lederman, Crowson, & Osofsky, 2002; Osofsky et al., 2007; Robinson et al., 2009) and foster care (Zeanah et al., 2003). Research was also conducted among preschoolers in community samples (Mouton & Roskam, 2014; Verschueren, Dossche, Marcoen, Mahieu, & Bakermans-Kranenburg, 2006) and high risk samples such as disadvantaged populations (Brassart & Schelstraete, 2015a), children with post-traumatic stress (Scheeringa, Zeanah, Myers & Putnam, 2004) exposed in utero to psychotropic medications (Misri et al., 2006) and incest survivors (Fitzgerald, Shipman, Jackson, McMahon, & Hanley, 2005). Likewise, the Crowell procedure was used with preschoolers referred for depression (Luby et al., 2006) or externalizing behavior (Brassart & Schelstraete, 2015b; Roskam, Brassart, Loop, Mouton, & Schelstraete, 2015). In addition to the enthusiasm arising from researchers, the Crowell procedure is also popular for clinical use (Miron et al., 2009; Sprang, Clark, Kaak, & Brenzel, 2004). Despite the interest that the procedure aroused, its psychometric properties remain relatively under-documented (Miron et al., 2009). It has nevertheless been shown to discriminate between clinical and non-clinical parent-child dyads (Crowell & Feldman, 1988) or maltreated and healthy children (Smyke, 2000). To the best of our knowledge, only a recent study reported a psychometric analysis of the Crowell procedure (Sprang & Craig, 2014). It was conducted with 151 caregiver-child dyads referred by the child welfare system in the United States. The results of this study demonstrated the usefulness of the procedure and its coding system in a clinical setting. They gave support to the reliability of both child and parent rating scales and suggested that scores could be resumed in two global scales, one for the child and the other for parent's behavior.

The validation of standardized observational measures such as the Crowell procedure is very important both for research and clinical purposes. Otherwise, observation of parent-child interaction would remain subjective about how to carry out observation and what is assessed (Budd, Poindexter, Felix, & Naik-Polan, 2001; Hynan, 2003). A lack of agreement would persist about which aspects of the child and the parent behaviors are the most relevant. In absence of a validated coding system, observation measures would also remain qualitative, conditioned by the rater's skills, knowledge and experience (Schmidt, Cuttress, Lang, Lewandowski, & Rawana, 2007). Finally, validation studies are very helpful to identify the best discriminant tasks and reliable rating scales in order to define the most effective and focused observation scheme. Without such research, observational procedures tend to be long and time-consuming, making them impossible to be implemented both by clinicians and researchers.

Therefore, the current study provides a psychometric analysis of an adapted version of the Crowell procedure aiming at replicating initial findings of Crowell and colleagues with regard (1) to the association between parental behavior and children behavior, (2) the discriminant properties of the Crowell procedure between preschoolers with clinical level of externalizing behavior and non-clinical children and (3) finally the correlation between the Crowell procedure and a behavioral checklist (Crowell et al., 1988). In line with Sprang and Craig (2014), it also tests the child and parent rating scales reliability. Finally, it aims to go further than these previous psychometric findings by testing the inter-task relations, test-retest fidelity, inter-rater agreement and correlations between the parental scales of the Crowell procedure and one self-reported measure of parenting behavior.

Method

Sample

The study is part of the H2M (Hard-T(w)o-Manage) research program conducted at the Psychological Sciences Research Institute of the University of Louvain (Belgium) and approved by the ethics committee. Data have been collected among 137 parent-child dyads from a community sample. Children were between 36 and 72 months old ($M=53.96$, $sd=8.08$) and 58.4% were boys. The parents were aged between 26 and 54 ($M=37.25$, $sd=5.20$) and 83.9% were mothers. The educational level of the parent participating was calculated as the number of years of education he/she had completed, counting from first grade onwards. Some had completed 6 years (2.2%); others had completed 12 years, corresponding to the end of secondary school and to compulsory education in Belgium (16.8%); others had completed 3 more years (corresponding to undergraduate studies) (22.6%); others had gained a 4-year degree or more (58.4%). Monthly incomes were less than €2,500 for 24.8% of the families, between €2,500 and €4,000€ for 35.8% and higher than €4,000€ for 39.4%.

Procedure

Information about the study was given in two different ways. First, participants were informed through leaflets, posters and a website and Facebook page created for this study. Parents who were interested in taking part in a study on child development were invited to contact the research team. Second, the information was given in schools and to pediatricians. Parents who had concerns about the relationships with their child or concerns about their child's behavior were invited to take part in the research. A total of 137 parents who were interested completed an online questionnaire consisting in socio-demographic information and a child behavioral checklist. All participants completed an informed consent with regard to their participation to the videotaped observation procedure. A subsample of 87 participating parents was also asked to report their childrearing behavior. Observation data were collected in the sample of 137 families during one home visit by extensively trained researchers for 24 families or in a laboratory at the university for the 113 remaining. A standardized observation of the parent-child interaction was made and a video recorded in order to rate how and to what extent the child and the parent were behaviorally adjusted when they played and solved problems together. For 70 dyads, the observation was conducted twice at 8-week intervals in order to evaluate test-retest fidelity.

Instruments

Parent and child behaviors were observed using the Crowell procedure (Crowell et al., 1988). It initially involved a series of eight episodes including 10-minute free play, 5-minute clean-up, a bubble blowing episode, four increasingly difficult problem-solving tasks, and a 2-minute separation-reunion episode. In this study, five of the eight episodes were considered excluding the bubble blowing and the separation-reunion which were eliminated because of their lack of relevance to this study and the problems raised by their implementation at home. Three rather than four increasingly difficult problem-solving tasks were also presented to children. Our objective was to keep the most relevant ones, i.e. tasks increasing the likelihood of externalized behaviors, and to make sure that the procedure will not exceed half an hour to be easily used in both research and clinical settings. The presentation of the episodes, task type, duration and instructions is shown in Table 1. The first free play episode included a standard set of toys which is described in Table 1. At the end of this first episode, a buzzer sounded instructing the dyad to clean-up. Each toy had to be put away in its corresponding box. After 5 minutes, the experimenter came into the room, even if the clean-up was not finished and proposed three puzzles. These were selected to move from slightly below the child's developmental level to significantly above developmental level, inducing positive and negative emotions and increasing the child's need to rely on the caregiver for help. Indeed, the first puzzle was easy for all children (6 pieces in 2D). The second puzzle was achievable with adult's support (6 easily identifiable pieces in 3D) and the third was hard to perform also for adults (10 difficult to identify pieces in 3D). The following instructions were given to the parents prior to the observation. "We propose various activities to do together. First you

will play freely for 10 minutes with this set of toys. Try to be as natural as possible and play as if you were at home. Then, when you hear a buzzer, it means that your child must put away the toys. For storage, you must put every toy in the box that corresponds to it. You have 5 minutes to store everything. Then I will present three puzzles of progressive difficulty. You can help your child if you think it is necessary. Do as you normally do with him/her. After 10 minutes, a new ringtone will sound, meaning that the game is over”.

Table 1. The episodes, task type, duration, instructions and materials of the Crowell Procedure

Tasks	Type	Duration	Instructions	Materials
Free-play	Unstructured	10 minutes	<i>You will initially play freely for 10 minutes with this set of toys. Try to be as natural as possible and play as if you were at home.</i>	Standard set of toys including animals, furniture, males, females, children, accessories, cars
Clean-up	Structured	5 minutes	<i>When you hear a buzzer, it means that you must put away toys. For storage, you must put every toy in the box that corresponds to it. You have 5 minutes to store everything.</i>	A specific box divided into 7 sections with tags (animals, furniture, males, females, children, accessories, large objects)
3 puzzles	Structured	10 minutes	<i>I present you three puzzles of progressive difficulty. You can quite sure help your child do if you think necessary. Do as you normally do with him. After 10 minutes a new ringtone will sound and will mean that the game session is over.”</i>	3 puzzles of progressive difficulty

In the current study, we used the coding system adapted by Heller et al. (1999). Parent behaviors were scored on a seven-point Likert scale for emotional responsiveness (creating a positive emotional context through encouragement and praise), behavioral responsiveness (providing instrumental support adapted to the child's developmental level through well-timed cues), positive affect (smiling and laughing), irritability (frustration with the child), withdrawal/indifference (disinterest in the child) and aggression towards the child. Child behaviors were scored on a seven-point Likert scale for positive affect (smiling and laughing), withdrawal/indifference (disinterest in the parent, depression or sadness), irritability/anger (fussing, pouting, punitive behavior directed towards the parent), non-compliance, aggression towards the parent, persistence (orientation and focus on tasks), and enthusiasm towards task. Each scale was coded for each task. A mean score was computed. Coding was done by three independent trained coders, two of whom were certified by Tulane University (USA), with an intercoder reliability of .92 calculated with the weighted Kappa coefficient on 25% of the sample.

Parenting behaviors were also reported by parents with the Preschool Parent Form of the Evaluation of Parental Practices (EPEP-PPSF; Meunier & Roskam, 2009), see in Annex VI. The EPEP-PPSF is a 40-item instrument yielding nine factors: Positive Parenting, Monitoring, Rules, Discipline, Inconsistent Discipline, Harsh Punishment, Ignoring, Material Rewarding, and Autonomy. A five-point Likert-type scale is provided for each

item, ranging from “never” to “always”. This instrument has been validated on 565 French-speaking mothers and fathers and shows good psychometric properties (nine-factor solution explaining 61.36% of the variance, α ranging from .59 to .90). Confirmatory factor analyses in the validation study showed that two second-order factors covering the supportive and controlling dimensions of parenting emerged from the initial factor solution (CFI = 0.94, RMR = 0.03, and RMSEA = 0.05). These two second-order factors were used in the current study in order to limit the number of constructs under consideration. The supportive factor was composed of Positive Parenting, Autonomy, and Rules, and included items such as “When my child seems to have a problem, I discuss with him/her what is wrong”. The controlling factor was composed of Discipline, Harsh Punishment, and Ignoring, and included items such as “When my child does something that is not allowed, I only talk to him/her again when he/she behaves better”.

Child behavior. The preschool version of the Child Behavior Check List (Achenbach & Rescorla, 2004) was used as another assessment of child behavior and was completed by the parent participating (see in Annex IV). For the external validation of the Crowell procedure, we particularly focused on 32 items consisting in externalizing behavior (EB) scale encompassing attention problems and aggressive behavior and the anxious-depressed items of the internalizing behavior scale. CBCL provides three-point Likert scales: “not at all present”, “moderately present”, or “often present”. Scores are computed in each scale by summing item scores. The psychometric properties of the initial version of the scale were good, with α of .92 for “externalizing problems” and of .89 for “internalizing problems” (Achenbach & Rescorla, 2000). Similar psychometric properties have been reported for the French version (Fombonne, 1989). According to norms of the second-order EB scale, 40.1% of the children in our sample were in the normal range of EB (<21), 18.2% were in the borderline clinical range (21-24), and 41.6% were in the clinical range (>24).

Results

Inter-task relations

In order to test the relations between the tasks, t-tests, inter-task correlations as well as reliability analyses with Cronbach’s alphas (α) were computed for each parent and child scale. For child scales, they ranged from $r=.54$ to $.73$ for positive affect ($\alpha=.89$); from $r=.42$ to $.87$ for withdrawal ($\alpha=.88$); from $r=.35$ to $.77$ for irritability ($\alpha=.83$); from $r=.44$ to $.82$ for non-compliance ($\alpha=.85$); from $r=.31$ to $.73$ for persistence ($\alpha=.81$); and from $r=.38$ to $.75$ for enthusiasm ($\alpha=.84$). However, coefficients were low for aggression scale ($\alpha=.34$). A limited number of occurrences were found in several tasks leading to inconsistent results and $\alpha=.34$. According to this result, the child aggression scale was no longer considered in the analyses. For parent scales, coefficients ranged from $r=.48$ to $.79$ for behavioral responsiveness ($\alpha=.86$); from $r=.39$ to $.72$ for emotional responsiveness ($\alpha=.84$); from $r=.49$ to $.82$ for positive affect ($\alpha=.90$); from $r=.24$ to $.93$ for withdrawal ($\alpha=.82$); and from $r=.23$ to $.76$ for irritability ($\alpha=.82$). However, coefficients were low for aggression scale ($\alpha=.63$). A limited number of occurrences were found in several tasks leading to

inconsistent results. According to this result, the parent aggression scale was no longer considered in the analyses.

The results of correlations and t-tests between free-play, clean-up and puzzle 3 tasks are presented in table 2. Change was observed in child and parent behavior throughout the procedure as the level of stress induced increase. For parent scales, responsiveness and positive affect were seen to decrease from free-play to clean-up and puzzle 3 whereas irritability increased. The same has been observed for child scales with positive affect, persistence and enthusiasm decreasing, and with non-compliance and irritability increasing.

Table 2. Descriptive statistics, correlations and t-test between scales in free-play, clean-up and puzzle 3 tasks

	Free Play (FP)		Cleanup (CU)		Puzzle 3 (P3)		Corre- lations FP-CU	t-test FP-CU	Cor- rela- tions FP-P3	t-test FP-P3
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>t</i> (135)		<i>t</i> (135)
Parent' s scales										
1.Behavioral responsiveness	5.26	.81	4.99	1.05	4.96	1.25	.55	2.78**	.47	2.52*
2.Emotional responsiveness	5.03	.91	4.76	1.01	4.88	1.07	.56	2.82**	.46	1.42
3.Positive affect	5.47	.79	5.21	.94	5.20	.94	.54	3.51***	.49	3.45***
4.Withdrawal	1.10	.44	1.07	.39	1.15	.69	.66	1.00	.25	-.84
5.Irritability	1.22	.53	1.44	.94	1.41	.88	.28	-2.59*	.41	-2.65**
Child' s scales										
1.Positive affect	5.36	.88	4.90	1.25	4.89	1.04	.61	5.23***	.57	5.98***
2.Withdrawal	1.14	.56	1.15	.51	1.11	.41	.48	-.31	.53	.70
3.Irritability	1.42	.79	1.65	1.19	1.76	1.20	.47	-2.43*	.40	-3.42***
4. Noncompliance	1.59	.96	2.05	1.50	1.84	1.50	.44	-3.87***	.54	-2.24*
5. Persistence	5.71	.94	4.80	1.37	4.89	1.47	.31	7.39***	.41	6.76***
6. Enthusiasm	5.61	.91	4.49	1.29	4.62	1.29	.38	10.15***	.38	8.79***

* $p < .05$; ** $p < .01$; *** $p < .001$

Inter-scale consistency

As the high correlations found for inter-task consistency suggest that a mean score encompassing all tasks can be computed in each scale, correlations between mean scores were computed. They are displayed in Table 3 for child scales and in Table 4 for parent scales. They coherently show moderate to high positive relations among the three positive child scales, i.e. Positive affect, Persistence and Enthusiasm, and the three negative ones, i.e. Withdrawal, Irritability and Non-compliance. Also moderate to high negative relations are displayed between positive and negative scales. The same conclusions were drawn for parent scales. As expected, the reliability analyses showed that child scales were consistent with $\alpha = .88$ (including reverse scores for irritability, non-compliance and withdrawal). The same was reported for parent scales, $\alpha = .80$ (including reverse score for irritability and withdrawal).

Table 3. Correlations between child scales (mean scores)

	2	3	4	5	6
1. Positive affect	-.49***	-.63***	-.47***	.56***	.69***
2. Withdrawal	-	.08	.14	-.35***	-.39***
3. Irritability		-	.68***	-.53***	-.56***
4. Non compliance			-	-.80***	-.76***
5. Persistence				-	.89***
6. Enthusiasm					-

*** $p < .001$

Table 4. Correlations between parent scales (mean scores)

	2	3	4	5
1. Behavioral responsiveness	.65***	.43***	-.36***	-.37***
2. Emotional responsiveness	-	.76***	-.23**	-.48***
3. Positive affect		-	-.25**	-.53***
4. Withdrawal			-	.04
5. Irritability				-

** $p < .01$

*** $p < .001$

Association between parent and child behavior

The correlations between child and parent scales (mean scores) are presented in Table 5. Coherently, high correlations were found for common scales, i.e. child and parent positive affect ($r=.78$), withdrawal ($r=.57$) and irritability ($r=.57$). The moderate to high correlations found between child and parent scales confirm the ability of the Crowell procedure to capture the bidirectional relationships in the dyad. Child and parent behaviors are seen to be interdependent from each other. The more positive the child behavior towards the parent the more positive the parent behavior is and vice versa.

Table 5. Correlations between child and parent scales (mean scores)

	Behavioral responsiveness	Emotional responsiveness	Positive affect	Withdrawal	Irritability
1. Positive affect	.42***	.62***	.78***	-.23**	-.50***
2. Withdrawal	-.36***	-.42***	-.44***	.57***	.12
3. Irritability	-.35***	-.41***	-.49***	.00	.57***
4. Non-compliance	-.39***	-.44***	-.39***	.01	.57***
5. Persistence	.35***	.48***	.48***	-.13	-.47***
6. Enthusiasm	.39***	.56***	.58***	-.18	-.47***

** $p < .01$

*** $p < .001$

Discriminant properties of the Crowell procedure

T-test comparisons were computed in order to test whether child and parent scales vary according to the level of child externalizing behavior as well as between mothers and fathers. Mean scores of each scale were compared between mothers and fathers with t-test for independent samples. However, this analysis remains exploratory due to the limited number of fathers in the current study. No significant difference was displayed between mothers and fathers for the five parent scales. In contrast, significant differences

were found between children according to their level of externalizing behaviors evaluated with the CBCL-externalizing scale. For the analysis purpose, children (N=19) who were in the borderline clinical range (between 21 and 24 on the CBCL-externalizing scale) were excluded. Only normally developing children (< 21) and children with clinical level (>24) have been compared. Preliminary analyses demonstrated that these two groups (normally developing versus clinical level of externalizing behavior) were comparable with regard to socio-demographic data. Five out of six child scales discriminated between children displaying clinical level of externalizing behavior from those in the normal range. Descriptive statistics and results of t-tests are presented in Table 6. Children displaying clinical level of externalizing behavior showed less positive affect, persistence and enthusiasm but higher irritability and non-compliance than normally developing children.

Table 6. Means and standard deviations of child scales for children in the normal vs. clinical range of the CBCL-externalizing behavior scale and t-tests

	Normally-developing children N=55		Children with clinical level of externalizing behavior N=63		t-test
	M	SD	M	SD	t(116)
1.Positive affect	5.38	.74	4.92	.78	3.19**
2.Withdrawal	1.12	.29	1.06	.19	1.10
3.Irritability	1.28	.50	1.77	.97	-3.37***
4.Non-compliance	1.38	.61	2.05	1.30	-3.43***
5.Persistence	5.56	.76	5.02	1.08	3.03**
6.Enthusiasm	5.31	.81	4.78	.94	3.23**

** $p < .01$ *** $p < .001$

Significant differences were also found for two of the five parent scales. Descriptive statistics and the results of t-tests are presented in Table 7. Parents of children displaying clinical level of externalizing behavior displayed less positive affect but higher irritability towards their child than parents of normally-developing children.

Table 7. Means and standard deviations of parent scales for parents of children in the normal vs. clinical range of the CBCL-externalizing behavior scale and t-tests

	Parents of normally developing children N=55		Parents of children with clinical level of externalizing behavior N=63		t-test
	M	SD	M	SD	t(116)
1.Behavioral responsiveness	5.08	.97	5.13	.86	-.26
2.Emotional responsiveness	5.18	.76	5.02	.76	1.16
3.Positive affect	5.51	.67	5.19	.71	2.45*
4.Withdrawal	1.14	.48	1.03	.10	1.77
5.Irritability	1.19	.37	1.47	.75	-2.51*

* $p < .05$

External validation

For child scales, external validation was tested with the CBCL-Externalizing and the CBCL-Internalizing behavior scales. For parent scales, it was tested with the support and control dimensions of the EPEP-PPSF scale. Coefficients are presented in table 8 for child scales and in table 9 for parent scales.

Table 8. Correlations between child scales and the CBCL-Externalizing behavior scale (N= 137)

	Positive affect	Withdrawal	Irritability	Non compliance	Persistence	Enthusiasm
Externalizing behavior	-.34***	-.02	.33***	.31***	-.28***	-.32***
Internalizing behavior	-.04	.17†	.03	.00	-.07	.04

† $p < .10$ *** $p < .001$

Table 9. Correlations between parent scales and EPEP support and control scales (N= 87)

	Support	Control
1. Behavioral responsiveness	.12	-.20†
2. Emotional responsiveness	.02	-.25*
3. Positive affect	.11	-.30**
4. Withdrawal	-.13	.07
5. Irritability	-.10	.33**

† $p < .10$; * $p < .05$; ** $p < .01$

Overall, moderate correlations support the validity of the Crowell procedure child scales. Higher externalizing behavior was associated with lower positive affect, persistence and enthusiasm, and higher irritability and non-compliance. Coherently, withdrawal that relates to internalizing behavior was not associated with the externalizing behavior scale of the CBCL.

Overall, correlations support the validity of the Crowell procedure parent scales. Controlling behaviors were associated with low behavioral and emotional responsiveness as well as with low positive affect, and high irritability. Coherently, parent withdrawal was not associated with controlling behavior. Support was not significantly associated with parent scales, whereas the coefficients were in the right direction, i.e. positive support with responsiveness and positive affect but negative support with withdrawal and irritability.

Test-retest fidelity

Test-retest was studied in a subsample of 70 dyads in an 8-week interval. For child scales, the correlations were moderate, ranging from $r = .32$, $p < .01$, for enthusiasm scale, to $r = .57$, $p < .001$, for persistence scale. Only the correlation for withdrawal scale was found to be low with $r = .12$. For parent scales, correlations were moderate, ranging from $r = .28$, $p < .05$, for withdrawal scale, to $r = .45$, $p < .01$, for behavioral responsiveness.

Discussion

The aim of the current study was to analyze the psychometric properties of an adapted version of the Crowell procedure among preschoolers interacting with their mother or father. Overall, results support consistency of both tasks and scales, the discriminant properties, external validity and fidelity of the coding system. The Crowell procedure can therefore be used as an observational paradigm to assess both child and parent behavior. However, we failed to validate the aggression scales. A first explanation could be that in the observational context, parent aggression could be inhibited. Adult participants knew

they were being videotaped and observed by experts in parent-child relationships. In such a context, social desirability could play an important role in lowering inappropriate behavior towards the child. Also, child aggression could be inhibited due to the unfamiliar context and the presence of an unknown experimenter. Also unfamiliarity could lower the probability that extreme behavior could occur in children. A second explanation could refer to the specific nature of this scale and therefore the nature of observed aggressive behaviors. Contrary to the other child and parent behaviors that are measured during the procedure, aggression is assessed with a frequency scale, indicating whether this kind of behavior is present or absent in the parent-child interaction. Therefore to report aggressive behavior, coders sometimes expect to observe clear violence against the partner. Measuring aggression on a continuum may be difficult in this setting. A better coding system would be to record the presence of specific aggressive behaviors like throwing or pulling a puzzle piece, speaking aggressively to the child or to the parent, even if they are low in intensity.

The inter-task comparisons suggest that a mean score can be computed for each scale through the entire procedure. This is the case for children's positive affect, withdrawal, irritability, non-compliance, persistence and enthusiasm as well as for parents' behavioral and emotional responsiveness, positive affect, withdrawal and irritability. Inter-tasks consistency is important since a certain coherence in child's behavior in interaction with his parent is expected. However, whereas high consistency may suggest that each task could be representative to some extent of the entire procedure, clinicians and researchers must be aware that using single tasks may lead to a reduction in the variety of situations where relevant behaviors can be observed. It may increase the probability of misinterpretation of child's and parent's behaviors. The use of single tasks may also lead to the deletion of the transitions between the tasks which has been designed to elicit stress in the interaction allowing problem-solving and stress reduction capabilities to be observed (Sprang & Craig, 2014). The use of different tasks is therefore recommended to gather information on representative parent-child interactions and on the way the dyad handles stressful situations for example when the child doesn't want to perform a task. Single tasks could only be used in particular context for example when time constraints arise in clinical settings or when rapid screening for preventive purpose is needed. In these specific cases and in line with the suggestion of Miron et al. (2009), the most relevant might then be free play first because it seems to be comparable to what happens in the family setting due to the light structuring of the task. In the absence of any achievement expectations, parents and children are free to display their interactional routines. Second, in contrast to teaching tasks, free play can be easily implemented with diverse populations including low-educated parents or mentally disabled children. Third, free play had been considered to serve as the most revealing observational window into children's emotional lives, revealing the familiarity of the dyad with play and their use at time as fun-oriented (Miron et al., 2009).

In line with previous psychometric analysis (Sprang & Craig, 2014), scores emerging from the different child and parent scales could be resumed into two global

consistent scores. Our results suggest that the six child scales assess a second-order construct we could label child behavior. The same is true for the parent scales. These results give support to the conceptual validity of the coding system by displaying moderate to high correlations in the expected directions between the scales. However, the validity of second-order scales needs to be validated with larger sample size and appropriate statistical procedure such as confirmatory factor analysis. These second-order scales could for example be used in studies where the number of variables has to be limited for analyses purpose or in studies where no hypothesis is made upon specific first-order behaviors. However, first-order scales remain necessary and relevant for studies focusing on specific outcomes such as externalizing problems in children (Roskam, Brassart, et al., 2015). They are also useful for studies documenting intervention effect to identify which specific behavior improves (Loop et al., 2015).

The correlations between child and parent scales illustrate the interdependence that has been theoretically described in the transactional model (Sameroff, 2009) and empirically shown in bidirectional effect studies (Barnett, Gustafsson, Deng, Mills-Koonce & Cox, 2012; Pardini, Fite, & Burke, 2008; Verhoeven, Junger, van Aken, Deković & van Aken, 2010). These correlations suggest that the Crowell procedure may be relevant to capture dyadic aspects of the parent-child relationship. However to date and contrary to other observational paradigms (Aoki et al., 2002; Clark, 1985), no scale is available in the coding system to rate dyadic functioning as joint attention or reciprocity. Future attempts should be made to develop and validate a new dyadic coding scheme. Also, correlations between parent and child scales assume that behaviors are limited to this specific interactional context. Child behavior has to be understood and interpreted according to parent behavior and vice versa. This can explain the moderate correlations (around $r=.30$) with the CBCL. They illustrate that child behavior is only partly the same in various real-life situations as in a particular parent-child interaction. That is why, in the absence of a gold measure of child behavior, strong recommendations are made for considering multi informant and multi method assessment and diagnostic procedure (Kraemer et al., 2003; Noordhof, Oldehinkel, Verhulst & Ormel, 2008; Roskam, Meunier & Stievenart, 2013).

With regard to the diagnostic purpose, the discriminant analyses revealed that, as expected in the initial study of Crowell et al. (1988), the procedure was effective to differentiate children displaying a clinical level of externalizing behavior from normally developing ones. Differences were significant for five out of six child scales. Only the withdrawal scale was not significant, probably due to the internalizing orientation of this scale. Correlations found between the CBCL-internalizing scale and child scales were coherent with this view. Also, two out of five of the parent scales displayed good discriminant properties, i.e. positive affect and irritability. Whereas children's externalizing problems seem to preserve parents' responsiveness, they result in less fun-oriented interaction, in particular lower positive affect and higher irritability from the parent. Such emotional reactions illustrate that caring for externalized children is often described as more challenging and less rewarding than caring for other children, leading to lower levels of satisfaction, negative feelings, and higher criticism in caregivers (Coleman & Karraker,

2003; Meunier, Roskam, & Browne, 2011; Slagt, Deković, de Haan, van den Akker & Prinzie, 2012). Finally, as for child scales, withdrawal was not discriminant.

To conclude for external validation of parent scales, the analyses demonstrate low to moderate correlations with controlling childrearing behavior. However no association was displayed with supportive behavior. Actually, supportive behavior refers to positive parenting, autonomy demands and rules among which the last two are not strictly coded in the Crowell procedure. In contrast, controlling behavior such as discipline and ignoring are appraised to some extent through responsiveness and withdrawal parent scales.

Finally, the fidelity of the procedure was found to be moderate for all child and parent scales, but low for child withdrawal. Compared to questionnaire-based assessment, observations are more sensitive to transient conditions related to children's and parents' mood state, tiredness or willingness, as well as to co-occurring events resulting in lower moment-to-moment fidelity. An additional important point is the delay between the two waves. It may be that 8 weeks is too long to ensure the fidelity of the coding system because of dyadic dynamics. New research attempts should be made with a shorter delay to provide additional support for the fidelity of the procedure.

In sum, in line with previous findings (Crowell et al., 1988; Sprang & Craig, 2014), the current study supports the validity of the Crowell procedure and the coding system adapted from Heller's work (Heller et al., 1999). Several advantages can be highlighted. First, this procedure is highly flexible. It can be implemented in diverse settings such as the laboratory such as in Mouton & Roskam (2014) and Loop & Roskam (2016), health services or at home (Roskam, Brassart, Loop, Mouton, & Schelstraete, 2015). It can also be used on several different occasions in order to appraise the stability of the constructs over time or to evaluate the effect of interventions for children and their parents such as in Roskam et al. (2015) and Loop et al. (2016). The materials such as the free-play set of toys or the teaching task puzzles could also easily be adapted to avoid learning and test-retest effects. Finally, the procedure may also be implemented with different caregivers into foster care (Zeanah, 2003; Loop et al., 2016) allowing the testing of core behavioral functioning of children and to what extent behaviors vary according to the interactional partner. No differences were displayed between mothers and fathers in the current study but exploratory due to low number of fathers. Hence fathers represented only 16% of the sample and future research should study differences between dyads in greater depth. Second, thanks to its development and validation, the Crowell procedure is not time-consuming, which makes it useful in both clinical and research settings. In particular, free play could be used in a self-standing manner. Third, the Crowell procedure is not only a valid assessment tool, but also a therapeutic tool that can, for example, be used for video feedback purposes (Velderman et al., 2006). Also, playing with the child is already a therapeutic step for some dyads (Wettig, Coleman, & Geider, 2011).

Despite these strong advantages, the Crowell procedure nevertheless has some drawbacks. Every videotaped observational paradigm elicits a certain level of stress in

participants. Therefore, the ecological validity of such observation may be questioned. Whereas the structured tasks, i.e. clean-up and puzzles, were designed to elicit frustration and negative emotions in both children and their parent, it cannot be excluded that such negative feelings are also present during free play among participants, especially for dyads for whom play interaction remains unusual. Also, it cannot be excluded that some child and parent behaviors have been inhibited due to the specific context of observation or to the presence of an unknown experimenter. Moreover, whereas the procedure was highly standardized it cannot be excluded that the location where the dyads have been observed, i.e. at home or in the laboratory, slightly influenced the results. Finally, this validation is neither representative nor relevant for all parent-child dyads. Indeed, observation paradigms as the Crowell Procedure are very dependent to the age and the characteristics of children. For instance, the procedure may be less relevant for older children who are expected to be more autonomous both in task achievement and emotion regulation. Future validation studies are also needed to replicate the findings in diverse cultural settings and with children displaying internalizing problems for example.

In sum, this study provides an empirical validation of an adapted version of the Crowell Procedure. As underscored in 2005 by the American Academy of child and adolescents Psychiatry, the Crowell Procedure responds to the necessity to use evidence-based observational paradigm to assess child behavior in relational context (Thomas, 1998). The Crowell Procedure appears as a valid tool which can be used in clinical practice and which provided a pathway to more nuanced research investigation (Sprang & Craig, 2014).

Part II Empirical studies

The four empirical studies presented in this section explore the relationship between parental self-efficacy and child behavior.

The first study tests the causality hypothesis of parental self-efficacy on child behavior in a laboratory setting with a non-clinical sample of preschoolers with their mother.

Second, based on this experimental study's results, the modalities to improve parental self-efficacy are implemented in a parenting intervention called *Confident Parents* designed for children at-risk to display externalizing behavior and children with clinical levels of such difficult behavior. The effects of this program are measured by using a multi-method and multi-informant approach. Child initial EB severity and socio-economic risk are also investigated as predictors of the effects of the program.

Third, the differential sensitivity of children to a parental self-efficacy improvement is analyzed and discussed. The child temperamental traits of negative emotionality and activity are used as potential markers of differential sensitivity to parenting.

Last, possible negative effects of the *Confident Parents* program on co-parenting are explored and compared between mothers and fathers.

Confident mothers, easier children in a community sample

This randomized micro-trial aims at testing the relationship between mothers' self-efficacy and children's behavior in a quasi-experimental design. It assesses if mothers' self-efficacy can be improved using the social learning theory processes of social comparison and positive feedback on parenting experience. In this theory-based experiment, mothers' self-efficacy was manipulated in a convenience sample of 42 mothers and their 4-5 year-old preschoolers. Mothers' and children's behaviors were assessed during a 45-minute mother-child interaction session with free-play, frustration and problem-solving tasks. Both observational and self-report measures were used.

Results show that mothers who received a positive feedback to reinforce their self-efficacy had more positive parenting behaviors with their children than non-reinforced mothers in the control group. Children whose mothers had been reinforced in their self-efficacy were more positive with their mothers. This micro-trial contributes to discuss the quite complex causal nature of the relation between parental self-efficacy, parenting behavior and child behavior. First, its results confirm that mothers' self-efficacy could be improved using the social learning theory processes of social comparison and positive feedback. Second, this study documents the positive impact of a positive feedback to mothers, on both mothers and children, contributing in this way to parenting research and intervention design.

Keywords: Parenting, preschoolers, mother, self-efficacy, experimental manipulation.

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Confident mothers, easier children: A quasi-experimental manipulation of mothers' self-efficacy

Introduction

Studies relating parenting to child behavior are numerous. However, existing studies are rarely experimental, mostly correlative, and therefore unable to test causality between parenting variables and child behavior (van Ijzendoorn & Bakermans-Kranenburg, 2012). When manipulation is used to improve parenting, the purpose is usually to evaluate interventions and demonstrate the positive effects of parenting intervention programs (Dretzke et al., 2009). Such an approach does not make it possible to identify which parenting variables have the most effect on children's behavior, since several variables are manipulated together and simultaneously.

In contrast to such studies, micro-trials using experimental or quasi-experimental designs can bring a real added-value. Micro-trials are defined as "randomized experiments testing the effects of relatively brief and focused environmental manipulations designed to suppress specific risk mechanisms or enhance specific protective mechanisms, but not to bring about full treatment or prevention effects in distal outcomes" (Howe et al., 2010). Such a focused manipulation offers the opportunity to isolate a variable and disentangle its impact from that of covariates.

Among the various parenting variables that could be isolated, the cognition of parental Self-Efficacy Beliefs (SEB) has been defined by Coleman and Karraker (2003) as parents' self-perceived competence in their role. It covers the beliefs, thoughts, values and expectations which are activated when one is in charge of a child's upbringing (Coleman & Karraker, 2003; Meunier & Roskam, 2007).

SEB is an adequate variable to study among other parenting variables for three main reasons. First, it plays a key role in explaining parents' and children's behavior, second because a strong theoretical background provides effective ways to manipulate it and third because the experimental manipulation of this variable has been scarce so far. In the following section, we will describe those reasons more elaborately.

First, with regard to the key role of SEB in parenting behavior, Bandura's Social Learning Theory (1977) suggests that self-efficacy is a key concept to understand the transaction between an individual and his environment. It relates to the concept of human agency, defined as an intentional behavior reflecting one's general feeling to be able to influence his environment. As such, self-efficacy contributes to predict behavior and persistence in case of adversity (Bandura, 1989b), "the stronger the perceived self-efficacy, the more active the efforts" (Bandura, 1997, p. 194). This is of particular interest in the field of parenting where parents may encounter difficulty with their child. For

parents, it is an indicator of parental engagement in parenting tasks and of satisfaction and adjustment (Meunier & Roskam, 2009a).

Several empirical studies have confirmed Bandura's hypotheses in the field of parenting showing a positive association between SEB and parental behavior. For instance, Teti and Gelfand (1991) reported a positive association between maternal SEB and parenting competence. In their meta-analysis based on 47 studies, Jones and Prinz (2005) confirmed this link as well as Meunier and Roskam (2009a) documenting that a high level of SEB was correlated with positive support practices, higher parental satisfaction, and lower parental stress and depression. More recently, Deković, Asscher, Hermmans, Reitz and Prinzie (2010) concluded that self-efficacy is a powerful determinant of parenting practices in a recent quasi-experiment on parental sense of competence in the Head Start parenting program.

Parents' SEB are also associated with children's outcomes, in terms of social competence, self-regulation, self-esteem (Jones & Prinz, 2005) and academic achievement (Ardelt & Eccles, 2001). Coleman and Karraker (2003) also observed a significant link between SEB in specific parenting fields (physical care, emotions, discipline) and child outcomes (development outcomes measured by the Bailey test, as well as enthusiasm and affection towards the mother).

This link is also observed when the relationship between parent and child is not easy. Parents tend to feel less confident about their ability to raise their children when they have a difficult child (N. E. Hill & Bush, 2001; Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Sanders & Woolley, 2005; Sequerra, 2011; Slagt et al., 2012), both in terms of temperament (i.e. highly active, negative or emotionally reactive) or behavior (i.e. agitated, aggressive, oppositional). It is likely that difficult child behavior does not directly impair parental childrearing practices, but operates through a mediating role, by undermining parents' perception of their competence (Coleman & Karraker, 2003; Day, Factor, & Szkiba-Day, 1994). A lack of confidence in their parenting skills may increase frustration and irritation in parents, which contributes to negative parenting behaviors such as criticism, negative teasing and physical punishment. Such negative parenting has been shown to be related to difficult behavior in children (Gershoff et al., 2010; Gershoff, Lansford, Sexton, Davis-Kean, & Sameroff, 2012).

Furthermore, recent research explores a possible mediation link between parental SEB, parental practices and child outcome. In a longitudinal study on adolescents, Deković and colleagues (2012) concluded that "changes in parental sense of competence predicted changes in positive discipline, which in turn predicted a decrease in adolescent externalizing problems" (p.574).

Second, with regard to the manipulation of parental SEB, Social Learning Theory (Bandura, 2012) assumes that self-efficacy should be considered not as a personality trait but rather as a context-dependent concept, which means that it can be manipulated, as shown in social psychology and sport studies (Coffee & Rees, 2011). Bandura's theory states that psychological procedures, whatever their form, alter the level and strength of

self-efficacy. Social Learning Theory holds that SEB are rooted in individual factors (e.g. personal history of accomplishment, emotional arousal and its physiological impact) as well as in contextual factors (e.g. verbal feedback from others, social comparisons) (Bandura, 1989b). Performance accomplishments are the strongest source of self-efficacy, followed by vicarious experience (evaluation process based on seeing others of widely differing characteristics perform), verbal persuasion and emotional arousal. In parenting, SEB are therefore expected to depend on parents' past and actual experience with their children (successes and failures) and on emotional arousal this experience may induce. Feedback from others (in particular comments from relatives, teachers, doctors, friends, etc.) and social comparison with other parents are also major contributors to self-efficacy. Particularly, in the case of verbal persuasion, research shows that raising outcome expectations ("You will perform well") is less efficient than raising self-efficacy ("You possess the capabilities to master difficult situations"). Several of these factors can be considered as theoretically good candidates for a joint use in an experimental manipulation of parental SEB, in which parents are compared to others through a positive feedback that valorizes their parental experience.

Finally, experimental manipulation of SEB has been scarce so far. Experimentation in the parenting field is generally limited by necessary ethical requirements. For obvious reasons, one cannot manipulate child's or parent's behavior or cognitions without precautions. This makes designs based on comparison between experimental and control groups and pretest-posttest measures common for evaluation studies of mid to long-term parenting intervention but less usual for focused micro-trials.

This study is an attempt to innovate in this area, bearing in mind inherent limitations due to its innovative character. In line with the theoretical framework of Social Learning Theory, this study seeks to address the gaps in the literature by testing experimentally the impact of improving mothers' SEB on mothers' and children's behaviors. A study like the one presented in this paper is original as no evaluation of the manipulation of parental SEB has been done so far in intervention research. Furthermore, this study innovatively used a quasi-experimental randomized controlled trial design that can be considered as a micro-trial. In this specific study, SEB are focused mainly on beliefs or efficacy expectations rather than outcome expectations, as the manipulation procedure will further illustrate. Given that parental SEB and child outcomes are correlated (Coleman & Karraker, 2003; Jones & Prinz, 2005), it was expected that reinforcing mothers' SEB through positive feedback on their parenting experience and social comparison would enhance both the mothers' positive parenting behaviors towards their children and positive behavior by the children.

Method

Participants

This sample is part of the longitudinal H2M (Hard-T(w)o-Manage) research program conducted at the Psychological Sciences Research Institute of the University of Louvain-la-Neuve (Belgium). Data were collected from a self-selected convenience sample of 42 mothers and their 4-5 year-old preschoolers. Our sample was selected to be a relatively well-functioning, non-clinical community sample and not considered to be at risk in terms of children's behavior (in particular when looking at mother's income and education level). Mothers also volunteered to take part in such an experiment. Therefore, we expected mothers to have, in average, good parenting skills at baseline.

22 dyads were randomly assigned to the experimental group, and the other 20 to the control group, on a signing-up order basis. Mothers were informed about the research project, which had been approved by the Ethical Committee of the University of Louvain-la-Neuve, through leaflets and posters distributed in surrounding schools, as well as on a website and Facebook page created for this study. Participants received small rewards for their participation (i.e. entry tickets to museums, small toys or shopping vouchers provided by sponsors). Fifty-five parents expressed an interest in participating in the study. Forty-six actually came to the lab, four of whom had to be withdrawn from the sample (one father, two video recordings missing for technical reasons, and one outlier for child externalizing behavior). There were no missing data on parents. The socio-demographic characteristics of the sample are presented in Table 1.

Table 1 Descriptive statistics on socio-demographic characteristics for experimental and control groups

	Experimental (N=22)		Control (N=20)		Total (N=42)		Tests
Characteristics	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Mother's age	36.68	3.75	36.45	4.59	36.7	4.12	<i>t</i> (41)=-.09, <i>p</i> >.10
Child's age (months)	55.73	6.23	57.95	6.96	56.79	6.60	<i>t</i> (41)=-.28, <i>p</i> >.10
Child's gender (%boys)	45.45%		55%		50%		χ^2 (1)=.59, <i>p</i> >.10
Educational level (%)							
- University and higher	95.4%		85%		90.5%		χ^2 =.23, <i>p</i> >.10
- Primary and secondary	4.5%		15%		9.5%		
Monthly income (%):							χ^2 =.17, <i>p</i> >.10
- > 2500 euros	78.9%		84.2%		81.5%		
- < 2500 euros	21.1%		15.8%		18.4%		

Note: No significant difference was found between the two groups.

Procedure

The experimental procedure was structured in four steps. A standardized manual was used and the same experimenter was in contact with the entire sample. First, a few days before coming to the University lab, mothers completed an online set of questionnaires about their self-efficacy, their parenting practices and their child's behavior. Note that the data from the questionnaires were not used during the manipulation procedure, neither for group allocation nor for the preparation of mothers' feedback. The experimenter was

blind to this information. Questionnaires were encoded and analyzed after the fourth step of this experimental procedure. They were used to test the comparability between experimental and control groups and as baseline control measures in the main analysis testing the effect of the experimental manipulation.

In a second step, mothers came to the lab with their child for an hour and were randomly allocated to the experimental or control group (simple randomization based on the lab signing-up order). Participants were unaware of condition assignment. Those allocated to the experimental group received individual positive feedback concerning both their child and their parenting skills by mentioning the questionnaires filled in at home. Those in the control group received no feedback but they were also taken aside without their child to receive instructions about the experiment. Mothers in the experimental group were socially compared to a virtual representative group of mothers by means of a false graph on which they occupied a very high position. The experimenter introduced herself as a university researcher specializing in parenting in order to be perceived by the participants as an expert whose comments were research-based. The positive feedback highlighted their high parenting 'performance' compared to other parents and their child's positive development. By presenting it this way, we intended to use different components of self-efficacy: an acknowledged performance attainment, a positive social comparison and a verbal persuasion. Since SEB are based both on an auto-evaluation that parents make about their skills and also their perception of their ability to positively influence their children (Coleman & Karraker, 2003; Jones & Prinz, 2005), we talked about their child's positive development. Mothers were told the exact same thing, word for word: *"On the basis of the questionnaire filled in at home, we see that the way you behave with your child is particularly interesting for our research. Two points grabbed our attention. First, your child: he or she shows all the signs of a healthy child, at school and at home, in general, apart from any minor worries. Second, the way you parent your child. We have noticed in earlier research we carried out that some childrearing practices, like yours, seem to be more effective in daily life. Maybe you have already experienced this yourself: some ways seem to work better in the long run. Based on an average calculated in earlier research with similar families in Belgium (same number of children, same age, same number of boys and girls), we conclude that you are among the 20% of parents who seem to be the most effective with their children in three fields in particular: limit setting, emotion regulation and warmth."*

There are various elements that make the context in which positive comments are provided quite specific. It takes place in a university laboratory; it is given by a child development researcher; it is part of an experiment, which the mother is aware of and volunteers to participate to. It should not be assumed that SEB may change everyday, depending on any comment that the mother may hear about her parenting. But it was thought that Bandura's SEB theoretical framework used here could give way to SEB modification through the four main sources that influence SEB, on which this experiment is built.

After this positive feedback and social comparison (or absence of it in the case of the control group but with some time shared with the experimenter), mothers played with their child following a standardized procedure including free play and several semi-structured tasks. In the fourth and final step, the experimenter gave a debriefing to every mother without her child, explaining the goal of the study and the manipulation procedure.

Measures

Three self-reported measures on mothers' SEB, mothers' parenting behavior, and children's behavior, were collected at baseline in the first step of the experimental procedure. The set of questionnaires was completed at home by mothers who intended to come to the lab. The experimenter was not blind to the condition during the experiment, since he had to manipulate SEB in one condition and not in the other. But he was blind to parenting questionnaires that mothers fill in at home prior to the lab, therefore blind to how the mother described her child and her parenting skills. Coders who coded video-taped mother-child interaction tasks were blind to condition.

Mothers' self-efficacy beliefs (SEB) were assessed with the Global Parental Self-Efficacy Scale of Meunier and Roskam (EGSCP, 2009a), see in Annex III. Based on Bandura's Social Learning Theory (1977) and on subsequent parenting research (Coleman & Karraker, 2003), this is a 25-item scale related to five domain-specific SEB factors: Discipline, Nurturance, Playing, Instrumental Care, and Teaching. Bandura (1977) suggests that the most valid approach for determining domain-level SEB regarding a multidimensional construct—such as parenting—is achieved by combining several behaviorally specific assessments. In that sense, self-efficacy beliefs in parenting can be evaluated as a quantitative construct by asking parents their beliefs in specific parenting activities, such as teaching, playing, providing instrumental care, nurturing or disciplining their child.

Items are in the form of affirmatives, for example: *"I am able to sense when my child is starting to become distressed"* for the Nurturance subscale. The measure has been validated on 705 French-speaking parents and displays good psychometric properties, according to Meunier and Roskam (five-factor solution explaining 53.1% of the variance, α ranging from .60 to .84, 2009a). In order to limit the number of predictors in the analyses, a main SEB score was computed. Moderate to high correlations were observed between the five domain-specific measures in the validation article and this study ($r = .40$ to $.71$), suggesting that they may be combined in a higher-order domain-general parental SEB measure (α of .91). This procedure, used in the current study, is in line with Bandura's formulation (1977), which suggested that the most valid approach for determining domain-level SEB regarding a multidimensional construct—such as parenting—is achieved by combining the efficacy information conveyed by several behaviorally specific assessments.

Mothers' parenting behavior was assessed with the Preschool Parent Form of the Evaluation of Parental Practices of Meunier and Roskam (EPEP, (2009b). The EPEP-PPSF (Annex VI) is a 40-item instrument yielding nine factors: Positive Parenting, Monitoring,

Rules, Discipline, Inconsistent Discipline, Harsh Punishment, Ignoring, Material Rewarding, and Autonomy. A five-point Likert-type scale is provided for each item, ranging from “never” to “always”. This instrument has been validated on 565 French-speaking mothers and fathers and shows good psychometric properties (nine-factor solution explaining 61.36% of the variance, α ranging from .59 to .90). Confirmatory factor analyses in the validation study showed that two second-order factors covering the supportive and controlling dimensions of parenting emerged from the initial factor solution (CFI = 0.94, RMR = 0.03, and RMSEA = 0.05). The supportive factor was composed of Positive Parenting, Autonomy, and Rules, and included items such as “*When my child seems to have a problem, I discuss with him/her what is wrong*”. The controlling factor was composed of Discipline, Harsh Punishment, and Ignoring, and included items such as “*When my child does something that is not allowed, I only talk to him/her again when he/she behaves better*”. In order to limit the number of predictors in the analyses, the second-order factors of support and control were used in the current research.

Child behavior was measured using the preschool version of the Child Behavior Checklist (see Annex IV) or CBCL (Achenbach & Edelbrock, 1981). The CBCL provides three-point Likert scales: not at all present, moderately present, or often present. Its psychometric properties are good (α ranging from .63 to .86 for the different scales and .85 for test-retest reliability). For the current study, the data collection was limited to two first-order scales, i.e. the “attention problems” and “aggressive behavior” scales, enabling us to calculate an externalizing behavior total score building the second-order “externalizing behavior” scale.

Mothers’ and children’s behaviors were observed using the Crowell Mother-Child Interaction Task (MCIT) procedure. This method of observing caregiver-child interactions in a semi-structured play session has been widely used (Coleman & Karraker, 2003; Crowell & Feldman, 1989; Crowell, O’Connor, Wollmers, Sprafkin, & Rao, 1991). It involves a series of episodes designed to elicit behaviors showing how comfortable and familiar the dyad members are with each other, how they negotiate transitions, their ability to solve problems together, and their use of shared positive or negative affect. This setting is unstructured enough to allow for “real-life” or spontaneous interactions. It takes 45 to 60 minutes to complete and consists of five episodes: free play, frustration task and three increasingly difficult problem-solving tasks (puzzles).

Mothers’ behavior was coded using the Crowell MCIT parent scales and scored on a seven-point Likert scale for emotional responsiveness (creating a positive emotional context through encouragement and praise), behavioral responsiveness (providing instrumental support adapted to the child’s developmental level through well-timed cues), positive affect (smiling and laughing), irritability (frustration with the child), withdrawal/indifference (disinterest in the child) and aggression towards the child. Coding was done by two independent trained coders, one of whom was certified by the University of Tulane (USA), with an intercoder reliability of .92 calculated with the weighted Kappa coefficient on 25% of the sample.

Children's behavior during the interaction with the mother was measured using the Crowell MCIT child scales. Positive affect (smiling and laughing), withdrawal/indifference (disinterest in the relationship due to sadness or depression), irritability (fighting, withdrawn behavior with anger, sulking), non-compliance (not listening to the mother's suggestions or requests) and aggression (verbal or physical) towards the mother, as well as persistence and enthusiasm towards the task, were coded on a seven-point Likert-type scale. Coding was done by trained coders, with an intercoders' reliability of .94 for these scales, calculated with the weighted Kappa coefficient on 25% of the sample.

In order to limit the number of variables under consideration in the current study, a Principal Component Analysis based on regression and without rotation was computed on the four relevant scales for mothers, i.e. emotional and behavioral responsiveness, positive affect and irritability. The mothers' aggression scale had no variance, with very low scores as expected for a community sample. The withdrawal/indifference scales for both mothers and children had also limited variance and they did not correlate significantly with other parenting and children measures (i.e. CBCL or parenting practices). Therefore, these scales were not included in our analyses. A main factor of Positive Parenting was extracted explaining 62.03% of the variance. Reliability was high with $\alpha = .78$. All four scales loaded on the Positive Parenting factor .88, .87, -.71 and .66 for positive affect, emotional responsiveness, irritability, and behavioral responsiveness, respectively. Another Principal Component Analysis was computed on the six relevant scales for children, i.e. enthusiasm, positive affect, persistence, non-compliance, irritability and aggression. A main factor of Positive Child Behavior was extracted explaining 70.81% of the variance. Reliability was high with $\alpha = .90$. All six scales loaded on the Positive Child Behavior factor -.90, .87, .85, .84, -.82, -.75 for non-compliance, enthusiasm, positive affect, persistence, irritability and aggression, respectively. These two factors of Positive Parenting and Child Positive Behavior were used as variables for subsequent analyses.

Data analysis

A first preliminary analysis consisted of checking the comparability of the experimental and control groups on baseline measures, through *t*-tests. A second preliminary analysis checked the consistency of observed and self-report measures through correlations.

The main analysis of the current study consisted of testing the relationship between the manipulated mothers' SEB on the one hand and mothers' and children's behaviors on the other hand. The manipulation check was based on a highly controlled laboratory setting, enabling most variables to be controlled for. The only difference remaining between the two groups on the outcomes measured with *t*-tests and Cohen's *d* for effect's size, can be considered as the self-efficacy manipulation. A pretest-posttest evaluation of self-efficacy seemed inadequate because of a possible test-retest effect of this cognitive measurement carried out within an hour-time through a 25-item questionnaire.

Results

The comparison between the baseline measures of the experimental and control groups revealed no difference. Mothers in both groups had similar age, income and education level. Their children lived in similar families in terms of family composition (number of siblings, rank in the family, raised by single mothers) and had the same age and gender.

But most importantly, the two groups had similar parenting practices, felt similarly confident as mothers in each of the five domains (discipline, nurturance, instrumental care, play and teaching) and globally. Mothers' SEB were comparable to norms established for mothers of 3-7 year old preschoolers (Meunier & Roskam, 2009a) in both groups, ranging in the average level of SEB. They had children with similar levels of externalizing behavior at baseline, allowing us to test the main analysis. Descriptive statistics and results of *t*-tests are presented in Table 2.

Table 2 Descriptive statistics of the baseline measures for the experimental and the control groups

Baseline measures	Experimental (n=22)		Control (n=20)		t-test	
	M	SD	M	SD	<i>t</i>	<i>Df</i>
Parenting practices:						
Control	2.04	.41	2.02	.58	0.20	40
Support	4.17	.33	4.31	.41	1.27	40
Mothers' self-efficacy	96.72	10.13	93.80	12.12	0.85	40
Children's externalizing behavior	7.09	4.0	10.5	7.6	1.88	40

Note: No significant difference was found between the two groups.

Table 3 shows the correlation coefficients used to assess the relations between baseline measures (i.e. mothers' SEB, parenting practices, and children's behavior), with mothers' and children's scores from the MCIT Crowell procedure. The results reveal coherent patterns of relations, supporting the validity of our sample's measures. For example, what children and mothers did in the lab was consistent with what mothers reported by questionnaire at home about their parenting practices and their children's behavior. Children with low levels of positive behavior observed in the lab were described by their mother in the CBCL as also externalized at home. As expected on the basis of previous studies on SEB (Coleman & Karraker, 2003; Meunier & Roskam, 2009a), mothers who were low in positive parenting (for instance, showing irritability or low positive affect with their child) had lower SEB at baseline and used more negative controlling practices. Negative controlling practices and low SEB were correlated with children's observed low levels of positive behavior (for instance, higher irritability or non-compliance and less persistence and enthusiasm towards the task). Only the support scale of self-reported parenting practices did not correlate with observed behaviors of mothers and children. This scale measures autonomy, positive parenting and limit setting, which are not directly related to the scales of the observed interaction, with the exception of positive parenting. But it was positively correlated to mothers' SEB ($r(42) = 0.36$, $p < .05$). It remains that correlations between these various parenting constructs could have been found, as it has been for the control scale. Although these self-reported measures of parenting practices

play a controlling role, they are not the main variables of interest in this experiment. Last, the way mothers and children behaved in the lab was also very similar to one another, showing congruent behaviors. Finally, these preliminary correlational analyses confirmed the link between mothers' SEB and children's and mothers' behaviors for the entire sample, as expected.

Table 3 Correlations between baseline measures of mothers' and children's MCIT Crowell scores

Mothers' and children's behavior in MCIT	CBCL-Children's externalizing behavior	Parenting practices-control	Parenting practices-support	Mothers' Self-efficacy
Positive parenting	-.34*	-.40**	-.08	.37*
Child Positive Behavior	-.54**	-.53**	-.01	.59**

Note: ** $p < .01$; * $p < .05$; MCIT: Mother-Child Interaction Task

With regard to the main analysis of the current study, the results confirmed that the experimental manipulation made a difference in the outcomes. *T*-tests comparing control and experimental groups on outcomes showed that giving a positive feedback to mothers in view of enhancing their SEB had a positive effect on both Positive Parenting and Positive Child Behavior, with effect sizes of .63 and .64, respectively. Descriptive statistics, results of *t*-tests and effect sizes are displayed in Table 4.

Concretely, during the observed interaction, mothers in the experimental group showed more positive parenting behavior than mothers in the control group. Furthermore, children in the experimental group displayed more positive behavior; they expressed more positive affect towards their mother, smiled and laughed more than the ones whose mothers did not receive any feedback. Their enthusiasm towards the task was also higher.

Table 4 Descriptive statistics of the measures after the experimental manipulation for the experimental and control groups, *t*-tests and effect sizes

Post-test measures	Experimental (n=22)		Control (n=20)		T-test			Effect size	
	M	SD	M	SD	<i>t</i>	<i>p</i>	<i>df</i>	Cohen's <i>d</i>	
Mothers and Children's behavior in MCIT:									
Positive parenting	.31	.74	-.31	1.17	-2.03*	.05	40	0.63	
Child positive behavior	.33	.53	-.25	1.19	-2.03*	.05	40	0.64	

Note: * $p < .05$, ** $p < .01$. MCIT: Mother-Child Interaction Task.

Discussion

The aim of this quasi-experimental study was to clarify one of the processes involved in parent-child interactions. By investigating in the lab the link between mothers' self-efficacy and both parenting and child's behavior, this controlled randomized micro-trial brings an insight to the relationship between parenting and children's behavior. In such a complex field, where many variables interact with one another, experimental manipulations of this kind are innovative, providing probably one of the closest ways, although imperfect, to clarify a potential causal relationship between one specific

parenting variable and child behavior in particular. For obvious ethical reasons, manipulations of either parents or children are limited to outcomes' improvement. Longitudinal studies can provide a complementary way to determine directionality but with the limitation that time precedence does not necessarily indicate causality, as illustrated by recent genetic studies that show that some genetic effects manifest only at certain ages (Avinun & Knafo, 2014).

As on the issue of understanding to what extent parenting influences children, results of this study show that an attempt to modify one single specific parenting variable, here the cognition of self-efficacy beliefs, may have an immediate effect on both mothers' and children's behaviors. The positive comments on the way they raise their children may have reinforced mothers' evaluation of a positive experience of parenting, contributing to a possible enhancement of their self-efficacy beliefs. This had a positive impact on their observed behavior with their child. Being told by an expert that they are among the top parents using the most effective parenting practices contributes to an increase in Positive Parenting of mothers even when asked to do difficult and frustrating tasks. Enhanced SEB seem to play a protective role against the effect of children's frustration. The experimental manipulation, which allows an immediate effect of improved parenting to be observed, leads to positive changes in the child as well. For children, manipulation makes also a significant difference in their behavior, which is particularly interesting, considering that nothing has been said or done to them directly. Results show that children show more positive behavior directly after their mother has received positive feedback, for instance expressing more positive affect, less irritability, more enthusiasm and persistence towards the task. In line with their mother's changes, children modify their affect and behavior almost immediately. This complements previous studies stressing the impact of improved positive parenting on children's positive affect, rather than a reduction of harsh or negative parenting (Gardner et al., 2010). This immediate effect has been rarely observed in parenting intervention studies because most of them evaluate effects on a more diluted time. It could be hypothesized that if they were observed immediately after the sessions, an immediate effect could be found. The sleeper effect (i.e. effects not visible immediately after an intervention but later on) described in several studies measuring behavioral change (Mitchell, Broeren, Newall, & Hudson, 2013), was not salient for Child Positive Behavior here.

Clinical implications

Micro-trial designs like this one make it easier to translate knowledge into prevention and intervention research because of their focused and theory-based approach (Howe et al., 2010). Hagan et al. (2012) recently underlined the added value of prevention trials founded on well-specified and theory-based models of developmental processes. They "provide experimental tests of whether changing these processes accounts for reductions in problem outcomes and increases in competencies, which in turn should lead to the design of more effective and efficient intervention" (p.2). In a complementary way to trials, Sanders (2013) proposed a model detailing change processes based on Social Learning Theory, that are used in parenting intervention.

The results of this study could contribute to show that parenting interventions can build on positive feedbacks related to parental SEB to improve mother-child interaction and to the reduction of difficult behavior by children (Deković, Asscher, et al., 2012; Sofronoff & Farbotko, 2002). However, SEB could be targeted and specifically improved in parenting interventions, and should not be considered solely as a positive side-effect of intervention. Self-efficacy beliefs could be considered as a possible empowerment tool for parents which strengthens positive parenting and contributes to improving children's behavior (Deković et al., 2010).

SEB-based interventions could use the processes of verbal persuasion when it targets parents' actual parenting experience and compare it to other parents, with a limited number of sessions. This confirms the study by Bakermans-Kranenburg and colleagues showing that such short-term interventions are more effective (2003). This study showed that providing a positive feedback to mothers (through a short and straightforward experimental manipulation) makes a difference in behaviors of both mother and child. Medium size effects were already visible after a single feedback session.

Limitations and further research

While results of this study are promising, it has several limitations and replication could be recommended in future research. First, the size of its sample is relatively small, though adequate for a micro-trial design (Brown et al., 2012; Brown & Liao, 1999; Howe et al., 2010). Second, the measurement of mothers' SEB, as a form of cognition, is based exclusively on self-report without being combined with behavioral or multi-informant measures. The way mothers are allocated to a group could have been done in a more randomized way, such as flipping a coin instead of allocating them on the basis of their signing-up order.

Because of these evaluation limitations and the fact that this concept may seem close to other cognitions such as self-esteem or influenced by mood, three methodological precautions were thoroughly prepared. First, to ensure that the only difference between the control and experimental groups was the positive feedback provided, most of what could be controlled for has been checked, both groups are comparable in terms of parents' and children's characteristics.

Second, this study is based on a control-experimental group comparison, which is not the ideal pretest-posttest design for a full experimental manipulation. Given that even mothers in the control group were invited to discuss experiment guidelines with the experimenter, without their child, in the same room where mothers from the experimental group received their feedback, one may assume that time and interest dedicated to each participating mother before the interaction time was somehow comparable. In theory, the best manipulation check would have been a pretest-posttest evaluation of self-efficacy beliefs. But it seemed inadequate because of a possible test-retest effect of this type of cognition measurement carried out within an hour-time and through a 25-item questionnaire. The possibility that mothers in the experimental group

may have been more efficient before the intervention cannot be completely ruled out. In future similar micro-trials on SEB, a pretest-posttest comparison could be tested.

Third, the positive feedback was theory-based using Bandura's Social Learning Theory, which stipulates that self-efficacy is enhanced by personal experience, comparison with others, feedback and emotional states (Bandura, 2012). This experiment specifically used several of these resources to improve mothers' SEB by explicitly acknowledging their high parenting performance and the positive development of her child.

Another limitation relates to the probable short-lived effect of the manipulation. Evidence is provided on mothers' self-efficacy enhancement and its impact on both mothers' and children's behaviors and affect but without any indication of its effect on the longer run. Longer-term effects could be explored if this type of manipulation induces mainly short-lived effects or not.

This study also focuses on a relatively well-functioning, non-clinical convenience sample not considered to be at risk in terms of children's behavior, in particular when looking at mother's income and education level. Further analyses could compare the impact of such SEB manipulation on different populations such as a clinical sample of externalizing children, or socio-economically at-risk dyads. Mothers with a lower level of education could need an intervention not based solely on language as the one used in this study.

Studying a possible mediation relation between mother SEB, mother behavior and child behavior would be an interesting point to explore. In our study design, since mothers are never alone and in constant interaction with their child, there is no possibility to identify a possible mediation link. Unfortunately here, mothers and children's behaviors are measured at the same time and both measures are necessary because of this interaction setting.

A similar micro-trial studying the impact of fathers' SEB reinforcement could also bring a different perspective (Kwok, Ling, Leung, & Li, 2013; Sevigny & Loutzenhiser, 2010). Studies tend to show that the association between SEB and parenting behaviors is stronger for mothers than fathers (Slagt et al., 2012) and that fathers' SEB may be more influenced by their child's temperament than mothers' (Sevigny & Loutzenhiser, 2010).

Taking into account the temperament of children and mothers could also shed additional light on these results (Pluess & Belsky, 2010; Prinzie, van der Sluis, de Haan, & Deković, 2010; Van Den Akker, Deković, Prinzie, & Asscher, 2010). Children with a difficult temperament may be more sensitive to changes in their mother's SEB. Checking for a differential susceptibility hypothesis based on temperament measures (Gilissen, Bakermans-Kranenburg, van Ijzendoorn, & van der Veer, 2008) could contribute to the identification of which intervention is most beneficial to which type of parents and children (Belsky & Pluess, 2009). This could widen the understanding of these results notably by reflecting temperamental influences, which remains a research field yet to be explored further. In a recent meta-analysis, Avinun and Knafo (2014) provide empirical evidence for the role of children's genotype in affecting parenting, stressing the

importance of viewing children as active agents in the family environment and calling for a deeper understanding of the family not only as a social but also biological system.

In spite of these shortcomings, this micro-trial study contributes to the field of parenting research, as it contributes to prove a direct relationship between mothers' manipulation based on a positive feedback aiming at improving their self-efficacy beliefs and their behavior, in particular positive parenting, when other variables have been controlled for thanks to the experimental nature of this study. Mothers' self-efficacy's enhancement could be considered also as a possible predictor of children's positive behavior including in challenging tasks. Thus this study identifies self-efficacy beliefs as a relevant parenting variable to be targeted and manipulated in parenting interventions using theory-based change processes as a therapeutic leverage, and not just as a secondary effect used to evaluate programmes or as a baseline predictor of programmes' effectiveness.

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Confident parents in at-risk and clinical sample

This study presents the effects on children's externalizing behavior of *Confident Parents*, a focused parenting program targeting parental self-efficacy. This innovative program was experimentally tested on 80 parents of three-to-six-year-old preschoolers with moderate to clinical levels of externalizing behavior. Thirty-seven parents participated to the program and were compared to a waiting-list control group (n=43). Effect sizes were evaluated through observational and parent-report measures on children's externalizing behavior and parents' self-efficacy at pretest, post-test and a four-month follow-up. Through a multi-level analysis, predictors of the change in children's behavior were identified. The results illustrate that improving parental cognition of self-efficacy could be a direction to explore further. *Confident Parents* decreased children's externalizing behavior as reported by parents. It also improved both parents' and children's observed behavior. The more difficult children were initially, the more they benefited, whereas socio-economic risk predicted a reduced effect.

Keywords: Parenting, preschoolers, intervention, self-efficacy, child externalizing behavior

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Confident Parents: A parental self-efficacy program to reduce preschoolers' externalizing behavior

Introduction

Externalizing Behavior (EB), defined as aggression, non-compliance, hyperactivity, inattention and impulsivity, is the most common reason for preschoolers' referral to mental health services (Wakschlag et al., 2007). Most children demonstrate some of these behaviors, considered as part of a standard development path (Bagner, Rodríguez, Blake, Linares, & Carter, 2012), but when pervasive and intensive, EB can have negative effects on children's social and learning skills, as well as on family life (Campbell et al., 2000).

Contributing factors to child EB

Numerous factors contribute to EB in children, the most documented of which are biological factors (i.e. difficult temperament), environmental factors (i.e. socio-economic disadvantage), and negative parenting (Gartstein, Putnam, & Rothbart, 2012; Long, Gurka, & Blackman, 2008; Martel et al., 2012). Many correlational studies have shown a strong link between negative parenting and a high level of EB in children (Karreman, van Tuijl, van Aken, & Deković, 2006; Roskam, Meunier, Stievenart, et al., 2013). Parents use more negative or inept discipline and children display more disruptive behavior, contributing to a vicious circle leading to increasingly difficult behavior in children (Lorber & Egeland, 2011; Stoltz, Londen, et al., 2013).

Numerous studies have also shown a relation between child EB and parental cognition. In particular, parental self-efficacy beliefs (SEB), defined as beliefs parents hold of their capacity to parent a child (de Montigny & Lacharité, 2005), are an important factor. A parent with an aggressive or agitated child often feels less competent than other parents (Coleman & Karraker, 2003; Heath, Curtis, Fan, & McPherson, 2015; Jones & Prinz, 2005). The link between parental self-efficacy and parenting behavior has also been investigated. It has been demonstrated that parental SEB, parenting behavior and children's behavior are connected through transactional relations. Parents with low self-efficacy tend to use more coercive and harsh parenting than parents with a higher level of SEB, who use more positive parenting (Johnston & Mash, 1989; Teti & Gelfand, 1991). Children of low SEB parents tend to be more difficult, with higher negativity and non-compliance (Beaulieu, Normandeau, & Robaey, 2014; Bugental et al., 2010; de Haan, Prinzie, & Deković, 2009; Deković et al., 2010; Leerkes & Crockenberg, 2002). However, most studies are correlational in nature, leaving the question of causality between parental cognition and child EB unresolved.

Parenting programs to reduce child EB

Given that EB is the most common reason for mental health consultations for children, a number of treatments have been tried in the last few decades. Many of these focus on the parent, in an attempt to reduce negative parenting and improve parent-child interaction. They imply that parents are key actors for change in the child, based on the interactional nature of parent child interactions (Aunola & Nurmi, 2005; Granic & Patterson, 2006).

Several meta-analyses have shown the effectiveness of such parenting interventions at reducing children's EB, with a small to moderate effect size varying from 0.35 to 0.53 (Dretzke et al., 2009; Furlong et al., 2012; Kaminski et al., 2008). In a recent meta-analysis, 35 intervention studies were analyzed to evaluate their effectiveness according to their behavioral or cognitive orientation (Mouton et al., submitted-c). A majority of these programs tend to cover a wide range of parenting skills. Parenting programs focusing on one specific orientation of parenting are rare. Also, most parenting programs prioritize the modification of parenting behaviors, rather than cognition (Weisz & Kazdin, 2010). However, more programs now include some cognitive components.

Cognitive components in parenting programs

Several parenting programs have included new components in addition to the existing behavioral components (Bor, Sanders, & Markie-Dadds, 2002). In a literature review, Mah and Johnston (2008) analyzed seven studies, in which an incremental cognitive component was added to an existing behavioral program. Their aim is to modify parental cognition during behavioral training in order to enhance treatment outcome. As was also the case in the meta-analysis of Mouton & al (submitted-c), authors have underlined the difficulty of evaluating isolated effects of specific components, even in enhanced versions of existing programs. However, some authors have found that effect sizes are slightly greater and maintained at follow-up in enhanced programs (Gavița, Joyce, & David, 2011).

These cognitive additions to existing programs are justified by the fact that many researchers and clinicians acknowledge the importance of the cognitive dimension in parenting (Bugental & Johnston, 2000). However, few experimental studies have focused exclusively on cognitive-based components so far. Joyce (1995) was one of the first to develop a rational-emotive therapy (RET) program that helped parents reduce their emotional stress associated with parenting. More recently, two experimental studies have explored the possibility of manipulating parental SEB and analyzed its direct effect on parent-child interaction, with normally developing dyads. Mouton and Roskam (2015) showed that SEB can be reinforced in mothers by using brief positive feedback on their current parenting skills with their child. Direct positive effects on both mothers and children were already visible after a single feedback session, with a medium effect size (0.63 and 0.64 for mothers' and children's observed behavior respectively). Cassé and colleagues (2015) investigated another aspect of SEB, their persistence after negative experiences, in a similarly innovative experiment. They used another type of feedback,

based on the parent's performance in a general parenting task (infant crying), unrelated to the parent's own child. Both studies illustrate the possibility of modifying parental SEB, in a positive or negative manner, by using feedback. The main difference lies in the subject of the feedback: on parents' general parenting skills in one study, and in their parenting of their own child in the other.

Finally, it is interesting to note a discrepancy between the acknowledgement of the role of SEB in parenting and the small place it has been given in programs. SEB have been identified as a good component of parental cognition on which to focus in order to empower parents, strengthen positive parenting and contribute to reducing children's difficult behavior (Deković et al., 2010; Sofronoff & Farbotko, 2002). Several studies have shown that higher parental SEB predict more positive behavior in children after participation in a program in which parenting behaviors are modified (Beauchaine et al., 2005; Bor et al., 2002). However, parental SEB have mostly been analyzed in existing programs so far as a positive side-effect, a moderator or predictor of change, documenting the indirect effects of SEB on child EB.

The study of Deković and colleagues (2012) is innovative in the way it identifies the change in parental SEB during the program as a mediator between a change in parenting practices and adolescent EB. But here again, SEB were not the main focus of these interventions.

Factors influencing parenting programs' effectiveness

Some meta-analyses have analyzed predictors and moderators in order to achieve a better understanding of who benefits most from such programs and under what circumstances (Barlow & Parsons, 2002; Nixon, 2002). The age and gender of children and parents were controlled for, but showed no main effect.

Two of the most documented factors are the initial severity of the child's EB and the socio-economic status of the family (SES, in terms of parental income and education). Concerning the initial severity of the child's EB, results are contradictory. Some authors have observed greater program effectiveness in clinical samples (Lundahl et al., 2006) in which children had a high level of EB, and speculated that this is because parents are more motivated to change (Leijten et al., 2015). However, other authors (Reyno & McGrath, 2006; Shelleby & Shaw, 2014) have concluded that there is no systematic effect of initial severity. Concerning family SES, low SES children are considered to be at risk for EB, and their parents for negative parenting (Gross et al., 2009). Single parenthood and high levels of parental stress or adversity in the family also contribute to this risk factor (Ackerman, Brown, & Izard, 2004). These SES risk factors have also been thought to diminish the effects of parenting programs (Lundahl et al., 2006; Reyno & McGrath, 2006). However, there is a controversy on this issue. For McGilloway et al. (2012), Beauchaine, Webster-Stratton and Reid (2005) and Gardner et al. (2010), children of at-risk families derive considerable benefits from programs, while other research has shown that moderation effects of SES risk are not visible at post-test but only at follow-up (Leijten et al., 2013). In

any case, the effects of these factors have not previously been investigated in the case of programs focusing on parental cognition, in particular self-efficacy.

Current study

So far, SEB have been mostly analyzed in relation to child outcome in an indirect way: either as a moderator of a treatment response (higher SEB contribute to a better child response to treatment), or as a secondary treatment outcome (improved SEB after a program for participating parents compared with control group), or more interestingly as a mediator between parenting improvement and the effect of the program on children (first, parents increase their SEB, then improve their positive parenting behavior, which eventually reduces child EB).

In view of these omissions in the literature, a different approach was taken in this study. The direct effects of SEB were explored through the following question: if we modify parental cognition of self-efficacy directly and exclusively, will this prove effective in reducing children's EB? The rationale behind this innovative approach is that, as stated by Mah, Johnston and Regambal (2010), although the skills taught in most behavioral parenting programs are known to improve children's behavior, many parents have difficulty in engaging in and using these skills and generalizing them across a wide range of situations. It may be harder for parents to improve their SEB than their behavior without support (Gerdes & Hoza, 2006). Our hypothesis was that improving parental SEB could be a way to help parents engage in a change process with their child. They may then be able to adapt their parenting skills by themselves and modify them if necessary. Behavior modification was not the focus here, as it is in most parenting programs, because we hypothesized that parents have the potential to modify behavior outside the program thanks to their increased SEB. They can make use of reading and discussing best practice with other parents, using the Internet and social networks, which make information more easily accessible than used to be the case.

The aim of this study was therefore to test a parenting program that has two unusual characteristics: it is focused and it targets a cognitive parenting variable. This study analyzes the change occurring in children with moderate to clinical levels of external behavior after the participation of their parents in *Confident Parents*. Can parental SEB be improved through an eight-week group parenting program? If so, does this program have a direct effect on children's EB, both reported by parents and observed, as well as on parents' observed behavior? Do the effects of this program differ according to initial EB severity or SES risk?

Based on previous research, our hypothesis was that this SEB program would have a direct positive effect on children and improve parents' behavior. In view of the contradictory findings in the literature and the lack of studies on these factors in cognitive interventions, we had no hypothesis on the predictive effect of initial severity of EB or socio-economic risk.

The method used here was the one used for micro-trials (Howe et al., 2010) which are randomized experiments testing the effects of relatively brief and focused environmental manipulations designed to suppress specific risk mechanisms or enhance specific protective mechanisms. They do not bring about full treatment or prevention effects in distal outcomes, but they may contribute to the understanding of the effects of specific variables and change processes on which parenting interventions are built. They imply three conditions: first, the identification of a protective factor (SEB); second, the selection of a specific proximal outcome with multiple informants and instruments (EB, both parent-reported and observed, as well as parents' observed behavior); last, the manipulation of the selected factor (SEB) in a randomized controlled trial.

Method

Sample characteristics and recruitment

The study is part of the H2M (Hard-T(w)o-Manage) research program conducted at the Psychological Sciences Research Institute of the University of Louvain (Belgium). Data were collected from two samples of respectively 44 at-risk and 36 clinically referred three-to-six-year-old preschoolers and their parents. The two samples attended the same parenting program, in which the same parenting variable – parental SEB - was manipulated. They were tested at pretest, post-test and follow-up at the same intervals (post-test at 8 weeks /follow-up at 16 weeks). They shared common socio-demographic characteristics (parent's gender and age, child's age and IQ). They only differed in respect of clinical EB characteristics such as initial severity of EB and other socio-economic characteristics. For the recruitment of subjects, parents were informed through leaflets, posters, a website and Facebook page created for this study. At-risk parents were invited to attend a free parents' group to improve their relationship with their child. Information was given to selected schools, according to their socio-economic index. This index is computed by the National Institute of Statistics in Belgium on the basis of the pupils' neighborhoods characteristics (incomes, educational level, housing quality, professional occupation and employment) and ranges from 1 to 20. An index score of 1 to 5 is attributed to the most deprived schools, which receive additional financial support from the government. Families were recruited in schools with an index score of 6 to 10, in order to target children with low SES but exclude the most deprived children. Parents in the clinical sample were invited to attend a free parents' group if they had a child who showed difficult behavior. On the basis of an online questionnaire, children with a clinical or borderline level of EB were included in the study. The choice to merge the two samples is justified by the fact that the parents received the same intervention and the same experimental design was implemented. This approach also ensured a wider range of EB level at baseline and SES risk.

Forty-seven parents were quasi-randomly assigned to a waiting list control group, on the basis of their enrolment order. Three parents dropped out, and 43 valid cases were finally considered for control data analyses after excluding one outlier. After the eight-week waiting period, the experimental group was composed of 37 parents: 25 from the

former control group and 16 newly enrolled parents, with four parents having dropped out before the beginning of the program. Data analyses of the intervention group were eventually based on 37 valid cases. 56 parents were allocated to other interventions tested in the H2M research, all lasting eight weeks (see flow of participants in Figure 1). The 16 dyads that were only involved at the program stage were compared with the other 64 dyads and did not differ on any socio-demographic or baseline outcomes. In both samples, there were no drop-outs between baseline and follow-up; parents attended at least 80% of the program sessions and all pre-post assessments.

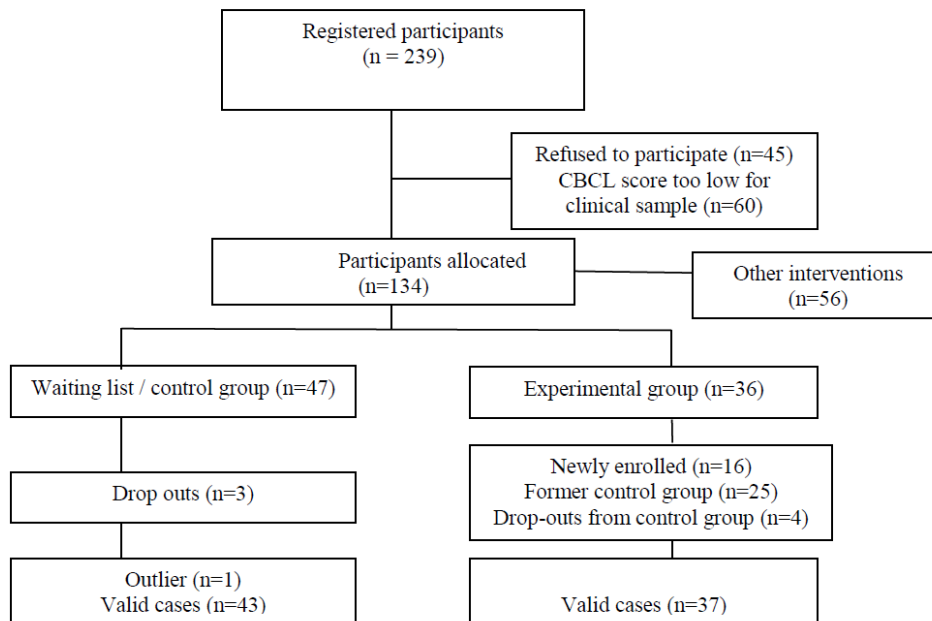


Figure 1. Flowchart of participants (N=80)

In the total sample (table 1), the mean age of the children (52.5% boys) was four and a half years ($M=54.98$ months, $SD=8.21$). The mean age of the parents (75% mothers) was 37.69 years ($SD=5.57$). Children with intellectual disabilities or high potential were excluded from the study ($IQ < 5$ or > 15). Their IQ ($M=10.60$, $SD= 2.30$) was evaluated using two subtests (block design and information subtests) of the WPPSI-III (Wechsler & Grégoire, 1996) for reasoning and verbal IQ respectively. Thirty-two percent of the children had been in contact previously with clinicians for their behavior. Parents' educational level was calculated as the number of years of education they had completed, counting from first grade onward. Few had only completed six years (3.8%); 25% had completed twelve years (completion of secondary and compulsory education in Belgium); others had completed three more years in undergraduate studies (12.5%); and the majority had a four-year degree or more (58.8%). 18.8% of families had one child, 56.3% had two and 25% had three or more. Monthly incomes were less than €2000 for 23.8% of the families (the poverty threshold in Belgium), between €2000 and €4000 for 38.8%, and

higher than €4000 for 37.5%. On average, the level of chaos in the families (adverse environmental factors such as household level of noise, crowding, untidiness) was measured with the CHAOS questionnaire (Matheny Jr, Wachs, Ludwig, & Phillips, 1995), see Annex VII. The mean level of Chaos was 5.54 ($SD=2.86$) on a scale of 15. 11.3% of parents were single. A global socio-economic risk factor (SES risk) was compiled with single parenthood status, the lowest 30% of income and education levels, and the highest 30% of chaos scores, each counting as one risk on a total scale from 1 to 4. The mean risk factor for the entire sample was less than one. 42.5% of families had no risk factors, 32.5% had one, 16.3% had two and 8.8% had three of these risk factors.

Table 1: Descriptive statistics on socio-demographic characteristics for experimental and control groups

Characteristics	Control (N=43)	Experimental (N=37)	Total (N=80)	Tests t-tests t(79) or X ² (1)
	M (SD)	M (SD)	M (SD)	
Parent's age	37.15 (5.03)	38.36 (6.18)	37.69 (5.57)	0.93
Parent's gender (% mothers)	77 %	73%	75 %	0.15
Child's age (months)	53.84 (8.69)	56.30(7.53)	54.98 (8.21)	1.34
Child's gender (%boys)	53.5%	51.4 %	52.5 %	0.04
Child's IQ	10.22 (2.35)	11.02 (2.19)	10.60 (2.30)	1.56
Educational level (years)	14.37 (2.53)	14.65 (2.24)	14.50 (2.39)	0.51
Monthly income (%):				
- <2000 euros	27.9%	18.92%	23.8 %	
- 2000- 4000 euros	34.9 %	43.24%	38.8 %	1.04
- > 4000 euros	37.2 %	37.84%	37.5 %	
Chaos	5.91 (2.76)	5.11 (2.96)	5.54 (2.86)	1.25
Single parent families (%)	14.0%	8.1%	11.3%	0.68
Socio-economic risk	1.05 (1.02)	0.76 (0.89)	0.91 (0.97)	1.34
Previous counseling	30.20 %	35.10 %	32.5 %	0.22

Data collection

In both samples, baseline data were collected with a multi-method approach, using both parent-reported questionnaires and observations. Data was collected online with a questionnaire on socio-demographics and the child's EB. Other baseline data (parental self-efficacy and child's IQ) were collected in each family during a visit at home or on the university premises, by extensively trained researchers. During the first meeting, a standardized observation of the parent-child interaction was also made and video-recorded for coding. At the end of the program as well as after a 16-week follow-up period, data were collected at home or on the university premises.

This study was approved by the Ethical Committee of the Psychological Sciences Research Institute of the University of Louvain (Belgium). Informed consent was obtained from all participants included in the study. Participants received small rewards provided by sponsors (museum tickets, small toys or shopping vouchers). A waiting list control group design was chosen, mostly for ethical reasons, as is often the case in parenting intervention research (Sanders et al., 2000). Although such a design prevents comparisons at follow-up, it offers an alternative to families who would be left without any support otherwise.

The Confident Parents program

Confident Parents is a focused parenting program to empower parents, based on the hypothesis that they will be able to adjust their parenting skills to their child's characteristics and their family functioning by themselves. Parents were told at the very first session: "You, as a parent, have the greatest change potential in the relationship with your child. You are the one who knows him or her best." They were told that there would be no explicit coaching on the way they raise their child, because they are the best experts about their own child. The focus would be on what they think, how they feel about themselves as a parent and what they imagine is going on for their child.

The content of *Confident Parents* was based on Bandura's social learning theory, assuming that self-efficacy should be considered not as a personality trait but rather as context-dependent, which means that it can be manipulated, as shown in social psychology and sport studies (Coffee & Rees, 2011). Social learning theory holds that SEB are rooted in individual factors (e.g. personal history of accomplishment, emotional arousal and its physiological impact) as well as in contextual factors (e.g. verbal feedback from others, social comparisons), (Bandura, 1989b). Performance accomplishments are the strongest source of self-efficacy, followed by vicarious experience (an evaluation process based on seeing others perform), verbal persuasion and emotional arousal. In parenting, SEB are therefore expected to depend on parents' past and actual experience with their children (successes and failures) and on the emotional arousal this experience may induce. Feedback from others (in particular comments from relatives, teachers, doctors, friends, etc.) and social comparison with other parents are also major contributors to self-efficacy.

The intervention consisted of eight weekly group sessions with seven to eleven parents, including mothers and fathers (75% and 25% respectively on average). During an hour and a half, activities varied from group discussion based on brainstorming, video or audio clips, and role-plays to personalized video-feedback on parent-child interactions. Between sessions, homework was set to implement issues discussed at home. Groups were led by two trained psychologists on the basis of a standardized delivery manual.

This manual contained instructions for the participants at each session, a precise timetable, a description of activities and materials and standardized answers to possible questions raised by parents. Recommendations were given about how to keep a neutral, open and unconditional acceptance attitude towards parents, and how to stay exclusively focused on the manipulated variable. No instructions were given by the program leaders to parents on how a good parent should deal with a child, to avoid weakening parents' SEB and reinforcing the program leaders' position as experts. On the contrary, the intervention aimed at empowering parents by making them realize how much they already do and know about their child and by countering the negative perceptions that often lead to guilt.

The first session began with discussion based on each parent's representations of his role and difficulties with the child. The therapeutic process used here was based on

challenging specific cognitions about child-rearing and child development (Gavița et al., 2011). Daily difficulties were shared among the group, helping to normalize parents' daily hassles and reduce parents' feelings of powerlessness and guilt. This normalization process contributed greatly to the group-building process as well as to a process of seeing things in perspective for parents. In Session 2, the cognitive process involved was breaking free of negative and globalizing thoughts. The third session focused on the identification of emotions, cognitions and behaviors, as well as physical sensations, when expressing or receiving positive feedback. In Session 4, parents watched videos showing various dyads, illustrating the effects of children's difficult behavior on parents (i.e. emotional reaction, physical sensations and thoughts). Unconscious automatic cognitions and behaviors and the emotional arousal of parents and children were discussed. The therapeutic aim here was to raise parents' awareness of these automatic processes and increase their anticipation capacity in order to limit the activation of negative processes (Gavița et al., 2011). In Session 5, parents were requested to ask a significant other of their choice (their own parents, siblings, best friends, etc.) to give them positive feedback on their parenting and their child. The effects of this feedback were discussed as well as the differences of perspective on the same child from different people, illustrating the possible negative bias parents may have towards their own child. The therapeutic process used here was the reinforcement of self-efficacy through one of Bandura's four sources of parental self-efficacy, i.e. verbal persuasion from significant others (1977). In session 6, once the group cohesion was strong enough, parents were invited to recall a difficult time with their child and identify their own thoughts, emotions and physical sensations in this situation. Mindfulness was used as a coping strategy (A. Ellis, 2005; Gavița et al., 2011). In the last two sessions, personalized video-feedback was used to observe and discuss dyadic interactions in the group (Juffer, Bakermans-Kranenburg, & van Ijzendoorn, 2008). Similarly to Mouton & Roskam (2015), the hypothesis was that referring to the parents' skills with their own children, reinforced still further by the use of images here, rather than referring to a skill implemented with any children, would help strengthen self-efficacy.

Measures

Parents' self-efficacy beliefs (SEB) were assessed for manipulation check with the Global Parental Self-Efficacy Scale (see Annex III) of Meunier and Roskam (EGSCP, 2009a). Based on Bandura's Social Learning Theory (1977) and on subsequent research (Coleman & Karraker, 2003), this is a 25-item scale related to five domain-specific SEB factors: Discipline, Nurturance, Playing, Instrumental Care, and Teaching. Items are in the form of affirmatives, for example: "*I am able to sense when my child is starting to become distressed*" for the Nurturance subscale. The measure has been validated on 705 French-speaking parents and displays good psychometric properties, according to Meunier and Roskam (five-factor solution explaining 53.1% of the variance, α ranging from .60 to .84, 2009a). As suggested by the authors, a main SEB score was computed in order to limit the number of predictors in the analyses. Moderate to high correlations were observed between four of the five domain-specific measures ($r = .25$ to $.57$), suggesting that they

may be combined in a higher-order domain-general parental SEB measure (α of .71, .72 and .76 for the total score at baseline, post-test and follow-up respectively). The instrumental care scale was not included in this study because of its limited correlation with the other scales. Parents of EB children may feel competent for the basic functions of parenting (feeding, physical or medical care, etc.), but a lot less so for discipline, nurturance, playing and teaching.

Child externalized behavior was measured using the preschool version of the Achenbach's Child Behavior Check-List or CBCL (2010), see Annex IV. The CBCL provides three-point Likert scales: not at all present, moderately present, or often present. Its psychometric properties are good (α ranging from .63 to .86 for the different scales and .85 for test-retest reliability), including for the French-version validation (α ranging from .63 to .86 for the different scales and .85 for test-retest reliability) used here (Fombonne, 1989). For the current study, the data collection was limited to two first-order scales, i.e. the "attention problems" and "aggressive behavior" scales, enabling us to calculate an externalizing behavior total score building the second-order "externalizing behavior" scale. According to the norms of the second-order EB scale, 61.3% of the children were in the clinical or borderline range at baseline (≥ 21). The total sample varied from 6 to 45, with a mean of 22.33 ($SD=8.74$).

Parents' and children's behavior was observed using the Crowell procedure (Crowell & Feldman, 1988). This method of observing caregiver-child interactions in a semi-structured play session has been widely used (Coleman & Karraker, 2003; Crowell, Warner, Davis, Marraccini, & Dearing, 2010). It involves a series of episodes designed to elicit behaviors showing how comfortable and familiar the dyad members are with each other, how they negotiate transitions, their ability to solve problems together, and their use of shared positive or negative affect. The setting used here (Loop et al., revised) is unstructured enough to allow for "real-life" spontaneous interactions. It takes 25 minutes to complete and consists of two main episodes: a freeplay session and a frustration task including a "cleaning toys away" task followed by three increasingly difficult problem-solving tasks (puzzles). The cleaning task and the two most difficult puzzles were added to produce the frustration task score (the first puzzle was not frustrating enough to be included).

Parents' behavior was coded using the Crowell parent scales and scored on a seven-point Likert scale for emotional sensitivity (creating a positive emotional context through encouragement and praise), behavioral sensitivity (providing instrumental support adapted to the child's developmental level through well-timed cues), positive affect (smiling and laughing) and irritability (frustration, negative affect) towards the child. Coding was done by five independent trained coders, one of whom was certified by the University of Tulane (USA), with an intercoder reliability of .92 calculated with the weighted Kappa coefficient on 25% of the sample. Based on the French validation of the Crowell procedure (Loop et al., revised), a combined score was used because there was no specific hypothesis on separate Crowell scales in this study. This also helped limit the number of variables in the analyses. This combined positive score was computed by adding the scores on emotional and behavioral sensitivity and positive affect scales, as

well as the inverse of the score on irritability scale. A combined score was calculated for free play session and another for frustration (consisting of the cleaning task and the two most difficult puzzles), for both parents and children.

Children's behavior during the interaction with the parent was measured using the Crowell child scales. Positive affect (smiling and laughing), irritability (fighting, withdrawn behavior with anger, sulking), non-compliance (not listening to the parent's suggestions or requests) and aggression (verbal or physical) towards the parent, as well as persistence and enthusiasm towards the tasks, were coded on a seven-point Likert-type scale. A combined positive score was computed by adding scores on positive affect, enthusiasm and persistence scales, and the inverse of the scores on irritability, non-compliance and aggression scales.

Treatment satisfaction was measured at post-test, through a global item using Visual Analogue Scale (Wewers & Lowe, 1990), from 1 and to a maximum of 10.

Analysis strategy

A first preliminary analysis consisted of comparing control and experimental groups for socio-demographic and outcome baseline measures, with t-tests (see Tables 1 and 3). Next, the consistency of observed and parent report measures with one another was checked through correlations (table 2). Third, the objective was to check if there was an effect of the focused parenting program through an intragroup effect size (calculated between pre- and post-measures with *Cohen's d*) and intergroup effect size (between control and experimental groups with *Morris' ES* (Morris, 2008). The outcomes were observed child behavior in free play and frustration task (Crowell), parent-reported child EB (CBCL), observed parental behavior in free play and frustration task (Crowell) and parental self-efficacy (table 3). The interaction between group (experimental vs control) and time (pre- vs. post-measure) was calculated with analyses of variance for repeated measures.

In the fourth step of the analysis, hierarchical linear modeling techniques with the HLM 6.08 software (Gavin, 2004; Raudenbush, Bryk, & Congdon, 2004) were used to study the predictors of child behavior change, considered both from parent reports and observation over the course of the study. We therefore considered the three waves of measurement, i.e. baseline, post-test and follow-up, for participants in the intervention group. To start with, we checked the results of the unconditional model where time is the only predictor in order to establish whether there was significant individual variability around the slope and if it was appropriate to examine predictors of child behavior change. Next, we analyzed the extent to which change in parent self-efficacy over the course of the study would predict change in parent-reported child EB and children's observed behavior in frustration tasks. The choice to focus this analysis on the frustration task was justified by the nature of this task (a task inducing frustration brings useful insight into the functioning of children with externalizing behavior) and the concern to limit statistical analyses. We tested two models separately, one for each of the two outcomes (parent-reported child EB and observed child behavior). The conditional models were computed with a time-

varying predictor, i.e. parental self-efficacy, entered at level 1, and the trajectory of each of the two outcomes as the dependent variable. The time varying predictor was within-person centered and constrained to have fixed effects. The mean level of the time-varying predictor over the three waves was also calculated and added as a predictor of the slope coefficient at level 2. This procedure aimed to examine the pure effect of change in the time-varying predictor over time (as its mean level was controlled; Hoffman & Stawski, 2009). In this conditional model, we also tested whether and to what extent age, gender, initial EB severity or SES risk were related to EB change. These time-invariant predictors were added at the level 2 (Raudenbush et al., 1995).

Results

Preliminary analyses

First, control and experimental samples were compared at baseline, for socio-demographics and outcomes, showing no difference (see Tables 1 and 3). Next, links between the various child and parent variables were verified (Table 2). The results revealed coherent patterns of relations, supporting the validity of our measures and opened the way for checking for an effect of the program. This was done in the second step of the analysis (Table 3).

Table 2: Correlation between parents' and children's measures at baseline, post-test and follow-up

	Baseline						Post-test						Follow up					
	Child EB	Child in free play	Child frustra- tion tasks	Parent in free play	Parent frustra- tion tasks	Parent self- efficacy	Child EB	Child in free play	Child frustra- tion tasks	Parent in free play	Parent frustra- tion tasks	Parent self- efficacy	Child EB	Child in free play	Child in frustra- tion tasks	Parent in free play	Parent in frustra- tion tasks	Parent self- efficacy
Child EB	-	-.14	-.28*	-.09	.02	-.53**	-	-.18	-.23*	-.13	-.20†	-.49**	-	-.42*	-.42*	-.25	-.30†	-.73**
Child in free play		-	.46**	.49**	.29**	.17		-	.44**	.47**	.40**	.01		-	.48**	.47**	.29†	.29†
Child in frustration tasks			-	.22*	.47**	.22*			-	.31**	.60**	.10			-	.20	.34*	.38*
Parent in free play				-	.52**	.06				-	.63**	-.03				-	.64**	.18
Parent in frustration tasks					-	.09					-	.10					-	.21
Parent's self-efficacy						-						-						-

** $p < .01$; * $p < .05$; † $p < .01$. Child EB: externalized behavior measured by CBCL. Child in free play: observed positive behavior in Crowell. Child in frustration tasks: observed positive behavior in Crowell. Parent in free play: observed positive behavior in Crowell. Parent in frustration tasks: observed positive behavior in Crowell.

Table 3: Means, standard deviations, at baseline, post-test and follow-up and program effects compared to baseline.

	Baseline					Post-test											Follow-up				
	Control (n=43)		Experimental (n=37)		t-test X²	Control (n=43)		t-test with base- line	Cohen's d	t-test Conf. intervals	Experimental (n=37)		t-test with baseline	Cohen's d	t-test Conf. intervals	Morris's ES	Experimental (n=37)		t-test with baseline	Cohen's d	t-test Confidence intervals
	M	SD	M	SD		M	SD				M	SD					M	SD			
Parents' self-efficacy	2.96	0.69	3.09	0.76	-0.85	3.12	0.69	-2.73**	0.42	[-0.29 0.04]	3.45	0.65	-4.47***	0.75	[-0.52 0.20]	-0.27	3.65	0.64	-7.99***	1.35	[-0.73 - 0.43]
Parents' observed positive behavior in free play	22.76	2.09	22.14	2.23	1.31	22.14	2.14	1.67	0.25	[-0.13 1.38]	23.28	2.73	-2.27*	0.38	[-2.00 0.11]	-0.79	23.43	2.06	-3.24**	0.53	[-2.11 -0.48]
Parents' observed positive behavior in frustration tasks	65.33	8.56	64.27	8.56	0.55	62.95	8.73	1.85	0.28	[-0.21 4.96]	69.42	5.38	-3.64**	0.61	[-7.70 -2.19]	-0.85	68.05	6.39	-2.90**	0.48	[-6.43 - 1.14]
Children's observed positive behavior in free play	34.81	3.42	34.65	2.78	0.23	34.95	2.57	-0.29	0.04	[-1.12 0.84]	35.28	2.85	-0.92	0.15	[-1.87 0.70]	-0.14	34.95	2.38	-0.57	0.09	[-1.36 - 0.77]
Children's observed positive behavior in frustration tasks	94.33	15.23	99.08	7.46	-1.81	94.47	14.15	-0.07	0.01	[-4.17 3.89]	100.67	8.08	-0.92	0.15	[-3.73 1.40]	-0.09	102.16	6.96	-2.14*	0.35	[-6.00 - 0.16]
Child's externalized behavior (CBCL)	23.26	9.24	21.24	8.12	1.03	21.60	8.24	1.65	0.25	[-0.37 3.67]	18.92	8.46	3.74**	0.62	[1.24 4.20]	0.12	15.67	7.29	5.50***	0.92	[3.61 7.83]

* $p < .05$, ** $p < .01$, *** $p < .001$. Cohen's d: intra-group Effect Size. Morris's ES: intergroup Effect Size. T-tests confidence 95% intervals

Program effect

Manipulation check: Program effect on parent self-efficacy and treatment satisfaction

In the third step of the analysis, a manipulation check confirmed that the program had been successful. T-tests comparing control and experimental groups on outcomes showed that the program increased parents' SEB at post-test with an intragroup moderate effect size of 0.75 and a large effect size of 1.35 at follow-up. SEB in the control group also increased, but to a lesser extent, which led to an intergroup effect size at post-test of 0.27 in favor of the experimental group. Descriptive statistics, results of t-tests and effect sizes are shown in Table 3. ANOVA for repeated measures showed a significant interaction effect between group and time on parents' SEB, in favor of the experimental group ($F(1,77)=3.89$, $p<.05$). Another intervention effect can be measured by investigating treatment satisfaction. Parents were highly satisfied ($M=8.23$, $SD=1.28$, minimum 3 and maximum 10). 74.3% of parents had a score between 8 and 9.

Program effect on parent-reported child EB

On the children's side, the results showed that *Confident Parents* significantly decreased EB. At post-test, the intragroup effect size was small ($d=0.25$) for the control group and moderate ($d=0.62$) for the experimental group (table 4), leading to a small intergroup effect size (Morris' $ES=0.12$). The interaction effect (group x time with ANOVA with repeated measures) was not significant. At follow-up, EB continued to decrease, with a high effect size of the program ($d=0.92$).

Program effect on observed child behavior

The effects of the intervention were lower on observed child behavior than on parent-reported child behavior. At post-test, the intragroup effect size was almost nil ($d=0.04$ in free play and 0.01 in frustration tasks) for the control group and small ($d=0.15$) for both free play and frustration for the experimental group, leading to a small intergroup effect size (0.14 and 0.09 respectively). The interaction effect was not significant. At follow-up, behavior continued to improve, more in frustration tasks ($d=0.35$) than in free play ($d=0.09$).

Program effect on observed parent behavior

The program had greater effects on observed parent behavior than on observed child behavior. At post-test, the intragroup effect size was small ($d=0.25$ in free play and 0.28 in frustration tasks) for the control group and small to moderate ($d=0.38$ for free play and $d=0.61$ for frustration) for the experimental group. The intergroup effect size was high for both tasks (0.79 and 0.85), because there was limited change in the control group. The interaction effect (group x time) was highly significant for both tasks ($F(1,79)=8.13$ $p<.01$ for free play and $F(1,79)=15.30$, $p<.000$ for frustration). At follow-up, parent observed

behavior continued to improve moderately in both frustration tasks ($d=0.53$) and free play ($d=0.48$).

Predictors of EB change

Through the hierarchical linear model, predictors of EB change were identified. The examination of the random part of the unconditional model, where time is the only predictor, indicated significant individual variability around the slope and showed that it was appropriate to examine predictors of change in child EB (table 4).

Table 4: Results of HLM unconditional models: Estimates of the intercepts, linear change and variance in child EB (CBCL) and child's observed positive behavior in frustration tasks.

	Fixed effects			Random effects variance
	Coefficient	SE	t(36)	
Child's EB (CBCL)				
- Intercept	24.12***	1.70	14.17	75.38***
- Slope	-2.74***	.51	-5.38	2.46†
Child's observed positive behavior in frustration				
- Intercept	97.55***	1.77	54.97	46.74**
- Slope	1.74*	.71	2.16	3.58

* $p<.05$, ** $p<.01$, *** $p<.001$, † $p<.10$

Fixed effects also indicated that child EB (parents' reports) significantly decreased by 2.74 per wave. The conditional model (Table 5) shows that change in SEB is the most significant predictor of this reduction in child EB reported by parents. For every unit increase in SEB over a wave, there was a decrease of 3.68 units of child EB. The average level of SEB also predicted EB change. For every unit above the average level of SEB, a decrease of 2.70 units of EB was found over a wave. Two other time-invariant predictors (SES risk and child's age) had significant but lower effects on child EB.

Table 5: Results of HLM conditional models of variables in predicting change in child EB (CBCL) and child's observed positive behavior in frustration tasks.

Fixed effects	Child's EB (CBCL)			Child's observed positive behavior in frustration		
	Coefficient	SE	t(31)	Coefficient	SE	t(36)
Level 1: Prediction of time-varying fluctuations						
- Parents' self-efficacy	-3.68*	1.55	-2.37	-2.86	2.68	-1.07
Level 2: Prediction of linear change						
- Intercept of the slope	-3.29**	1.07	-3.07	2.43	1.46	1.66
- Mean parents' self-efficacy	-2.97***	0.52	-5.77	0.06	0.57	0.11
- Parents' gender	0.16	0.66	0.23	1.09*	0.53	2.05
- Socio-economic risk	0.85*	0.38	2.25	-0.51	0.35	-1.45
- Child's age	-0.09*	0.04	-2.54	0.17***	0.04	4.64
- Child's gender	0.88	0.60	1.46	-1.07	0.56	-1.92

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

As far as observed child behavior is concerned, fixed effects indicated that child behavior significantly improved by 1.74 per wave. The conditional model displayed in Table 5 shows that the two predictors of changes in child observed behavior over time are parent's gender (when fathers attend the program, their child's observed behavior

improves more than when mothers attend) and child's age. Parental self-efficacy does not emerge as a significant predictor here for child observed behavior. Finally, it is interesting to note that the initial level (intercept) and the change (slope) were correlated both for child EB and child observed behavior ($\tau = -0.72$ and -0.76 respectively). The more difficult the child was at baseline, the more this child tended to benefit from the parenting program, the slope being more negative for CBCL. For observed behavior, the more positive a child was at baseline, the less his/her observed behavior improved after the program.

Discussion

The aim of this study was to evaluate the effectiveness of *Confident Parents*, an innovative program targeting parental self-efficacy beliefs with a view to reducing EB in children. The results showed that this focused program did increase parents' self-efficacy beliefs, as hypothesized, with a moderate effect size already at post-test, and a continued increase at follow-up. Modifying this parental cognition seems to be a process that takes time and, more interestingly, a process that remains active over time (Sanders, Bor, & Morawska, 2007).

Improving parents' self-efficacy had a direct positive effect on children's behavior, as we hypothesized. Effects of *Confident Parents* on children's EB reported by parents were significant in the experimental group, with a moderate effect size at post-test, and continued to decrease at follow-up. But these effects were limited in comparison with the control group, because some parents had already modified their representation of their difficulties with their child after one encounter with program leaders, even before attending the program. The effect on children's observed behavior was most apparent at follow-up, in frustration tasks, with a small effect size. Compared with the control group, children were less difficult (less irritable, less non-compliant, less aggressive) and showed more positive affect, enthusiasm and persistence with their parents who had attended *Confident Parents* when they were facing a frustrating situation. These children behaved better than those whose parents had not improved their self-efficacy. This complements previous studies (Mah & Johnston, 2008), stressing the positive impact of improved positive parenting on children rather than a reduction of negative parenting (Gardner et al., 2010).

Confident Parents also improved parents' observed behavior, with a large intergroup effect size at post-test, and this continued to improve at follow-up. It is interesting to note that this parenting behavior improved in both free play and the frustration task, unlike children's behavior, which improved only in the frustration task.

The difference between children's observed and parent-reported behavior raises question, although this discrepancy between observed and reported measures of EB has been found in other studies (Maughan, Christiansen, Jenson, Olympia, & Clark, 2005). Several explanations could be suggested. First, the Crowell observation paradigm could be a more favorable context than the home context reported by the parent. Second, parents

may have over-rated children's behavior at baseline to convince program leaders of the severity of the situation and make sure that they were enrolled for the research. Third, another explanation specific to this study may be related to the content of the program itself. As it focused on self-efficacy, it may have helped modify parents' representation of their children as measured by CBCL, even without or in addition to any actual improvement of children's behavior that would have been reported by another observer (the other parent or a teacher). Many parents came to the conclusion at the end of the program that part of their job as parents was to accept their child as he or she was, with a difficult temperament that might not change for instance, and to adapt to this. *Confident Parents* focused parents on the positive side of the relationship and therefore decreased their negative view of their child's difficulty. Also, this difference between measures may be explained by psychometric limitations of the parent report questionnaire, and highlights the need to use a multi-informant and multi-method design in parenting research.

Another interesting question concerns the differences between scores in free play and frustration tasks, which could be explained by the nature of the task (ecological in free play or challenging in frustration). When the interaction with the parent becomes more challenging, the positive change in the child's behavior is more visible than in a more ecological task such as free play. The parent may decide to let go in free play, let the child take the lead and not intervene too quickly, ignoring child irritability or even aggression, knowing that there are still several minutes before the end of the session. In the frustration task, the parent may step in more actively and manage to modify the child's behavior.

This study also aimed to investigate to what extent this self-efficacy parenting program was effective for all children, according to their EB initial severity and SES risk. The initial severity of EB was highly correlated to the change after the program. The more difficult the child was before the program, the more he/she benefited from the parent's attendance of the program. SES risk also appeared as a predictor of a lower score for parents' observed behavior and a higher score for parent-reported children's behavior but not of a lower score for children's observed behavior. The more disadvantaged the family was, the less children benefited from this SEB program. The cognitive nature of *Confident Parents* may make it less accessible to families facing daily hassles due to limited financial, social and educational resources. The therapeutic processes used here, such as negative and global bias modification, standing back from the problem and acceptance of child's characteristics that cannot be changed, may be complex and far from the daily priorities of such families. Explicit behavioral training for parents might be more appropriate in such circumstances.

Another question to be raised is the extent to which parents with a high level of SEB are better at raising a child with externalizing behavior. In this study, the most confident parents (with the highest level of SEB) had the easiest children (with the lowest scores in EB), in line with previous correlational research (Donovan, Leavitt, & Walsh, 1990). Also, the results showed that an increase in SEB predicted a decrease in child EB. However,

some parents may not see the problem with their child as acute when other observers would (school teacher, other parent or therapist). Their report of their child's EB might be biased. We also realized that the relation between parental SEB and parents' observed behavior was weaker than with the children's observed behavior. Not all parents may behave more effectively when they feel better about their parenting competence, but they still may see their child more positively and their child may behave more positively with them. An explanation could be found in the issue raised by Wilson et al (2014) about the non-linearity of the relation between SEB and parenting behavior. On the question whether parents with strong SEB are the best parents, Wilson et al. demonstrated that this is not always the case. In fact, the relation is more curvilinear than strictly linear. Parents with a moderate level of SEB demonstrated the best parenting behavior, while parents with high SEB were less adequate when interacting with their child. In their study, mothers who reported high SEB were also rated as low in sensitivity (introducing toys when their child was already busy, restricting their child's access to toys, physically manipulating their child and violating their child's proximal space, for instance). They concluded that parenting programs need to develop strategies for reaching parents who enter with high levels of confidence but lack knowledge of positive parenting practices.

It may be important to underline that the way self-efficacy beliefs were reinforced in this *Confident Parents* program was based on reference to the actual performance of the parent with the child, using personalized video feedback for instance. This partly counters the mismatch hypothesis in case of parenting failure or aggravated outcomes for children mentioned by Cassé et al. in their study (2015). The group design was also helpful for questioning high-SEB parents who used harsh parenting in a non-stigmatizing way.

Finally, these results confirmed that increasing parents' SEB has a positive effect on children's behavior, in line with previous studies on parental SEB (Deković, Asscher, et al., 2012; Sanders & Woolley, 2005). However, these studies have usually been limited by their reliance on correlations and self-report. Micro-trial designs like the present one go one step further by exploring the causal relation between a specific parenting outcome (the parental cognition of SEB) and child behavior.

Clinical implications

Confident parents has proved its effectiveness at reducing child EB. It could be used by clinicians as a potential intervention for parents who are willing to reflect on their parenting representations, beliefs and expectations. Such a focused approach could be used in particular for families with children displaying a high level of EB severity, for parents with low self-efficacy and for those who face limited socio-economic difficulties. Before orienting families towards a parenting program, clinicians could screen parents' SEB and socio-economic situation and children's EB severity, in order to direct them towards the most suitable program (Gross et al., 2009). A shorter version of *Confident parents* could also be tested to see if eight sessions are necessary or if four sessions would be enough to modify parental SEB and positively affect children. The way forward in parenting intervention research could be to move from standardized universal programs

towards programs adapted to family's needs, constraints and potential. A more focused and shorter program could be more suitable for families.

Limitations and future research

This study has several limitations. First, the size of its sample is relatively small, though adequate for a micro-trial design (Brown et al., 2012; Brown & Liao, 1999; Howe et al., 2010). Second, no measures were available at follow-up for the control group, due to the waiting list design, which is a common limitation in intervention studies. Third, it would have been interesting to analyze parenting practices reported by parents, beyond observed parent behavior. This might have provided more insight into the question of the relation between parental cognition and parenting behavior, in other words to what extent parents behave on the basis of how they feel about themselves as a parent. Also, extra assessments during the intervention, in addition to baseline, post-test and follow-up, would have increased the understanding of the change mechanisms at stake (Deković, Asscher, et al., 2012). In this study, no mediation analysis was carried out between parents' SEB improvement, parenting behavior and children's EB, because this was not covered by the research questions. The main issue at stake here was to evaluate direct effects of parental SEB on child behavior. This question was justified by the existing literature on parenting programs and on the role of parental SEB in child development, but it would be interesting to explore the mechanisms explaining the change in children's EB thanks to improved parental self-efficacy. These mechanisms might be complex and go beyond the mediational role of parenting behavior observed in the present study. It has been demonstrated by Roskam & al. (2016) that enhancing a specific parenting variable could impact other parenting constructs through widespread effects. This may be particularly true for a cognitive variable such as parental SEB, which may have implications for many internal and implicit beliefs, linked to various parenting covariates.

The question of the measurement of parental SEB, as a cognitive factor, is also a limitation for this study. It is based exclusively on parental self-report and cannot be combined with any other behavioral or multi-informant measures. This is a psychometric limitation usual in the cognitive parenting field and not specific to this study. Also, finally, it might have been interesting to measure parents' adherence to treatment (Pierce et al., 2010), to control for the extent to which parents implemented what was discussed in group sessions and how this affected the program's effectiveness.

In spite of these shortcomings, this study contributes to the field of parenting research, by implementing previous experimental results into an innovative program for clinical EB and at-risk children. It provides strong arguments demonstrating two facts. First, targeted programs are effective, and second, self-efficacy is a relevant parenting variable, necessary and sufficient in some cases, that should be targeted and manipulated in parenting interventions for preschoolers' behavior.

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Child differential sensitivity to parental self-efficacy improvement:

A micro-trial perspective

This study investigates the hypothesis of a child differential sensitivity to parenting improvement. 114 parents of preschoolers participated in two focused parenting micro-trials aiming to increase parental self-efficacy in view of reducing child externalizing behavior. The first micro-trial took place in a short-term laboratory experiment; the other was an eight-week parenting group intervention, both focusing on altering parental cognition. Differential effects of parenting improvement on child's positive and negative behaviors, depending on child temperament, were compared at post-test between control and experimental groups. Both observation and questionnaires were used to measure child behavior as well as regression and Regions of Significance analyses.

Child differential sensitivity was found both in the laboratory experiment and the parenting intervention for the temperamental trait of negative emotionality but not for the temperamental trait of activity. However, this sensitivity was in an unexpected direction. Highly emotional children benefited less from this parenting cognitive manipulation than children low on emotionality. These results may be explained by the specific cognitive nature of these two parental self-efficacy micro-trials.

Keywords: Parenting, preschoolers, temperament, differential susceptibility, intervention, experiment, self-efficacy.

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Introduction

In the field of parenting research, understanding what type of intervention works best for whom has become a priority (Belsky & van Ijzendoorn, 2015; Bornstein & Manian, 2013; Stoltz, Deković, van Londen, Orobio de Castro, & Prinzie, 2013). Based on the fact that children's sensitivity to environmental influences differs, the analysis of individual differences in reaction to a modification in parenting provides a useful insight into intervention efficacy research.

Differential susceptibility

The hypothesis of a differential sensitivity to parenting has now been confirmed by several empirical studies (B. J. Ellis & Boyce, 2011; Pluess & Belsky, 2010; van Ijzendoorn, Bakermans-Kranenburg, & Ebstein, 2011; van Zeijl et al., 2007). Children are differently affected by their environment (Bornstein & Manian, 2013), whether it is favorable (for better) or detrimental (for worse). Several models of individual differences in environmental sensitivity postulate that some children may have an increased sensitivity to negative stressful environments (diathesis stress) (Caspi et al., 2002), some to favorable environments (vantage sensitivity) (Pluess & Belsky, 2013), or to both types of environment (differential susceptibility) (Belsky & Pluess, 2009). This latter theory is an evolutionary-based theory stating that some plasticity factors not only amplify risk of a maladaptive development, but also increase the probability of a positive adaptation. But several gaps remain in the current literature. First, historically, studies exploring moderation effects of putative plasticity factors such as child temperament or genes on the relation between parenting and child outcomes looked mainly at negative parenting environments affecting negative child outcomes. Recently, a meta-analysis (Slagt et al., in press) examined susceptibility for both child positive and negative outcomes (the bright and dark sides) and for both positive and negative parenting (for better and for worse). It showed that it is worth analyzing effects of positive parenting on positive child outcomes because they are comparable to effects of negative parenting on negative child outcomes. Second, most of these studies base their conclusions on plots of interaction and single slopes analysis. In 2012, Roisman and colleagues (2012) revisited data of previously published studies on temperament by parenting interaction applying a complementary analysis of the Regions of Significance (RoS). This new method provides information on the values of temperament for which parenting and child outcomes are significantly associated. They found that differential susceptibility depends on who rates the child's outcomes. When parents rate their child's behavior, the effect of temperament can be interpreted according to the diathesis stress model, implying that children are more sensitive to negative parenting. When teachers are the informants of child's behavior, they found a child sensitivity to both positive and negative parenting, closer to the differential susceptibility model. It is therefore necessary to introduce this type of analysis when looking at parenting by temperament studies, which was not done systematically before. Third, most of these studies are correlational (with longitudinal or cross-sectional design). Only few experiments have actually tested parenting-by-temperament

interactions. The few studies that did showed that highly reactive children benefited more from an improved parenting in terms of increased attachment security (Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011; Klein Velderman, Bakermans-Kranenburg, Juffer, & van Ijzendoorn, 2006) and fewer looked at externalizing behavior (Bakermans-Kranenburg, Van Ijzendoorn, Pijlman, Mesman, & Juffer, 2008).

Temperament as a sensitivity marker to parenting

In most of research on differential sensitivity, temperament is used as a marker of sensitivity to parenting (Slagt, Dubas, & van Aken, 2015). Temperament refers to constitutionally-based individual differences in reactivity and self-regulation in the domain of affect, activity and attention (Rothbart & Bates, 2006). It is partly heritable, based on genetic or neurobiological elements and is also shaped by interactions with the environment during early development. Various traits are used to describe child temperament, including negative emotionality, surgency (which may include positive emotionality and activity), effortful control and attention, self-regulation and soothability as well as sociability (De Pauw, Mervielde, & Van Leeuwen, 2009). Some of these contribute to what is called difficult temperament and are known risk factors in the development of child Externalizing Behavior or EB (Rothbart & Bates, 2006 2012), in particular negative emotionality, surgency/activity and effortful control (Gilissen et al., 2008). Negative emotionality is the tendency to be easily distressed, with intense emotions of fear, worry, sadness, discomfort and anger, frustration and irritability. It may reflect a highly sensitive nervous system making children more reactive to their environment. It has been shown to function as a sensitivity marker moderating the relation between parenting and child adjustment (Slagt et al., in press). Activity, related to surgency, may be considered as a predisposition to be actively involved with the environment, through impulsivity, curiosity or sensation-seeking for instance (Goldsmith et al., 1987). It has been less studied as a potential sensitivity marker and its moderating role has not been documented consistently (Slagt et al., in press).

Differential sensitivity to parenting intervention

Some parenting interventions aimed at reducing EB looked at differential effects on children, depending on their temperament (M. J. Bakermans-Kranenburg & Van Ijzendoorn, 2015). For instance, Scott and O'Connor (2012) found in their study of the effectiveness of the Incredible Years parenting program that emotionally dysregulated children (i.e. irritable, hurtful, headstrong or defiant) were more responsive to improvements induced by parenting program than children scoring low on this temperament trait. But because of the wide scope of these parenting interventions, which modify several parenting variables simultaneously, it is primarily the overall interaction between temperament and parenting that is tested. By contrast, studies designed as micro-trials could be better suited to analyzing *specific* effects of distinct parenting variables on child outcomes (Howe et al., 2010). Randomized controlled trials of this type are based on relatively brief and focused manipulations designed to suppress specific risk mechanisms or enhance specific protective mechanisms. Focused by nature, micro-trials

build on the identification of a protective factor, the selection of a specific proximal outcome with multiple informants and instruments, and the manipulation of this selected factor in a randomized controlled trial. Though in progression, they remain new to the field and they rarely analyze differential sensitivity of their effects on children. Moreover, no micro-trial has documented differential effect of an exclusively cognitive parental manipulation.

Current study

This aim of this study is to overcome some of the gaps in literature by assessing child differential sensitivity in two parenting micro-trials that focus on improving parental self-efficacy beliefs (SEB). This study expands the literature by analyzing child differential sensitivity in experimental and intervention trials in which one parenting variable, SEB, is manipulated exclusively. It also uses stringent RoS tests and not only plot interaction. In terms of child outcomes, both positive and negative measures are included using a multi-informant and multi-method design with observation and questionnaires. In terms of parenting, this study is looking exclusively at improved parenting both in the laboratory experiment, for ethical reasons, and in the intervention that aimed to help parents with their externalizing child. The sensitivity analysis done here is therefore in line with the vantage sensitivity model.

The first micro-trial is a short-term laboratory experiment during which mothers of a non-clinical sample of preschoolers are manipulated to improve their parental self-efficacy. The second is an intervention study for parents of clinical or at-risk preschoolers for EB lasting eight weeks and expands the SEB manipulation tested in the laboratory experiment. In both micro-trials, parental self-efficacy was enhanced by using the four sources of self-efficacy described by Bandura's social learning theory (1977): positive experiences, vicarious experience, verbal persuasion and emotional and physiological states.

Both micro-trials improved parenting and child behaviors, as detailed in the results section, which opens the way to test child differential sensitivity effects. We hypothesized that children with a difficult temperament (highly emotional or highly active) would be more sensitive to improved parenting induced by the participation of their parents in the two micro-trials, as suggested by the literature on vantage sensitivity to parenting. We expected that this sensitivity be higher in the eight-week intervention than in the short laboratory experiment because the modification of parental self-efficacy would be more deeply internalized and engraved.

Method

Sample and data collection

The two samples are part of the longitudinal H2M research program conducted at the Psychological Sciences Research Institute of the University of Louvain (Louvain-la-Neuve, Belgium). Each study was approved by the ethical committee of the Psychological

Sciences Research Institute of the University of Louvain. Parents gave their informed consent and their privacy was protected. The characteristics of the two samples are presented in Table 1 and the recruitment procedures in Figures 1 and 2. Each sample was composed of a control and an experimental group. The main difference between the laboratory and the intervention samples lies in the recruitment procedure. The first sample was a convenience sample of mothers with their normally-developing preschooler, whereas the second sample consisted of self-referred parents with preschoolers at-risk or with clinical scores on EB.

Parents were 37 year-old in average. Their children, both girls and boys (52% boys in average), were between three and six-year old (4 years and 8 months in average). In terms of temperament, children in the clinical sample were higher in negative traits (emotionality and activity) and lower on positive traits (sociability and soothability).

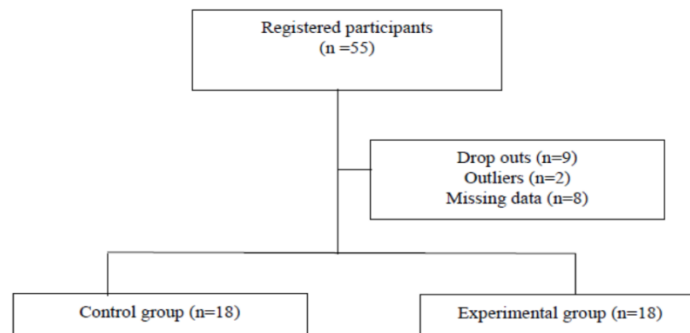


Figure 1: Flowchart of laboratory experiment sample participants (n=36)

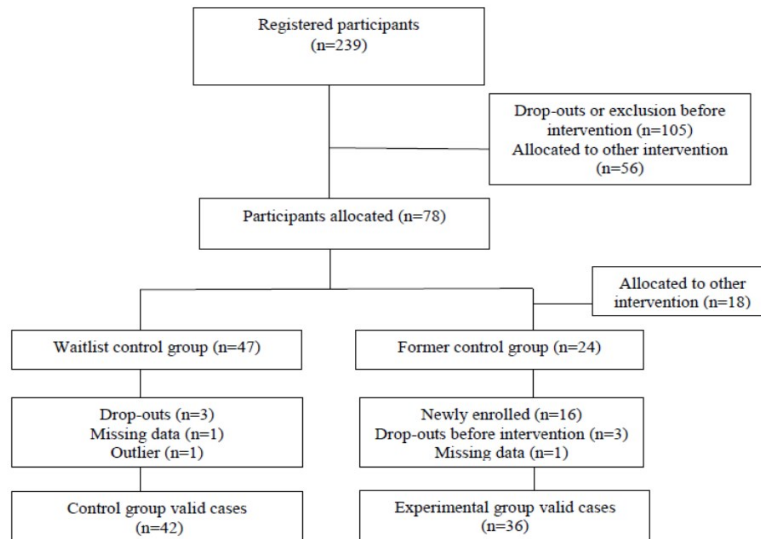


Figure 2: Flowchart of intervention sample participants (n=78)

Procedure

In the laboratory experiment (n=36), the procedure began with mothers filling in a questionnaire at home, after which they came once into the lab with their child and were randomly allocated to the experimental or control group. The experimental mothers were manipulated to improve their SEB based on Bandura's self-efficacy theory (1977). A false positive feed-back was given to mothers by referring to their answers to the questionnaire filled in at home. The same comment was given to all mothers, irrespective of their actual answers. In this comment, their positive parenting and the positive development of their child were acknowledged and compared to a fictive sample showing that these mothers were part of the 20% of parents that use the most positive parenting practices. The control group did not receive any comment. After the manipulation, mothers of both experimental and control groups played with their child following a standardized procedure including free play and frustration tasks during forty five minutes (Crowell & Feldman, 1988).

In the intervention (n=78), a waitlist control group design was used. The intervention consisted of eight weekly group sessions focusing on parental self-efficacy. In this theory-based focused intervention, exercises were based on the four sources of self-efficacy: focus on positive parenting experiences, use vicarious experiences to compare oneself to others and normalize difficulties with the child, receive positive feedback through verbal persuasion from the group and identify and anticipate negative emotional states and automatic thoughts.

More detailed information on the two samples, their study procedures and SEB manipulation can be found in Mouton & Roskam (2015) for the laboratory experiment and Roskam, Brassart, Loop et al. (2015) for the intervention.

Measures

In the laboratory experiment, children's EB reported by the parent was measured only at baseline and their observed behaviors only after parenting manipulation, as is usual in such experiments. In the intervention, all child outcomes (observed and parent-reported) were measured at baseline and post-test.

Child temperament

Child temperament was measured with the Colorado Childhood Temperament Inventory (CCTI), a 25-item questionnaire completed by parents (Rowe & Plomin, 1977) with a Likert-type scale (1-5), translated into French with back translation by a native speaker (see Annex V). The CCTI has good internal consistency ($\alpha=.73$ to $.88$) and test-retest reliability ($r=.43$ to $.80$) and leads to five factors, calculated by a sum for each scale, some items being reversed: emotionality, activity, sociability, attention and soothability. The emotionality and activity scales measure negative traits ("my child gets upset easily" for highly emotionally reactive children and "my child is off and running as soon as he wakes up in the morning" for highly active children). Sociability, attention and soothability

measure positive traits. Only the emotionality and activity scales were included in the analyses in this study, because they describe best “difficult” temperament traits related to EB (Slagt, Dubas, & van Aken, 2015). Positive scales were only used to compare control and experimental groups at baseline.

Children’s and parents’ observed positive and negative behavior

Children’s and parents’ positive and negative behaviors were observed using the Crowell procedure. This method of observing caregiver-child interactions in a semi-structured play session has been widely used (Crowell & Feldman, 1988) and recently validated in French (Loop et al., revised). Coding was done by two independent trained coders with an intercoder’s reliability on 25% of the sample of .92. Children’s behaviors in interaction with the parent were measured using the Crowell child scales. Positive affect (smiling and laughing), irritability (fighting, withdrawn behavior with anger, sulking), non-compliance (not listening to the parent’s suggestions or requests) and aggression (verbal or physical) towards the parent, as well as persistence and enthusiasm towards the task, were coded on a seven-point Likert-type scale. A positive behavior score was computed by adding scores on the positive affect, enthusiasm and persistence scales. A negative behavior scale was computed by adding scores on the irritability, non-compliance and aggression scales. For the parent, the Crowell parent scales were used to measure emotional and behavioral responsiveness, positive affect (combined for positive behavior), irritability (negative behavior). Though these positive and negative scores were significantly correlated in the experiment ($r = -.69$ for child scales and $r = -.44$ for parent scales) and in the intervention ($r = -.49$ for child scales and $r = -.48$ for the parent scales), the distinction between positive and negative behaviors provided a more detailed view on the effect of this cognitive parental manipulation.

Children’s negative Externalizing Behavior

EB was measured with the preschool version of the Child Behavior Check-List or CBCL (Achenbach & Edelbrock, 1981) using a three-point Likert scale (see Annex IV). The CBCL is a widely used instrument and its psychometric properties are good (α ranging from .63 to .86 for the different scales and .85 for test-retest reliability). For this study, data collection was limited to the “attention problems” and “aggressive behavior” scales, to calculate an EB total score.

Analysis strategy

A preliminary analysis consisted of comparing the experimental and control groups in each of the two samples, with t-tests on socio-demographic, EB at baseline and temperament measures (Table 1). Next, the main effect of the condition in both experiment and intervention on parent and child behaviors was analyzed using analyses of variance (one-way ANOVA in the experiment and ANOVA for repeated measures in the intervention, see in Table 2). Third, we used a regression model to test whether difficult children (highly emotional or active) showed a greater response to parenting improvement than easier children. The outcomes were twofold in the laboratory

experiment: child observed positive and negative behaviors at post-test. The outcomes in the intervention were the same for child observed positive behavior and child observed negative behavior. Additional outcome of the intervention was child negative EB reported by the parent. Two models were tested, one for the child temperament trait of emotionality and the other for the temperament trait of activity using z scores for the variables and unstandardized coefficients for the analyses. In the laboratory experiment, condition (control or experimental), child temperament (emotionality in Model 1 and activity in Model 2) and interaction between condition and the temperament trait were included in the model, as shown in Table 3. In the intervention, the baseline level of negative behavior reported by the parent was included as well in the model to take into account the initial severity of the child externalizing behavior in this at-risk and clinical sample (see Table 4).

Fourth, a complementary analysis was done to measure the Regions of Significance of the interaction with respect to temperament, using Fraleys' application to probe interaction in differential susceptibility research (Roisman et al., 2012). The aim was to identify for whose children the interaction was the most significant.

Results

Preliminary analyses

Comparison between experimental and control groups at the baseline revealed no difference on socio-demographic and temperament traits, either for the laboratory experiment or for the intervention. Descriptive statistics and the results of t-tests/ X^2 are presented in Table 1.

Table 1: Descriptive statistics on socio-demographic characteristics and temperament at baseline.

Characteristics	Laboratory experiment				Parenting intervention			
	Control (n=18)	Experi- mental (n=18)	Total (n=36)	Test <i>t</i> (35) $X^2(1)$	Control (n=42)	Experi- mental (n=36)	Total (n=78)	Test <i>t</i> (77) $X^2(1)$
	M (SD)	M (SD)	M (SD)		M (SD)	M (SD)	M (SD)	
Parent age	37.17(4.03)	37.00 (3.74)	37.08 (3.83)	0.51	36.95 (5.15)	38.72 (5.93)	37.73 (5.54)	-1.36
Parentgender(%mothers)	100.00%	100.00%	100.00%	0.00	72.2%	76.7%	74.7%	.21
Child age (months)	57.61 (6.87)	56.50 (6.19)	57.06 (6.47)	0.13	53.74 (8.87)	56.83 (6.88)	55.15 (8.13)	-1.70
Child gender (%boys)	55.55%	50.00%	52.78%	0.11	53.5%	50.0%	51.9%	.09
Child Extern. Behavior	10.56 (7.67)	6.67 (4.00)	8.61 (6.34)	1.91	23.19 (9.17)	20.92 (7.98)	22.15 (8.67)	1.16
Child emotionality	13.44 (3.35)	11.67 (2.85)	12.56 (3.19)	1.72	18.05 (3.78)	17.50 (4.64)	17.79 (4.18)	.57
Child activity	15.50 (3.54)	14.28 (3.56)	14.89 (3.55)	1.03	17.93 (3.72)	17.92 (4.02)	17.92 (3.84)	.01
Child sociability	18.89 (3.51)	17.11 (4.24)	18.00 (3.94)	1.37	16.86 (4.08)	17.31 (4.18)	17.06 (4.10)	-.48
Child attention	17.33 (2.68)	16.61 (3.38)	16.97 (3.03)	0.71	14.52 (4.07)	15.31 (3.94)	14.88 (4.00)	-.86
Child soothability	18.17 (3.38)	16.50 (2.28)	17.33 (2.97)	1.73	13.76 (3.91)	13.44 (4.44)	13.62 (4.14)	.33

* $p < .05$.

In Table 2, the main effects of the condition (group versus experimental) are reported. In the laboratory experiment with a non-clinical sample, parent's negative observed behavior was reduced significantly. In the intervention, designed for an at-risk and clinical sample, parent's positive observed behavior was improved significantly.

Concerning main effects on children's outcomes, the laboratory experiment improved positive observed behavior. No data was available on child negative behavior reported by the parent. The intervention tended to reduce negative behavior.

Table 2. Main effects of condition on child and parent outcomes in both laboratory experiment and intervention.

	Laboratory experiment		Parenting intervention	
	F (1,35)	Cohen's <i>d</i>	F (1,78)	Cohen's <i>d</i>
Parent's positive observed behavior	2.50	0.53	9.36**	0.69
Parent's negative observed behavior	4.64*	0.72	.71	0.19
Child's positive observed behavior	4.69*	0.72	.14	0.09
Child's negative observed behavior	1.28	0.38	2.97	0.40
Child Externalizing Behavior			.71	0.19

** $p < .01$; * $p < .05$. In the laboratory experiment, the analysis of variance is calculated for post-test measures between control and experimental groups. In the intervention, the analysis of variance is calculated with repeated measures (baseline and post-test) between control and experimental groups.

Testing the differential sensitivity hypothesis

In the laboratory experiment, the full model that includes temperament, condition and the interaction between temperament and condition explains between 23% and 35% of variance depending on the outcomes and the temperament trait, as shown in Table 3. Differential sensitivity is confirmed for the negative observed behavior based on negative emotionality. Activity was a significant predictor of both the positive and negative observed behavior, but the interaction between activity and condition was not significant. Thus, only emotionality appears as a child sensitivity marker for the experimental reinforcement of parental self-efficacy.

Table 3: Regression models for child's observed behaviors with child emotionality and activity x condition in the laboratory experiment

	Laboratory experiment ($n=36$)			
	Child observed positive behavior		Child observed negative behavior	
	β	R^2	β	R^2
<i>Model 1: Emotionality</i>		.24		.23
Condition	-.70		.21	
Emotionality	-.59		.54	
Condition x emotionality	-.60		.63*	
<i>Model 2: Activity</i>		.30		.35
Condition	-.70		.20	
Activity	-.95*		.96*	
Condition x activity	-.55		.55	

*** $p < .000$; * $p < .05$; † $p < .10$. Scores are measured at post-test. B are unstandardized coefficients.

In the intervention (Table 4), the full model including emotionality and condition, over and above EB initial severity, significantly explains 11% in positive observed behavior, 19% of variance in negative observed behavior and 63% of the variance in negative EB reported by the parent. With activity, 12%, 8% and 62% of variance are explained respectively. For observed negative and positive behavior, higher EB initial severity predicts a higher improvement in observed behavior both in emotionality and activity models, as found in other studies (Leijten et al., 2013; Lundahl et al., 2006) (Leijten, Raaijmakers, de Castro, & Matthys, 2013; Lundahl, Risser, & Lovejoy, 2006). Here again, a differential sensitivity is found for negative emotionality with respect to negative EB reported by parents. This means that highly emotional children tended to respond differently to the parenting intervention than children low in negative emotionality.

In sum, both in the laboratory experiment and the intervention, negative emotionality appears to be a sensitivity marker for the negative outcome (the dark side), as found in other research (Slagt, Dubas, & van Aken, 2015). This was not the case for the trait of activity.

Table 4: Regression models for child's observed and reported behaviors with child emotionality and activity x condition in the parenting intervention

	<i>Parenting intervention (n=78)</i>					
	<i>Child observed positive behavior</i>		<i>Child observed negative behavior</i>		<i>Child reported negative behavior</i>	
	β	R^2	β	R^2	β	R^2
<i>Model 1: Emotionality</i>		.11		.19		.63
Baseline level	.23*		-.31**		.70***	
Condition	-.17		.28		.65	
Emotionality	-.23		.18		.59	
Condition x emotionality	-.16		-.08		-1.15*	
<i>Model 2: Activity</i>		.12		.08		.62
Baseline level	.21*		-.16		.67***	
Condition	-.19		.35		.74	
Activity	-.23		-.04		.90	
Condition x activity	.22		-.02		-.18	

*** $p < .000$; ** $p < .01$; * $p < .05$. Scores are measured at post-test. B are unstandardized coefficients.

Further analyses were conducted to clarify the interpretation of the significant interaction effect. Interaction between temperament and condition were represented in graphs (Figures 3 and 4) using www.jeremydawson.co.uk/slopes.htm internet interface. The figures showed that children with a low level of emotionality benefited more from the parental self-efficacy improvement than other children with a high level of emotionality. These children had lower levels of negative observed or reported behavior than children with higher emotionality in the experimental condition, compared to the control group. For children with higher emotionality, negative behavior was comparable (or slightly) higher in the experimental group compared to the control group. They did not profit from the parenting improvement more than other children.

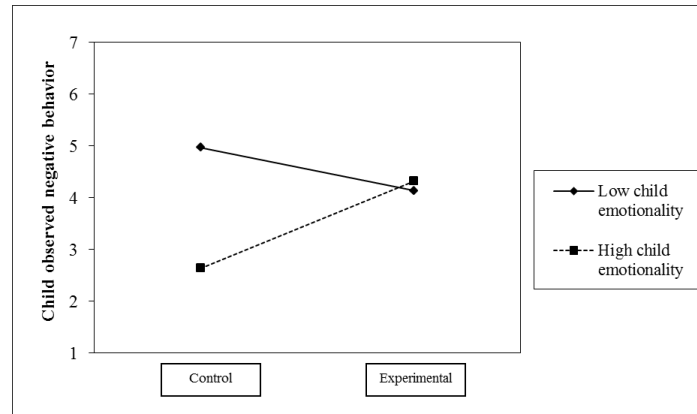


Figure 3: Graph on child differential sensitivity to parenting in the laboratory experiment

The Regions of Significance (RoS) with respect to child emotionality on observed child negative behavior in the laboratory experiment are between 1.65 and 13.79. This means that the regression of negative behavior on Condition is significant for all values of Emotionality that fall between these values. Given that the lower bound value is between ± 2 standard deviations from the mean and the upper bound value is not, only the lower bound is considered informative. Therefore, it can be concluded that parenting is significantly associated with child negative observed behavior with scores at or above 1.65 on emotionality, which is a low level of emotionality. The Proportion of the Interaction (0.86) indicates that the interaction is mostly significant for children with low levels of emotionality in the control group, at the left side of the graph (Figure 3), where parenting is on the “for worse” side or at least not improved. The cross-over point is located on the right side of the graph, related to the experimental group and the Proportion Affected index (PA) is .80.

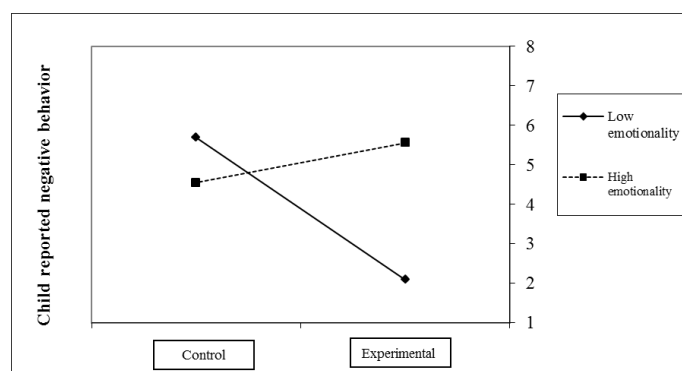


Figure 4: Graph on child differential sensitivity to parenting in the parenting intervention

The RoS with respect to child emotionality on child negative behavior reported by the parent in the intervention are between -336.78 and -0.58. This means that the regression of negative behavior on Condition is significant for all values of Emotionality that fall inside this region. Given that the upper bound value is between ± 2 standard deviations to the mean and the lower bound value is not, only the upper bound is considered here informative. Therefore, it can be concluded that parenting is significantly associated to the child EB for children with scores at or above -.58 on emotionality, which is a low level. Additional analyses indicate that the interaction is mostly significant for low level of emotionality for children in the experimental condition as shown by the Pol (Pol=0.26) which is located at the right side of the cross-over point for the interaction, with a Proportion Affected index (PA) of .31 (Figure 4).

To summarize, results show that child temperament trait of emotionality moderates the effect of an improved parental self-efficacy on the dark side (negative child outcome), both for observed and parent reported child behavior. In the short term experiment with normally developing children, temperament affects more children of the control group for which parenting is not improved than the experimental group. It cannot be considered fully as the “for worse” side of differential sensitivity because parenting was exclusively improved in the two micro-trials. The control group may be considered as for the “less improved” to some extent. In contrast, in the long term intervention, temperament is mostly influential on the experimental group, on the “for better” side.

Discussion

The aim of this study was to test differential child sensitivity to a parental self-efficacy improvement implemented in two micro-trials. The strengths of this study are the use of a multi-method and multi-informant assessment of child behaviors, as well as stringent tests on differential sensitivity to parenting. Also, the samples analyzed here cover both non-clinical and clinical children for EB and various SES levels.

On the one hand, the results confirm the hypothesis that children display differential sensitivity to a parenting improvement both in the laboratory experiment and the intervention on the basis of their level of emotionality. On the other hand, the results did not confirm a differential sensitivity on the basis of the temperament trait of child activity. However, differential sensitivity in both micro-trials did not confirm our hypothesis that children with higher levels of emotionality would benefit more from the parenting improvement. Results show that children with a lower level of emotionality profited more from their parents’ enhanced self-efficacy.

First, results show that child activity is not a sensitivity marker in the two micro-trials on parental self-efficacy put at test in this study. This confirms earlier research on child temperament traits showing that emotionality is a better marker than activity, surgency or effortful control (Slagt et al., in press).

Second, differential sensitivity to improved parenting, based on child emotionality, was found only on the negative outcome of the child. Children with low levels of emotionality

reduced their negative behavior observed and reported by the parents after the parental self-efficacy improvement but they did not increase their positive behavior. This “dark side” effect, compared to the “bright side” effect when child positive outcome is increased, has been found in other studies, as described in the meta-analysis by Slagt and colleagues (Slagt et al., in press).

Third, we expected differences in child sensitivity to parenting between the laboratory experiment and the parenting intervention, first, because of the samples’ composition and the type of parenting improvement. The laboratory experiment was tested with typically developing children, whereas intervention was designed for parents of children at-risk (based on SES) or clinical for EB. The parenting manipulation was also different in laboratory setting and intervention setting. Whereas, in laboratory experiment, manipulation took only 45 minutes, the intervention manipulation consisted of 12- hour group session spread over eight weeks. But child emotionality did not affect differently the relation between parenting improvement and child behavior when the intervention lasted longer.

Fourth, concerning the unexpected direction of sensitivity showing that less emotional children benefited more from an improved parental self-efficacy, there are several possible explanations. In the intervention, parents of less emotional children see a larger decrease in EB than parents of high emotional children after the intervention. Here, the proximity between the symptom (negative behavior measured by CBCL) and the temperament trait of negative emotionality might explain this effect. Some items of the CCTI are similar to the items of the CBCL, measuring behavioral expressions of temperament. This is illustrated by the fact that EB reported by parents at baseline is significantly correlated with difficult temperament traits both in the experiment ($r=.60$) and the intervention ($r=.36$).

This unexpected finding regarding the direction might be also explained by the cognitive nature of the intervention that focus on parental self-efficacy, which is unusual compared to most parenting interventions focusing on coaching parents on child-rearing practices as discussed in a recent meta-analytic review of parenting interventions for preschoolers (Mouton et al., submitted-c). Parental self-efficacy manipulation may not affect children in the same way as other behavioral or cognitive-behavioral parenting interventions. Parents who became more confident may be less self-centered or concerned with doubts about their parenting and be more attentive to their child. This increased positive attention would be particularly beneficial for quieter children, with lower levels of emotionality, because they usually attract less attention from their parents than children with higher levels of emotionality. This differential sensitivity would be visible in the child’s observed behavior. Concerning the child’s EB reported by the parent, it could be that the normalization cognitive process at stake in the intervention leads parents to assess their child’s EB in a less negative way when they are less emotional. When comparing his child with others during the intervention, the parent may modify positively his representation of the child, even more for easier children who appear less

difficult than other children described by the other parents. The vicarious experience would affect particularly parents' representation of easier children.

It is also possible that some of these children are not the easier ones, as implied in the temperament literature. Some of these children may share some similar characteristics with cold, oppositional and negative children, such as Callous-Unemotional (CU) profiles. These children express shallow affects and show reduced empathy and remorselessness. They have been found to be less responsive to usual behavioral parenting programs (Högström, Enebrink, & Ghaderi, 2013 2013). Even though CU profiles have their specificity, in particular the callous dimension with low empathy and guilt which does not overlap with negative emotionality, it would be interesting to further explore if these children displaying high CU traits may be more receptive to a cognitive parenting intervention such as the one on parental self-efficacy analyzed in this study.

Eventually, results show that micro-trials improving parental self-efficacy affect more the easiest children in terms of temperament than the more difficult ones. These could also show a vantage resistance of highly emotional children to an improved parental self-efficacy. These children may be less receptive to more parental positive attention because they already receive this attention thanks to their difficult temperament. They may express regular negative emotions such as cries or screams that elicit parent's attention and gain secondary benefits this way. A change in the parent may not be comfortable for them as they could lose this special position towards their parent.

Although this unexpected direction of susceptibility found in this study raises questions, it is not the first time that contrasting findings have been found in susceptibility studies (Slagt et al., in press; Weeland, Overbeek, de Castro, & Matthys, 2015). For instance, several studies found higher effect size of positive parenting on externalizing behavior of children with lower level of emotionality compared to children with higher levels (Burk et al., 2011; K. G. Hill et al., 2010; Leerkes, Blankson, & O'Brien, 2009 2009).

Another interesting result comes from the RoS analysis showing that the interaction between emotionality and parenting condition is significant for the control group in the laboratory experiment. Children were more sensitive to a non-improved parenting than to an improved parenting in the experimental group. This negative effect of negative temperament would disappear when parenting is improved. Temperament literature shows that children with difficult temperament, regardless of their EB level, display more negative behavior. It may be that the laboratory manipulation smoothed or protected the negative effect of a difficult temperament trait.

In the intervention for the at-risk and clinical sample, the differential sensitivity is inverted. It was mostly significant for the experimental group receiving the intervention, compared to the control group. Children were more sensitive to a parenting improvement which shows a clear vantage sensitivity, for the better.

Replication would be necessary to confirm these tentative conclusions. Yet, results confirm the added-value of micro-trial studies in improving our understanding of what works, how and for whom in parenting intervention (Stoltz et al., 2013). It may show here

a specific effect of the modification of a cognitive parenting variable, compared to most parenting interventions that focus on the modification of parenting behavior, rather than parental cognitions. In such programs, it is not possible to disentangle effects according to what is worked with the parents during the program (cognitive or behavioral elements), as shown in a recent meta-analytic review (Mouton et al., submitted-c).

Clinical implications

Testing a differential sensitivity hypothesis based on temperament measures can contribute to the identification regarding which intervention is most beneficial to which type of children. This knowledge can be useful for tailoring interventions by identifying clinical priorities according to child's temperament and potential response to parental change. If clinicians know that highly emotional or active children will not benefit from the SEB intervention as much as others, they could opt for a longer or more intense version of the intervention (Matthys, Vanderschuren, Schutter, & Lochman, 2012 & Lochman, 2012) or a cognitive-behavioral intervention that may be more suited for them.

Limitations and further research

This study has several limitations. First, the reduced size of its sample, due to the experimental and intervention nature of the study, limits regression and interaction analyses. Second, the measurement of child temperament, though widely used to test sensitivity, has some drawbacks. It is closely correlated with some CBCL items measuring EB symptomatology as discussed earlier, creating an overlap between one of the outcomes and the moderator and leading to a possible overestimation of the moderating role of temperament. Furthermore, temperament is not as stable as it is considered to be in the literature (Van Den Akker et al., 2010 & Asscher, 2010). This is particularly true for preschoolers who have already interacted with their parents countless times. Temperament may be a better marker at early age, in infancy in particular, than later on.

Future research could take into account the role played by parents' own temperament. Less studied in literature so far, it could contribute to an understanding of the dynamics of the dyad, in a goodness-of-fit perspective (Thomas & Chess, 1985). We could put forward a vantage sensitivity hypothesis for parents with a high level of anger-emotionality, for instance (Slagt, Dubas, Denissen, Deković, & van Aken, 2015 Deković, & van Aken, 2015). Sociability could also be a key temperament trait.

In spite of these shortcomings, this study contributes to parenting intervention research by assessing sensitivity in both negative and positive outcomes in two micro-trials – a relatively new method to the field. The fact that this study did identify possible child sensitivity to parental self-efficacy in an unexpected direction calls for further investigation and replication. It confirms that micro-trials could be a way forward by looking at specific interaction effects of specific mechanisms on specific positive or negative outcomes, using a multi-method and multi-informant design.

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Beyond the efficiency of interventions for parents of difficult children, possible deleterious effects for co-parenting?

The efficiency of programs for parents of preschoolers with externalizing behavior has been widely documented in several meta-analyses. But research on other possible negative effects of these interventions is limited.

In this study, unexpected negative effects of the *Confident Parents* program on secondary parenting aspects are explored. In particular, the impact on co-parenting (collaboration between the two parents) is measured and compared to the effects of another program experimented in the H2M study aiming at improving parental verbal responsiveness. Results show the absence of global negative effects of these two interventions (N=60) on the participating parent's co-parenting. But this evolution of co-parenting differs according to the parent's gender and the type of intervention. Moreover, a negative relation is found between co-parenting and the therapeutic alliance that parents create with the intervention clinicians.

Keywords: Co-parenting, externalizing behavior, parenting intervention, preschoolers.

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Introduction

Parenting programs are commonly used to reduce child externalizing behavior. They aim to strengthen positive parenting through group discussion, role play and exercises on parenting behavior and more rarely on the representations of their parenting role.

Positive effects of these interventions have been largely documented in literature (Barlow & Stewart-Brown, 2000; Nixon, 2002; Reyno & McGrath, 2006). Among these effects, it has been shown that parents improve their practices, being warmer and available to their child or expressing more consistent rules (Lundahl et al., 2006; Serketich & Dumas, 1996; Wyatt Kaminski, Valle, Filene, & Boyle, 2008). Parents focus more on enjoyable moments with their child and less on difficult behavior, which tends to be reduced. Parents also acknowledged a change in attitude, being more comprehensive and calm towards their child's emotions and behavior.

Parenting programs also induce effects that are not directly targeted. Some of these unexpected effects are positive (Roskam, Brassart, et al., 2016). Through parenting practices, it is possible to reduce parental stress or increase parental self-efficacy (Ardelt & Eccles, 2001). But, unexpected negative effects have been rarely documented in literature. It is possible that parenting programs may have deleterious effects that are not easy to control. For instance, when only one parent participates to a program (which is the case in most programs), positive effects may intervene at the detriment of coparenting. Coparenting may be defined as the quality of collaboration between the two parents in their parenting role (McHale, Kuersten-Hogan, & Rao, 2004), emotional and instrumental support instrumental that mother and father give to each other in a reciprocal way (Feinberg, 2003). It is an interactional dynamic that exists within the parental dyad about the way mother and father work as a team and support each other in their parenting role. It is not only a question of agreement on education or tasks sharing.

This coparenting is often measured through two dimensions. The first dimension is positive and includes the level of agreement on education, closeness (to what extent coparenting improves intimacy and strengthens marital relationship), support (feeling of receiving help from the other parent), role approbation (positive attitude positive towards the way the other parent is parenting). The second dimension is negative and includes children's exposition to parental conflict and critics from the other parent (Feinberg, Brown, & Kan, 2012).

Literature shows that coparenting is related significantly but moderately to child development (Teubert & Pinquart, 2010). The way parents work as a team would explain almost 9% of variance in internalizing and externalizing behavior of three-year-old children (McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000; Schoppe-Sullivan et al., 2001;

Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004). Negative coparenting (conflicts and critics between parents), would be associated with a lower level of self-control in young children, over and above parenting practices (Karreman, van Tuijl, van Aken, & Deković, 2008). The absence of cooperation between parents would influence also the quality of parent-child interactions, predicting children's negative behavior towards their mother and father (Floyd, Gilliom, & Costigan, 1998). It is important to state that this association between coparenting and child development is bidirectional, the child influencing as well coparenting. Difficulties with the child can become a recurrent subject of conflict between parents and deteriorating coparenting.

Moreover, child's gender and socio-economic conditions play a moderating role in this relation between coparenting and child development. Socio-economic precarious conditions, by creating daily stress, would be detrimental to coparenting. Boys would also be more sensitive to parental conflicts than girls (Schoppe-Sullivan et al., 2001; Teubert & Pinquart, 2010).

In the scope of the parenting programs discussed here, the participating parents meet other parents, modify their child's representations, their expectations and their level of demands as parents, take some distance towards their parenting practices, elaborate new strategies to manage their child's behavior, etc. Meanwhile, the other parent does not benefit from these changes in such a way that the gap between the two parents may increase and weaken coparenting. Also, in couples where coparenting is challenged by child's difficult behavior, the participating parent may be looking for a strong therapeutic alliance with the group and the clinicians to gain the support he does not find with his coparent.

This therapeutic alliance can be defined as the fact that the patient experiences a treatment or the relationship with the therapist as helpful or potentially helpful to reach his goal (Horvath & Greenberg, 1989). It underlines the importance of collaboration between a patient and a therapist to initiate a change process. The alliance process is therefore interactive between two actors focused on treatment, while building a reciprocal relationship. It is therapeutic by itself, constitutes a prerequisite for the intervention's efficacy and interacts with the therapist's interventions. The alliance covers three dimensions : the relationship (positive relationship between therapist and patient), the tasks (agreement on what it is to be done) and the goal (collaboration to reach the therapeutic objective), (Corbière, Bisson, Lauzon, & Ricard, 2006).

Based on these various literature elements, it can be stated that parenting programs are efficacious to reduce preschoolers' externalizing behavior. But it remains necessary to evaluate their secondary effects on other parenting effects, in particular coparenting. Nevertheless, in the absence of previous comparable studies, no hypothesis can be made but the following research questions will be explored:

- How does coparenting evolve during the course of the intervention for the participating parent?
- Does this evolution vary according to child's gender and age, parent's gender and age and families socio-economic status?
- Does this evolution differ according to the type of intervention?
- Is it associated to the evolution of child EB?
- Is coparenting associated with the therapeutic alliance built between the participating parents and the therapists?

Method

To answer these questions, we will analyze here two studies carried out in the Institute of research in psychological sciences of the University of Louvain (Belgium) in which parenting programs were experimented to reduce child EB (H2M ou Hard-t(w)o-Manage children). The first program aimed to improve parental self-efficacy (SCP), (Mouton et al., submitted-b). The second targeted verbal interactions of the parent with his child (verbal responsiveness or RV), (Brassart & Schelstraete, 2015).

Sample description

Sixty parents (47 mothers and 13 fathers) participated to this research (table 1 in the following French version of the article). The vast majority of these parents raised their children together, within two-children families. The child for whom the parent participated to the program was between 3 and 6 year-old, with a mean age of 4 years and 2 months ($sd = 10.2$ months) and presented moderate to high levels of EB. Three out of four were boys. They did not have cognitive impairment, with an average IQ of 10.48 ($sd = 2.38$).

The education level of parents was calculated according to the number of achieved school years from the first year of mandatory school. Twenty five percents of mothers and 28% of fathers achieved successfully 12 years of education while 75% of mothers and 72% of fathers achieved higher or university education. Household revenues were inferior to 2000€ for 10% of the families, between 2000 and 3000€ for 21.6%, between 3000 and 4000€ for 30% and superior to 4000€ for 38.4%. Participants to interventions were fathers for 25% and three fourths mothers, which is a father participation rate higher than in most parenting programs in the literature (Sanders, Dittman, Keown, Farruggia, & Rose, 2010).

Parents were recruited through media, pediatricians and kindergarten schools in the region of Brussels and Brabant Wallon (Belgium). Twenty parents participated to a first testing and constituted the control group. Then, they were allocated randomly to one of the two programs, to which other parents that were not in the control group were added. This waitlist control design is usual in parenting programs (Dretzke et al., 2009; Hanisch et al., 2010; Lundahl et al., 2006).

Analyses

Preliminary analyses were done to check the comparability between the three groups (control, SCP and RV). Moreover, the two parenting programs' efficacy was evaluated by analyzing the effects on the child (on CBCL, see Annex IV). Then, the evolution in time of coparenting was analyzed by using a hierarchical linear model with the HLM software, (Raudenbush et al., 2004), to test to what extent coparenting was modified by the program (CPS, in annex VIII).

A second level of analysis measured the influence of parent and child variables on the evolution of coparenting. Concerning the child, we tested the influence of age, gender, the influence of child EB's evolution during the program and the average level of child EB. Concerning the parent, we tested the influence of age, gender and SES risk (Matheny Jr et al., 1995). Also, we analyzed the influence of each type of intervention (SCP vs. RV). Finally, the therapeutic alliance was explored (WAI, see Annex IX).

Results

First, preliminary analyses showed that the different groups were comparable before the parenting programs (Table 1 in the following French version). Only monthly family revenues were higher in the verbal reactivity sample compared to the self-efficacy sample.

Moreover, the two programs analyzed here were both efficacious to reduce child EB (Table 2 in the following French version). Children score under the clinical threshold (21) four months after the program, at follow-up for the parental self-efficacy program (Figure 1 in the following French version).

Then, the evolution in time of coparenting was analyzed by using a ratio between positive and negative dimensions of coparenting to limit the number of variables.

In the unconditional model, where time is the only predictor of coparenting, the fixed effects show that the slope is not different from zero ($B = .109$, standard error = $.112$), $p > .05$). This means that there is no linear relation between coparenting at the three measurement times. In average, there is no significant evolution of coparenting between the beginning and the end of the programs, even after four months (follow-up).

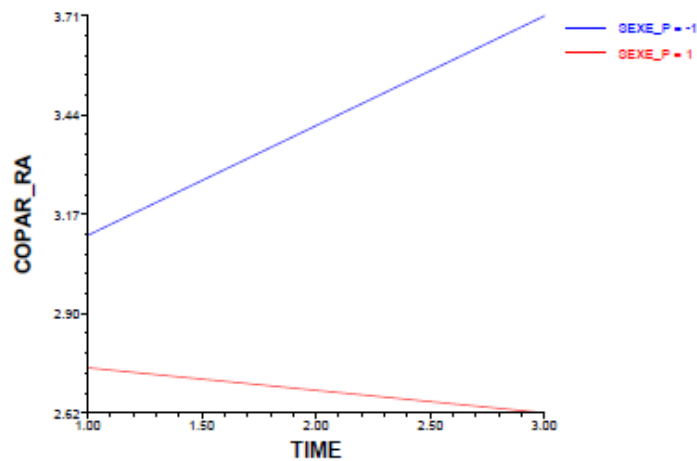
The second level of analysis relates to the conditional model in which we introduced the independent variables to explain the differences between the evolution in coparenting in the process of the program. While the mean evolution of coparenting is not significant, it may evolve differently for participants depending on child's age, gender and child EB and type of intervention, or SES risk. Results of the conditional model (Table 3) show that only two variables influence this evolution of coparenting: the type of intervention and parent's gender.

Table 3 : Results of the conditional model

	B	Standard error
Child age	-.01	.01
Child gender	-.24	.18
Mean child behavior	-.01	.02
Parent age	-.01	.01
Parent gender	-.18†	.09
Socio-economic risk	-.10	.09
Type of intervention	.39*	.17

† $p < .10$; * $p < .05$

Concerning the type of intervention, the evolution of coparenting is positive for the parents participating to the intervention focused on parental verbal reactivity. On the contrary, this evolution is negative for parents participating to the intervention focused on parental self-efficacy. Concerning parent's gender, we see a positive evolution for fathers and negative for mothers (Figure 2).



Sex_P=-1 : fathers ; Sexe_=1 : mothers

Figure 2. Evolution of coparenting in fathers and mothers.

Third, the association between coparenting and therapeutic alliance that parents have built with the therapists animating the self-efficacy intervention was analyzed. This analysis was done exclusively on a sub-sample of 37 participants. The correlation between alliance and coparenting is $r = -.14$ in baseline, then $r = -.25$ after the intervention and $r = -.30$ at follow-up. These correlations suggest that the stronger the alliance, the weaker the coparenting. We see that this relation becomes stronger with time. But, considering the limited size of the sample, these correlations are not significant and the difference between the correlations coefficients between the three measurement times is not either ($Z = .45$, $p > .10$).

Discussion

To conclude, coparenting is not affected negatively in average. It remains stable during the intervention and four months later. Interventions are not detrimental on that aspect, which is a good point for parenting programs.

But, the evolution of coparenting seems to vary according to the parent's gender. It seems more difficult for mothers to keep a positive coparenting when they take part to such a parenting program. Some mothers may be concerned that the father thinks that an improvement in the mother-child relationship, thanks to the participation to the program, be detrimental to him. The proximity felt by some mothers towards their child would be increased by the program and create a gap between the father and the child, as a negative secondary effect. This fear would be less present in fathers who would live this increased proximity with their child as favorable to their coparenting. A recent study shows that when mothers play a lot with their child, this has a negative effect on fathers who would tend to feel less competent in their parenting role (Biehle & Mickelson, 2011).

Moreover, could it be that when fathers participate to the program, their co-parent (mothers) while not present in the program, keep themselves informed about what the father did in the group sessions? Fathers would feel closer to the coparent, maybe more than mothers whose coparent would not ask systematically what happened during the session.

Another explanation hypothesis relates to the fact that fathers in the program would modify their child representations, making them more positive or accepting their child's difficulty, and making them closer to the representation of mothers. In this perspective merging process within the parental couple, fathers who participate to the program would feel closer to their parental partner compared to mothers who participate who would see a bigger gap with the father.

Also, it is possible that participating fathers are positively supported by mothers because of the simple fact of their implication in a group of parents. They would feel acknowledged in their parental role by mothers because they spend one to two hours a week to improve the relation with their child.

Moreover, the evolution of coparenting varies depending on the type of intervention. In the program focused on parent-child verbal interactions, an improvement in coparenting is observed, while it decreases in the self-efficacy program, on the short term. The first hypothesis relates to the fact that modifying cognitions would be a difficult experience to share with the other parent because it would affect self-representations as a parent. This might be more complex to explicit and more specific to each person. This would request time for a change in parenting practices to occur, as we see with follow-up effects. By observing the changes implemented by the other parent on a daily basis during several months, the other parent would get closer to the ones of the participating parent. Inversely, sharing on the verbal interactions homework and exercises implemented during the sessions would be more immediately accessible for each parent, and not only for the

participating parent. For instance, in the verbal interaction program, it is suggested to parents to express clear requests, using short and explicit sentences. In the sessions on parental self-efficacy, parents are invited to reflect on his parenting role, to differentiate the various domains in which they feel more competent. We can easily imagine that the coparent can observe changes in the first case, less than in the second program.

While these results would need replication considering the limited size of the sample, these various hypotheses to explain gender parental differences raise clinical questions. It could be relevant for clinicians to remain attentive to the fact that our interventions do not produce negative effects on coparenting. When it is the case, it could be adequate to find a way to compensate or limit these effects. Our results seem to show a negative correlation between therapeutic alliance and coparenting. Consequently, clinicians could be attentive to the degree of alliance between them and parents. This alliance could be a possible indicator of a weak coparenting, to support if necessary, if this is confirmed by other clinical observations. Also, differences between fathers and mothers highlight the necessity to take into account these specificities in coparenting. Depending on gender, the consequences on coparenting differ.

Par-delà l'efficacité des interventions auprès de parents d'enfants difficiles, de possibles effets délétères pour la coparentalité ?

Introduction

Les interventions auprès des parents – au lieu d'interventions auprès de l'enfant- ont été beaucoup utilisées comme un moyen de réduire les troubles du comportement externalisé chez les jeunes enfants (comme l'agitation, l'impulsivité, l'opposition, la désobéissance, l'agressivité, etc.). Ces interventions parentales consistent le plus souvent en séances individuelles ou de groupe, à raison d'une séance par semaine pendant plusieurs mois. Elles visent à renforcer la parentalité positive à travers des discussions de groupe, des jeux de rôle et des exercices sur les pratiques éducatives des parents et plus rarement, sur leurs représentations de leur rôle parental.

Les effets positifs de ces interventions ont été largement documentés dans la littérature (Barlow & Stewart-Brown, 2000; Nixon, 2002; Reyno & McGrath, 2006). Parmi les effets qui ont pu être observés, il a été pointé que les parents modifient favorablement leurs pratiques éducatives, en étant notamment plus chaleureux et disponibles pour leur enfant ou en exprimant des limites plus claires et cohérentes (Lundahl et al., 2006; Serketich & Dumas, 1996; Wyatt Kaminski et al., 2008). Ils relèvent aussi plus volontiers les moments agréables avec leur enfant et se décentrent de ses comportements difficiles qui tendent alors à diminuer. Les parents témoignent encore d'un changement d'attitude, devenant plus calmes et compréhensifs vis-à-vis des émotions vécues par leur enfant et des comportements qui en découlent.

Il reste que ces interventions ne seraient pas aussi efficaces pour tous les enfants ni pour toutes les familles (Leijten et al., 2013). Des difficultés socio-économiques (faible niveau de revenus, emplois précaires, niveau d'éducation bas), la monoparentalité et surtout la sévérité des difficultés chez l'enfant peuvent réduire l'efficacité de ces interventions parentales.

Par ailleurs, les programmes parentaux produisent aussi des *effets non directement visés*. Parfois, ces effets inattendus sont positifs (Roskam, Brassart, et al., 2016). En agissant par exemple sur des pratiques parentales, il est possible de réduire le stress éprouvé par les parents ou d'augmenter leur sentiment de compétence (Ardelt & Eccles, 2001). Par contre, dans la littérature, la survenue éventuelle d'effets inattendus négatifs est rarement documentée. Il est possible que les programmes parentaux aient quelques fois des effets délétères qui n'ont pas été anticipés et qu'il peut être difficile de maîtriser. Par exemple, lorsqu'un seul des deux parents participe à un programme (ce qui est le cas dans la majorité des situations), les changements positifs qui interviennent dans sa parentalité pourraient se faire au détriment de la coparentalité. La coparentalité peut être définie comme la qualité de la collaboration entre les deux parents dans leur rôle éducatif

(McHale et al., 2004), c'est-à-dire le soutien émotionnel et instrumental que la mère et le père s'apportent dans leur rôle parental de manière réciproque (Feinberg, 2003). Il s'agit d'une dynamique interactionnelle qui existe au sein de la dyade parentale portant sur la manière dont père et mère se coordonnent et se soutiennent dans leur rôle de parent. Ainsi, la coparentalité ne se limite pas uniquement à un accord sur l'éducation ou le partage des tâches. Cette coparentalité peut être mesurée sur deux dimensions. La première, positive, comprend le degré d'accord sur l'éducation, la proximité accrue (dans laquelle mesure la coparentalité améliore l'intimité et renforce les relations de couple), le support (le sentiment de recevoir de l'aide de l'autre parent), l'approbation du rôle de parent (l'attitude positive face à la manière dont son partenaire est parent). La seconde dimension, négative, comprend l'exposition des enfants aux conflits du couple parental et le dénigrement par l'autre parent (Feinberg et al., 2012).

La littérature montre que la coparentalité est liée au développement de l'enfant de manière significative bien que modérée (Teubert & Pinquart, 2010). La manière dont les parents coordonnent leur parentalité expliquerait environ 9% de la variance des comportements internalisés et externalisés des enfants de trois ans (McHale et al., 2000; Schoppe-Sullivan et al., 2001; Schoppe-Sullivan et al., 2004). La coparentalité négative (conflits et dénigrement entre parents), serait liée à un niveau plus faible de contrôle de soi chez les jeunes enfants, au-delà de l'influence première des pratiques éducatives (Karreman et al., 2008). L'absence de coopération entre parents influencerait aussi la qualité des interactions entre parents et enfants, en prédisant notamment des comportements négatifs de l'enfant envers sa mère, tout comme son père (Floyd et al., 1998). Il reste à noter que ce lien entre coparentalité et développement de l'enfant est de nature bidirectionnelle, l'enfant ayant aussi une influence sur la coparentalité de ses parents. Les difficultés rencontrées avec l'enfant peuvent devenir un sujet récurrent de conflit entre les parents détériorant ainsi la coparentalité.

De plus, le genre de l'enfant et les conditions socio-économiques jouent un rôle de modérateur dans ce lien entre coparentalité et développement de l'enfant. La précarité socio-économique, en créant du stress au quotidien, serait défavorable à la coparentalité. Par ailleurs, les garçons seraient plus sensibles aux conflits entre leur parents que les filles (Schoppe-Sullivan et al., 2001; Teubert & Pinquart, 2010).

Dans le cadre des interventions parentales dont il est question ici, le parent participant rencontre d'autres parents, modifie ses représentations de son enfant, ses attentes et son niveau d'exigence en tant que parent, prend distance par rapport à ses pratiques éducatives, élabore de nouvelles stratégies de gestion du comportement de l'enfant, etc. En parallèle, l'autre parent ne bénéficie pas de ces changements de telle sorte que l'écart peut se creuser entre les parents, et donc diminuer la coparentalité, dans la manière dont ils appréhendent les comportements difficiles de leur enfant ou dans la manière dont ils pensent qu'il convient de les gérer. En outre, dans les couples où la coparentalité est mise à mal par les comportements difficiles de l'enfant, il est possible également que le parent participant recherche une alliance thérapeutique forte avec les intervenants afin de bénéficier du support qu'il ne trouve pas ou plus auprès du coparent. Cette alliance

thérapeutique peut être définie comme le fait que le patient vive l'expérience du traitement ou de la relation avec le thérapeute comme aidante, ou potentiellement aidante, pour atteindre ses objectifs (Horvath & Greenberg, 1989). Elle souligne l'importance de la collaboration entre le patient et le thérapeute pour initier un changement. Le processus d'alliance est donc interactif entre les deux acteurs centrés sur le traitement, tout en construisant un lien réciproque. Elle est thérapeutique en soi, constitue un prérequis pour que l'intervention soit efficace et interagit avec les interventions du thérapeute. L'alliance couvre trois dimensions : le lien (la relation positive entre le thérapeute et le patient), les tâches (l'accord sur ce qu'il y a lieu de faire) et l'objectif (la collaboration pour atteindre l'objectif thérapeutique), (Corbière et al., 2006).

Au regard de ces différents éléments de la littérature, on peut relever que les interventions proposées aux parents ont montré leur efficacité pour réduire les comportements externalisés des jeunes enfants. Cependant, il reste nécessaire d'évaluer leurs effets secondaires sur d'autres aspects de la parentalité, en particulier la coparentalité. Néanmoins, en l'absence d'études antérieures comparables, aucune hypothèse ne peut être émise mais les questions de recherche suivantes seront explorées :

- Comment évolue la coparentalité au cours de l'intervention chez les participants à un programme axé sur la parentalité ?
- Cette évolution varie-t-elle en fonction du genre et de l'âge de l'enfant, du genre et de l'âge du parent participant, du niveau socio-économique des familles impliquées ?
- Cette évolution est-elle différente en fonction du type d'intervention, c'est-à-dire des stimulations proposées aux parents participants ?
- Est-elle liée à l'évolution des troubles du comportement chez l'enfant ?
- Y a-t-il un lien entre l'alliance thérapeutique, nouée entre les parents participants et les thérapeutes, et la coparentalité ?

Méthode

Pour tenter d'y répondre, nous analyserons ici deux études menées par l'Institut de Recherche en Sciences Psychologiques (Université Catholique de Louvain, Belgique) qui ont expérimenté des programmes parentaux en vue de réduire les comportements difficiles chez les jeunes enfants (H2M ou Hard-t(w)o-Manage children). Le premier programme visait à améliorer le sentiment de compétence des parents (SCP), (Mouton et al., submitted-b) le second à améliorer les interactions verbales du parent avec son enfant (réactivité verbale ou RV), (Brassart & Schelstraete, 2015).

Description de l'échantillon

Soixante parents (47 mères et 13 pères) ont participé à cette recherche (Tableau 1). La grande majorité de ces parents élevaient ensemble leurs enfants, qui étaient en moyenne deux par famille. L'enfant pour lequel le parent participait au groupe avait entre 3 et 6 ans, avec un âge moyen de 4 ans et 2 mois (déviations standard (sd) = 10.2 mois) et

présentait des niveaux modérés à élevés de comportements externalisés. Les trois quarts étaient des garçons. Les enfants ne présentaient pas de difficultés cognitives, avec un quotient intellectuel moyen de 10.48 (sd= 2.38).

Le niveau d'éducation des parents a été calculé en fonction du nombre d'années réussies à partir de la première année de l'enseignement obligatoire. Vingt-cinq pourcents des mères et 28% des pères ont accompli avec succès 12 ans de scolarité (ce qui correspond à la fin de l'enseignement secondaire en Belgique) alors que 75% des mères et 72% des pères ont réussi des études supérieures ou universitaires. Les revenus des familles étaient inférieurs à 2000€ pour 10% d'entre elles, entre 2000 et 3000€ pour 21.6%, entre 3000 et 4000€ pour 30% et supérieurs à 4000€ pour 38.4%. Les participants aux interventions étaient pour un quart des pères et trois quart des mères, ce qui représente un taux de participation paternelle plus élevée que dans la plupart des interventions parentales rapportées dans la littérature (Sanders et al., 2010).

Les parents ont été recrutés par l'intermédiaire des médias, des pédiatres et des écoles maternelles de la région de Bruxelles et du Brabant Wallon (Belgique). Vingt parents ont participé à une première série de mesures et ont constitué le groupe contrôle. Ensuite, ils ont été répartis aléatoirement entre les deux types d'intervention, auxquels se sont ajoutés d'autres parents qui n'ont pas participé au groupe contrôle. Ce design de groupe contrôle avec liste d'attente est courant dans les études d'interventions parentales (Dretzke et al., 2009; Hanisch et al., 2010; Lundahl et al., 2006).

Procédure

Récolte des données

Les parents ont été invités à compléter des questionnaires mesurant leur coparentalité par le Coparenting Relationship Scale de Feinberg, Brown et al. (2012), (33 items, adapté en français par Frascarolo et collègues (2009), ex. d'item : « *Cette personne et moi avons des points de vue différents à propos de ce qui est acceptable ou non dans le comportement de notre (McDonald, Sigman, Espinosa, & Neumann) enfant(s)* », sur une échelle de Likert à 7 points), voir en Annexe VIII.

L'alliance thérapeutique a été mesurée avec le Working Alliance Inventory de Horvath et Greenberg (1989), (12 items, version courte traduite en français par Corbières et al. (2006), ex. d'item : « *Nous nous entendons sur ce qui est important à travailler* », sur une échelle de Likert à 7 points), voir en Annexe IX. Le niveau de comportements externalisés de leur enfant a été mesuré par le CBCL d'Achenbach (2000) (24 items pour les échelles d'agressivité et de troubles attentionnels, ex. d'item : « *ne semble pas se sentir coupable après s'être mal comporté* », sur une échelle de Likert à 3 points), voir en Annexe IV. Ces mesures auto-rapportées ont été prises avant la participation à l'intervention, immédiatement après et lors d'un follow-up quatre mois plus tard.

Déroulement des interventions parentales

Les deux interventions proposaient huit séances hebdomadaires d'une heure et demie à des groupes d'une dizaine de parents environ.

L'intervention sur le sentiment de compétence parentale visait à diminuer les comportements difficiles des enfants en renforçant la confiance qu'a le parent en sa capacité à contribuer positivement au développement de son enfant. Fondées sur la théorie de l'apprentissage social de Bandura (1989b), les 8 séances de cette intervention ont été construites en fonction des quatre sources du sentiment de compétence théorisées par Bandura (2007) : les expériences actives de maîtrise (se centrer sur les expériences positives), les expériences vicariantes (observer les autres et se situer par rapport à eux), la persuasion verbale (recevoir des feed-back positifs par le groupe et les animateurs) et les états physiologiques et émotionnels (repérer les mécanismes d'activation émotionnelle et les anticiper). Au cours des séances, le parent participe à différentes activités qui lui permettent de changer progressivement son regard sur lui-même, son enfant et les situations vécues au quotidien. La première séance a pour effet principal de normaliser ce que le parent vit comme difficile en lui faisant découvrir qu'il partage des difficultés similaires avec d'autres parents. Il est ensuite proposé au parent de prendre conscience des biais négatifs envers son enfant et de sortir d'une pensée globalisante négative (« c'est toujours pareil avec lui », « quoi que je fasse, ça se termine toujours mal », etc.). Dans le but de lui permettre d'observer les autres et de se situer par rapport à eux, des vidéos et témoignages sonores de parents n'appartenant pas au groupe sont visionnées ensemble, et des jeux de rôle sont mis en place. Le parent est également invité à demander à son entourage de lui donner un feed-back sur lui en tant que parent et sur son enfant, ce qui a pour effet de le renforcer positivement. Un travail de prise de recul et d'identification des mécanismes automatiques d'activation émotionnelle et cognitive est enfin proposé, en identifiant les sensations corporelles, les sentiments et les pensées que le parent vit lors de moments difficiles ainsi que ses réactions et celles de son enfant, à travers notamment des activités de pleine conscience. Les deux dernières séances consistent en du vidéo-feedback, c'est-à-dire visionner des extraits de vidéos de chacun des parents participant au groupe, dans le but de discuter en groupe des compétences parentales (sensibilité aux signaux de son enfant, proximité physique, chaleur, humour, contribution à l'autonomie de son enfant, etc.) et de recevoir des feed-backs positifs. Entre les séances, différents exercices étaient aussi proposés aux parents pour expérimenter à la maison les éléments discutés en séance. En outre, tout au long de l'intervention, le parent est encouragé à noter un ou deux moments agréables passés avec son enfant, pendant lesquels il s'est senti bien en tant que parent, puis à en parler lors de la séance suivante.

L'intervention de guidance parentale logopédique avait pour but d'améliorer la réactivité verbale du parent pour soutenir le développement communicationnel des enfants. Le contenu de cette intervention est proche de celui de différents programmes de guidance parentale logopédique connus tels que le programme *Hanen Enhanced Milieu Teaching* (Girolametto, Greenberg, & Manolson, 1986), *Play and Learning Strategies*

(Wheeden & Fewell, 1995) et *Responsivity Education Milieu Teaching* (Yoder & Warren, 2002). L'intervention est divisée en différentes parties : (a) Introduction : importance pour les parents d'interagir avec l'enfant dans des situations de jeu ou de lecture d'histoire (1 session), (b) Suivre les initiatives de l'enfant en utilisant des stratégies verbales réactives (répétition, demande de clarification, interprétation, commentaire descriptif) et laisser le temps à l'enfant de prendre son tour dans la conversation (3 sessions), (c) Adapter le vocabulaire et les structures de phrases à l'enfant (1 session), (d) Video-feedback : visionnage des vidéos filmées des parents participants au début de l'intervention pour illustrer les stratégies proposées et renforcer positivement les parents (2 sessions), (e) Adopter des stratégies de stimulation langagière comme les reformulations, les expansions, les labellisations et l'ébauche (1 session). Chaque semaine, les parents devaient réaliser, à domicile, deux activités avec leur enfant en utilisant les stratégies proposées et une discussion à propos de ces activités était menée à chaque début de séance.

Analyses

Des analyses préliminaires ont été effectuées pour vérifier la comparabilité des trois groupes de parents (contrôle, SCP et RV). De plus, l'efficacité des deux interventions parentales a été évaluée en analysant les effets sur les comportements externalisés de l'enfant. Puis, l'évolution dans le temps de la coparentalité a été analysée chez les participants (suivant un modèle hiérarchique linéaire avec le logiciel HLM, (Raudenbush et al., 2004), pour voir dans quelle mesure la coparentalité a été modifiée par l'intervention.

Un second niveau d'analyse a mesuré l'influence de variables propres au parent et à l'enfant sur l'évolution de la coparentalité. En ce qui concerne les variables liées à l'enfant, nous avons testé l'influence de l'âge et celle du genre, l'influence de l'évolution des comportements externalisés pendant l'intervention ainsi que du niveau moyen de ces troubles. Pour le parent, nous avons testé l'influence de l'âge et du genre et à celle du niveau socio-économique de la famille. Pour ce faire, un indice de risque socio-économique des familles a été composé à partir des revenus du foyer, du niveau d'éducation, et du chaos dans la famille (Matheny Jr et al., 1995). En outre, nous nous sommes intéressés à l'influence du type d'intervention auquel le parent a participé (SCP vs. RV). Enfin, le lien avec l'alliance thérapeutique a été exploré.

Résultats

Dans un premier temps, les analyses préliminaires ont montré que les différents groupes étaient équivalents avant les interventions parentales (Tableau 1) tant du point de vue de l'âge des enfants et des parents, du niveau d'éducation des parents (mères et pères), des comportements externalisés chez l'enfant et de la coparentalité (pour les deux dimensions positives et négatives). Seuls les revenus mensuels nets du ménage étaient supérieurs dans le groupe sur la réactivité verbale parentale par rapport à celui sur le sentiment de compétence.

Tableau 1 : Comparaison des groupes sur les données socio-démographiques et les variables en ligne de base

	Total (N=60)		Contrôle (n=20)		SCP (n=17)		RV (n=23)		F
	M	sd	M	sd	M	sd	M	sd	
Age de l'enfant	50.98	10.12	49.25	10.79	52.94	8.38	51.04	10.83	0.60
Age du parent	35.53	6.11	35.32	4.85	37.07	7.68	34.73	6.08	0.64
Genre de l'enfant (% garçons)	75%		70%		70.6%		82.6%		1.15
Genre du parent (% mères)	78.3%		80%		70.6%		82.6%		0.88
Niveau d'éducation des mères (≤12 ans/>12 ans)	25/75%		20/80%		23.5/76.5%		30.4/69.6%		0.87
Niveau d'éducation des pères (≤12 ans/>12 ans)	28/72%		30/70%		11.7/88.3%		39.1/60.9%		2.37
Revenus du foyer <2000/2000-3000/3000-4000/>4000€	10/22/30/38%		10/20/25/45%		0/11.8/29.4/58.8%		17.4/30.4/34.8/17.4%		5.40*
Coparentalité positive	5.24	0.95	5.24	1.05	5.11	0.79	5.41	1.06	0.33
Coparentalité négative	2.30	1.11	2.33	1.19	2.34	1.17	2.22	0.96	0.04
Comportements externalisés	28.69	5.36	29.80	5.43	27.47	5.19	28.62	5.45	0.87

* $p < .05$

SCP : intervention ciblée sur le sentiment de compétence parentale

RV : intervention ciblée sur la réactivité verbale

De plus, les deux programmes analysés ici (centrés sur le sentiment de compétence ou la réactivité verbale) se sont révélés tous deux efficaces pour réduire les troubles comportementaux chez l'enfant. Immédiatement après l'intervention, les comportements difficiles de l'enfant diminuent (tableau 2). Ils passent sous le seuil clinique (score de 21) quatre mois après l'intervention, à la mesure de follow-up, dans le cas de l'intervention sur le sentiment de compétence parentale (Figure 1).

Tableau 2 : Comparaison des groupes sur les comportements externalisés de l'enfant (prétest, post-test, follow-up)

	Prétest		Post-test		Follow-up		t-tests		
	M	Sd	M	sd	M	sd	Prétest Post-test	Post-test Follow-up	Prétest Follow-up
Groupe Contrôle (n=20)	29.8	5.4	27.65	6.12	-	-	1.81†	-	-
Groupe SCP (n=17)	27.47	5.19	24.60	6.53	19.71	5.30	4.47***	5.00***	2.58*
Groupe RV (n=23)	28.62	5.45	21.67	5.84	23.69	5.98	4.23***	3.15**	-0.88

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$

SCP : intervention ciblée sur le sentiment de compétence parentale

RV : intervention ciblée sur la réactivité verbale

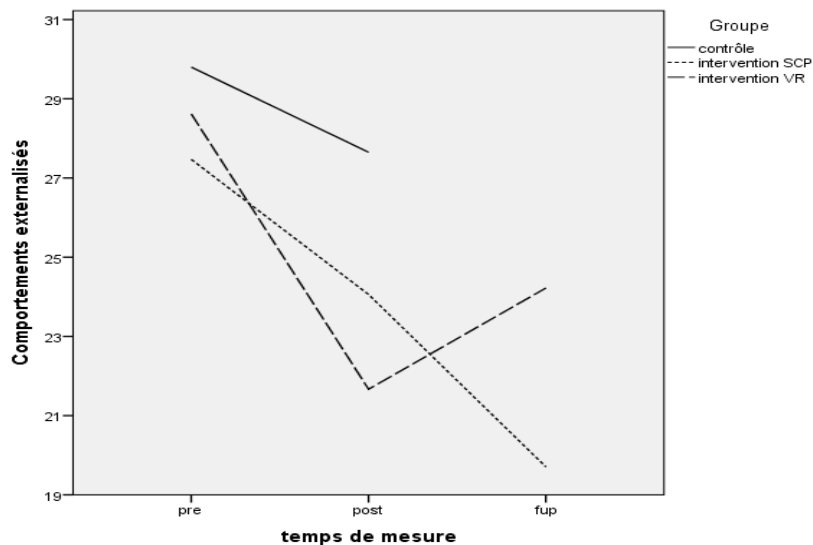


Figure 1 : Effets des interventions parentales sur les comportements externalisés chez l'enfant (au prétest, post-test et follow up).

Puis, l'évolution dans le temps de la coparentalité a été analysée chez les participants pour voir dans quelle mesure elle a été modifiée par l'intervention. Un ratio a été calculé entre les dimensions positive et négative de la coparentalité pour limiter le nombre de variables.

Dans le modèle dit inconditionnel, où le temps est le seul prédicteur de la coparentalité, les résultats des effets fixes montrent que la pente n'est pas différente de zéro ($B = .109$ (erreur standard = $.112$), $p > .05$). Cela signifie qu'il n'y a pas de relation linéaire entre la coparentalité aux trois temps de mesure. En moyenne, il n'y a pas d'évolution significative de la coparentalité chez les parents participant aux interventions entre le début et la fin de l'intervention, même après quatre mois (follow-up), (Tableau 3).

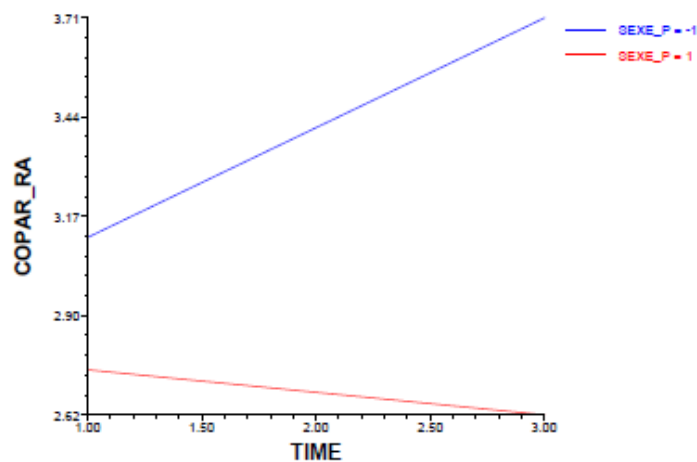
Le deuxième niveau d'analyse correspond au modèle conditionnel dans lequel nous avons introduit des variables indépendantes pour tenter d'expliquer les différences existant dans l'évolution de la coparentalité des participants au cours de l'intervention. En effet, bien que l'évolution moyenne de la coparentalité soit non significative, il se peut qu'elle évolue différemment chez les participants en fonction de l'âge, du genre et du comportement de l'enfant ainsi que de l'âge et du genre du parent, du type d'intervention ou bien encore de l'indice de risque socio-économique de la famille. Les résultats du modèle conditionnel présentés dans le Tableau 3 indiquent que seules deux variables influencent l'évolution de la coparentalité au cours de l'intervention. La première concerne le type d'intervention auquel le parent a participé. La seconde concerne le genre du parent participant.

Tableau 3 : Résultats du modèle conditionnel

	B	Erreur standard
Âge de l'enfant	-.01	.01
Sexe de l'enfant	-.24	.18
Comportement moyen de l'enfant	-.01	.02
Âge du parent	-.01	.01
Genre du parent	-.18†	.09
Risque socio-économique	-.10	.09
Type d'intervention	.39*	.17

† $p < .10$; * $p < .05$

En ce qui concerne le type d'intervention, l'évolution de la coparentalité est positive chez les parents participant à l'intervention centrée sur la réactivité verbale parentale. Inversement, cette évolution est négative chez les parents participant à l'intervention centrée sur le sentiment de compétence. En ce qui concerne le genre du parent participant, lorsque les pères participent, il y a une évolution de la coparentalité positive. Elle est plutôt stable à négative quand les mères participent au programme (Figure 2).



Sexe_P=-1 : pères ; Sexe_P=1 : mères

Figure 2 : Evolution de la coparentalité chez les mères et les pères.

Dans un troisième temps, les liens entre la coparentalité et l'alliance thérapeutique que les parents ont créés avec les psychologues animant l'intervention sur le sentiment de compétence parentale ont été analysés. Cette analyse concerne uniquement un sous-échantillon de 37 participants. La corrélation entre l'alliance et la coparentalité est de $r = -.14$ en ligne de base, puis de $r = -.25$ après l'intervention et de $r = -.30$ au follow-up. Ces corrélations suggèrent que plus l'alliance est forte entre le parent participant et les psychologues, moins la coparentalité est positive. On constate aussi que ce lien entre alliance thérapeutique et coparentalité se renforce avec le temps. Cependant, étant donné la taille réduite de ce sous-échantillon, ces corrélations ne sont pas significatives et

la différence entre les coefficients de corrélations aux trois temps de mesure n'est pas significative ($Z=.45$, $p>.10$).

Discussion

En conclusion, la coparentalité ne subit pas d'effet significatif délétère, ni positif d'ailleurs. Elle tend à rester stable pendant l'intervention et quatre mois plus tard. Les interventions ne semblent donc pas nocives à ce niveau, ce qui est un point positif pour les interventions parentales.

Toutefois, l'évolution de la coparentalité varie selon que ce soit le père ou la mère qui est impliqué(e) dans l'intervention et qui évalue la qualité de la coparentalité. Il semble plus difficile pour les mères de conserver une coparentalité positive lorsqu'elles prennent part à ce type d'intervention parentale. Certaines mères semblent craindre que le père pense que l'amélioration de la relation de la maman avec son enfant, grâce à la participation au groupe, ne le soit « à son détriment ». La proximité ressentie par certaines mères vis-à-vis de leur enfant serait renforcée par la participation à l'intervention, créant un fossé entre le père et l'enfant, comme un effet secondaire négatif. Cette crainte serait moins partagée par les pères qui vivraient le rapprochement avec leur enfant comme favorable à leur coparentalité.

Par ailleurs, se pourrait-il que lorsque les pères participent à l'intervention, les mères, bien que non présentes dans les groupes, se tiennent plus volontiers au courant de ce qui s'y fait, se dit ou se pratique ? Le père se sentirait alors plus proche du coparent, peut-être davantage que la mère dont le coparent ne demanderait pas systématiquement comment s'est déroulée la séance ?

Une autre hypothèse reposerait sur le fait que les pères participants rejoindraient les représentations davantage positives sur leur enfant qu'auraient déjà certaines mères ou reconnaîtraient plus volontiers les difficultés de leur enfant ? Dans un processus de rapprochement de points de vue au sein du couple parental, les pères qui participent se sentiraient plus proches de leur partenaire parental alors que les mères qui participent verraient le fossé se creuser avec le père de leur enfant.

Il est possible aussi que les pères participants bénéficient d'un soutien positif de la mère par le simple fait de s'impliquer dans un groupe de parents. Ils se sentiraient reconnus dans leur rôle parental par la mère, de par le fait de consacrer une à deux heures par semaine pour améliorer la relation avec leur enfant en participant à un groupe de parents.

Par ailleurs, l'évolution de la coparentalité varie selon le type d'intervention parentale selon qu'elle soit centrée sur le sentiment de compétence ou la réactivité verbale. Dans les groupes visant une amélioration des interactions verbales entre parent et enfant, une amélioration de la coparentalité est observée, alors qu'elle diminue, dans un premier temps, dans les groupes centrés sur l'amélioration du sentiment de compétence parentale. La première hypothèse repose sur le fait que travailler une cognition serait une

expérience difficile à partager avec son conjoint car cela affecterait les représentations de soi en tant que parent, qui sont peut-être plus complexes à expliciter et plus propres à chacun. Cela nécessiterait du temps avant un changement observable dans les pratiques parentales, ce que montrent les effets au follow-up. Ce serait en observant les changements mis en place par l'autre parent au quotidien, sur plusieurs mois, que l'autre parent se rapprocherait de celui qui a participé au groupe. Inversement, échanger sur des exercices pratiques de communication serait plus immédiatement accessible pour chacun des parents, et non pas seulement pour celui qui a participé à l'intervention. Par exemple, dans l'interaction sur la réactivité verbale, il est proposé aux parents de formuler des demandes claires, en utilisant des énoncés courts et explicites. Dans les séances sur le sentiment de compétence parentale, le parent est invité à réfléchir à son rôle de parent, à différencier les domaines dans lesquels il se sent le plus compétent. Nous pouvons facilement imaginer que le coparent peut observer des changements dans le premier cas, plutôt que dans le second. Et peut-être appliquer à son tour ces nouvelles pratiques avec l'enfant ?

Ces différentes hypothèses d'explication des différences entre pères et mères soulèvent des questions sur le plan clinique. Il pourrait être pertinent pour les cliniciens d'être vigilants au fait que nos interventions ne produisent pas d'effets délétères au niveau de la coparentalité et quand c'est le cas, chercher comment les compenser ou en limiter les effets. Nos résultats semblent indiquer par exemple un lien négatif entre l'alliance que le parent participant noue avec les intervenants et sa coparentalité. Dans ce sens, les cliniciens pourraient être attentifs au degré d'alliance des parents avec eux, qui pourrait être un indicateur éventuel d'une coparentalité fragile, à soutenir si nécessaire, si cela est confirmé par d'autres observations cliniques.

De plus, les différences entre père et mère identifiées ici mettent l'accent sur la nécessité de prendre en compte ces spécificités dans la coparentalité. Selon que le père ou la mère participe, les conséquences sur la coparentalité diffèrent. Offrir un espace aux parents pour qu'ils puissent exprimer l'un à l'autre leurs émotions, leurs attentes ou leurs doutes sur leur rôle de parent pourrait contribuer à clarifier le vécu de chacun et réduire les difficultés de coparentalité. Ceci limiterait par exemple les craintes des mères que le père vive mal un rapprochement avec leur enfant, craintes qui ne sont peut-être pas partagées par les pères. Inversement, les pères pourraient trouver les modalités d'engagement dans la relation avec leur enfant, en équilibre avec la mère elle-même souvent déjà engagée. Une étude récente montre ainsi que lorsque la mère joue beaucoup avec son enfant, cela peut avoir un effet négatif sur le père qui tend à se sentir moins compétent dans son rôle de parent (Biehle & Mickelson, 2011).

Concernant les questions posées dans la présente contribution, la recherche peut apporter une contribution pertinente, en ciblant notamment dans des expériences très ciblées, des micro-trials, les composantes de l'intervention susceptibles de produire des effets délétères. Ces micro-trials ont pour ambition de mesurer les effets d'une manipulation standardisée, brève et ciblée sur une variable spécifique au sein d'un laboratoire (Howe et al., 2010). L'objectif est d'identifier les facteurs de risque ou de

protection dans le domaine de la parentalité et les processus de changement qui les sous-tendent. Il ne s'agit pas ici d'intervenir pour soutenir les parents mais de tester si un facteur de risque ou de protection en particulier, isolé des autres variables, est modifiable, et dans quelle mesure le changement induit a des effets sur le parent et l'enfant. Ceci permet alors de cibler les aspects de la parentalité prioritaires pour une intervention thérapeutique (Dekovic, 2012).

Ces deux études expérimentales sont un exemple parmi d'autres de la valeur ajoutée de la coordination entre recherche et clinique pour que notre compréhension et notre soutien de la parentalité d'aujourd'hui soit encore plus ajustée et pertinente.

General discussion

General discussion

The aim of this dissertation was to test the causal link between parental self-efficacy and child behavior and to implement a parental self-efficacy intervention with the goal of reducing preschoolers' externalizing behavior. The two empirical studies confirmed that parental self-efficacy could be manipulated, leading to improved parenting and to a lesser extent to more positive child behavior. The innovative character of this dissertation lies in its cognitive and focused nature, not common in parenting intervention research to date. The use of a micro-trial design contributes to the aim of disentangling parenting variables' effects on child behavior, as well as the use of an observation paradigm complementary to parents reports. In this part, we will discuss the results of our experimental and intervention studies in the light of the three key questions when investigating parenting intervention (Deković, Stoltz, Schuiringa, Manders, & Asscher, 2012): "Does it work?" "For whom does it work?" And "how does it work?". Next, despite promising results, various limitations will be discussed and further research will be suggested to overcome these.

Main conclusions

"Does it work?": Main results

To answer this question, preliminary questions had to be explored. First, it was necessary to check if parental self-efficacy could be modified and if it affected child and parent behaviors. Second, when implemented into an intervention, the effects of a parental self-efficacy program on parents and children behaviors had to be analyzed.

Parental self-efficacy can be manipulated and it modifies parent and child behaviors

The *Confident Mothers* experimental study contributes to proving a direct relationship between mothers' enhancement of their self-efficacy beliefs and their positive parenting. Mothers' self-efficacy enhancement could also be considered as a possible predictor of children's positive behavior. Following the SEB manipulation, parent positive behavior increased with an effect size of Cohen's $d=.63$ and child positive behavior increased with an effect size of $d=.64$ (table 1). We can therefore suggest that self-efficacy beliefs is a relevant parenting variable to be targeted and manipulated in parenting interventions using theory-based change processes as a therapeutic leverage. Parental self-efficacy is not just a positive secondary effect used to evaluate programs or a baseline predictor of programs' effectiveness but a modifiable parental variable that causes changes in parents and children's behaviors.

The *Confident Parents* intervention study confirms this causal link by implementing the manipulation of parental self-efficacy with at-risk and clinical samples for EB. When

comparing control and experimental groups at post-test, the effect size is $d = .49$, but that not take into account the baseline level (table 1). When comparing self-efficacy between baseline, post-test and follow up, the parental self-efficacy of parents in the experimental group increased at post-test, compared to baseline, with an effect size of Cohen's $d = 0.75$ and 1.35 at follow-up (table 2). The interaction between group and time is significant. This proved that enhancing parental self-efficacy was possible by using Bandura's theoretical foundations of self-efficacy. It also shows that modifying this parental cognition seems to be a process that takes time and, more interestingly, a process that remains active over time (Sanders, Bor, & Morawska, 2007).

When looking at parents' behaviors, results show that parents' behavior was more positive in the experimental group in both the experimental and the intervention studies at post-test, with effects sizes varying from 0.47 to 0.89 , according to the study and the tasks (Table 1). In the intervention, the interaction effect (group x time) is also significant in both free play and frustration tasks. At follow-up, parents continued to improve their behavior as well (Table 2).

Table 1. Comparison of inter-group effects sizes between control and experimental groups on parent and child outcomes at post-test in the two studies

	Confident Mothers Experimental study (n=42)	Confident Parents Intervention study (n=80)	
	Post-test	Post-test	
		Free play	Frustration
Parental self-efficacy	na	0.49^*	
Parent positive behavior (observed)	0.63^*	0.47^{**}	0.89^{***}
Child positive behavior (observed)	0.64^*	0.12	0.54^*
Child negative behavior (parent report)	na	0.32	

na: not available. Inter-group effect sizes are calculated with Cohen's d , between control and experimental groups.

Table 2. Comparison of intra-group effects sizes between baseline, post-test and follow-up on parent and child outcomes in the intervention study for the experimental group

	Confident Parents Intervention study (n=37)			
	Post-test		Follow-up	
	Free play	Frustration	Free play	Frustration
Parental self-efficacy	0.75^{***}		1.35^{***}	
Parent positive behavior (observed)	0.38^*	0.61^*	0.53^{**}	0.48^{**}
Child positive behavior (observed)	0.15	0.15	0.09	0.35^*
Child negative behavior (parent report)	0.62^{**}		0.92^{**}	

Intra-group effect sizes are calculated with Cohen's d between baseline and post-test or follow-up in the intervention study for the experimental group only.

Children's observed positive behavior improved in the non-clinical sample in the experimental study. Compared with the control group, children were less difficult then (less irritable, less non-compliant, less aggressive) and showed more positive affect, enthusiasm and persistence when their mothers were reinforced in their self-efficacy. In the intervention study with a clinical and at-risk sample, children's behaviors remained

mostly the same at post-test and eventually increased slightly at follow-up during frustration tasks after the intervention with an Cohen's $d=.35$ (Table 2). The interaction effect (group x time) was not significant at post-test.

The negative symptoms of EB reported by parents for the clinical sample decreased significantly with a moderate effect size at post-test, and continued to decrease at follow-up (respectively Cohen's $d= 0.62$ and 0.92). But these effects were limited in comparison with the control group, because some parents had already modified their representation of their difficulties with their child after one encounter with program leaders, even before attending the program. When we use Morris's intergroup effect size that takes into account both group and pre-post differences, we see that the effect size remains high for parent behaviors ($ES=.79$ in free-play and $.85$ in frustration) but low for child behavior ($ES=.12$ for EB reported by parent; $.14$ for observed child behavior in free play and $.09$ for observed child behavior in frustration tasks). The interaction effect (group x time) was not significant at post-test.

In the child differential sensitivity study, observed behavior is analyzed in more detail by distinguishing between positive and negative scales, instead of using global scores. In the experimental study with a normally-developing sample, parent negative observed behavior is significantly reduced while child positive observed behavior is increased. In the intervention study with at-risk and clinical children, parent positive behavior is improved significantly while child negative observed behavior tends to be reduced.

Improving parents' self-efficacy had therefore a direct positive effect on child behavior as hypothesized, mostly increasing positive observed behavior of normally-developing children. This complements previous studies (Mah & Johnston, 2008), stressing the positive impact of improved positive parenting on children (Gardner et al., 2010). The intervention also contributed to reduce negative reported behavior of at-risk and clinical children in the experimental group but not significantly when compared to the control group. This effect visible as well in the control group (making the interaction effect non-significant) raises the issue of a possible placebo effect (treatment with no active component can stimulate real responses in patients). Parents of the control group have not received an intervention and yet, they already modify their description of their child's negative behavior. Placebo research (Feinberg, 2013) has shown that the way placebo treatment are delivered (is the physical surrounding of the room calming? Is the doctor caring or not?) are possible mechanisms behind placebo effect. In our case, parents of the control group do not receive placebo treatment (they receive no-treatment at that step) but they are assessed in the same way as experimental parents: they are being listened to and video-taped by clinicians perceived as university experts in parenting. This may be caring and not yet curing but it seems to contribute to a positive change.

Confident Parents also improved parents observed behavior, with a large intergroup effect size at post-test, and this continued to improve at follow-up. The interaction effect (group x time) was significant at post-test. It is interesting to note that this parenting

behavior improved in both free play and the frustration task, unlike children's behavior, which improved only in the frustration task.

Interestingly, results of the hierarchical linear model analysis in the *Confident Parents* study show that change in parental SEB is the most significant predictor of the reduction in child EB reported by parents. For every unit increase in SEB over a wave, there was a decrease of 3.68 units of child EB. The average level of SEB also predicted EB change. For every unit above the average level of SEB, a decrease of 2.97 units of EB was found over a wave. But, as far as observed child behavior is concerned, parental self-efficacy does not emerge as a significant predictor.

An innovative cognitive parenting program can reduce child externalizing behavior

Confident Parents is an innovative program because no similar focused self-efficacy program exists yet for parents of externalizing preschoolers, to our knowledge. The meta-analytic review in Part I shows that there was no exclusively focused cognitive parenting intervention for parents of preschoolers (Mouton et al., submitted-c).

Yet, results show different patterns for the two studies. When we compare effects between the experimental study and the intervention study on observed behaviors, we see that in the experiment, effects on behaviors of parent and child at post-test are similar. In the intervention, bigger effects sizes are found for the parent behaviors. For the child, significant effects are visible only at follow-up in the frustration task. There could be a sleeper effect in intervention (effects not visible immediately after an intervention but later on) on the observed child positive behavior in this task. When parents report on their child's negative behavior, size effects of the intervention are higher than on observed positive behavior.

This discrepancy of effects between parent reports and observation of child behavior is an issue to discuss further. Found in other studies (Maughan, Christiansen, Jenson, Olympia, & Clark, 2005), this difference between observed and reported measures of EB can be explained by several elements. First, should it be considered as discrepancy or rather complementarity of measures? Both measures capture behaviors in different contexts, one in a university lab and the other at home. The Crowell observation paradigm could be a more favorable context, in which children behave more positively than at home. Second, parents may have over-rated children's behavior at baseline to convince program leaders of the severity of the situation and make sure that they were enrolled for the research. Third, another explanation specific to this study may be related to the content of the program itself. As it focuses on self-efficacy, it may have helped modify parents' representation of their children as measured by CBCL (see in Annex IV), even without or in addition to any actual improvement of children's behavior that would have been reported by another observer (the other parent or a teacher). Many parents came to the conclusion at the end of the program that part of their job as parents was to accept their child as he is, with a difficult temperament that might not change, and to adapt to this. *Confident Parents* reorients parents on the positive side of the relationship and

therefore decreases their negative view of their child's difficulty. We observe higher effect on parents' reports than on observed behavior in this cognitive-oriented program but this is not the case in another cognitive-behavioral program having greater effect on observed child behavior (Loop et al., submitted). Along with other studies (Roskam, Brassart, Loop, et al., 2015), we may conclude that program content seems to matter but its effect may not be captured by parents' reports on child behavior but by observation. Also, this difference between measures may be explained by psychometric limitations of the parent report questionnaire, and highlights again the need to use a multi-informant and multi-method design in parenting research.

Another interesting result concerns the differences between scores in free play and frustration tasks, which could be explained by the nature of the task (ecological in free play or challenging in frustration). When the interaction with the parent becomes more challenging, the positive change in the child's behavior is more visible than in a more ecological task such as free play. The parent may decide to let go in free play, let the child take the lead and not intervene too quickly, ignoring child irritability or even aggression, knowing that there are still several minutes before the end of the session. In the frustration task, the parent may step in more actively and succeed in modifying the child's behavior.

To explain some of these results, it may be interesting to look at the effects of two cognitive parenting programs, partly comparable to *Confident Parents* as they share some aspects of a non-behavioral orientation but differ in the target population (younger children) or the setting (home setting). Parent Effectiveness Training program focuses on positive communication, active listening and appropriate assertiveness. Cedar and Levant (1990) examined 26 studies on this program and found no effect on child behavior but positive changes in parental attitudes and communication with their child. These results are similar to ours.

Effects of the Home-Start program (Asscher, Hermanns, & Deković, 2008) confirm these results. This preventive parenting program aimed to increase maternal sense of competence of 54 mothers and their children between 1.5 and 3.5 years of age. A significant improvement was found for parental self-efficacy, but mixed results were found for parenting behavior: Parental consistency and observed sensitivity improved significantly whereas no effects were found on other parenting variables. Child behavioral problems seemed to diminish for both intervention and control groups, and therefore these changes cannot be attributed to Home-Start. Compared to *Confident Parents*, this program shares the goal to support parents rather than coaching them on how to handle their child. Authors explain that it is based on Bandura's theory of self-efficacy in the sense that people are more likely to act when they believe both that they are capable of carrying out a given action and that this action will accomplish a desired goal. Extrapolating from this general idea, authors claim that the increase in maternal sense of competence is an important mediating link between the Home-Start program and changes in parenting behavior, in particular when looking on a long-term. Nevertheless, this is different from the role attributed to parental self-efficacy in the *Confident Parents* program. Here,

parental self-efficacy has been manipulated as a key independent parenting variable, independently from parenting behavior, which is new compared to most studies in which parental self-efficacy is conceived as a mediator or a moderator. In our case, the main justification to manipulate self-efficacy relates to Bandura's Social Learning Theory assuming that self-efficacy should be considered not as a personality trait but rather as a context-dependent concept (1977), which means that it can be manipulated. This theory holds that SEB are rooted in individual factors (e.g. personal history of accomplishment, emotional arousal and its physiological impact) as well as in contextual factors (e.g. verbal feedback from others, social comparisons). Performance accomplishments are the strongest source of self-efficacy, followed by vicarious experience (evaluation process based on seeing others of widely differing characteristics perform), verbal persuasion and emotional arousal. These sources have been used intensely in our self-efficacy manipulation, both in the laboratory experiment and the *Confident Parents* program, as it will be detailed later on in the description of the therapeutic processes.

"For whom does it work?": Predictors

After checking if enhancing parental self-efficacy does work, we investigated to what extent this self-efficacy parenting program is effective for all children, according to their EB initial severity, SES risk and temperament.

Confident parents works best for low SES risk and high child EB severity

SES risk, due to lower income, lower education levels, single parenting or high level of chaos in the family (see Annex VII), appeared as a predictor of a lower score for parents' observed behavior and a higher score for parent-reported children's behavior but not of a lower score for children's observed behavior after the *Confident Parents* program. The more disadvantaged the family was, the less children benefited from this SEB program. These results are consistent with some other studies' findings (Lundahl et al., 2006; Reyno & McGrath, 2006). The cognitive nature of *Confident Parents* may make it less accessible to families facing daily hassles due to limited financial, social and educational resources. The therapeutic processes used here, such as negative and global bias modification or standing back from the problem and acceptance of child's characteristics that cannot be changed, may be complex and far from the daily priorities of such families. Explicit behavioral training for parents might be more appropriate in such circumstances.

Concerning EB initial severity, it was highly correlated to the change after the program. The more difficult children were before the program, the more they benefited from their parent's attendance of the program and reduced their negative behavior according to their parents. This is confirmed also for child observed behavior, the less positive a child was at baseline, the more his/her observed behavior improved after the program. This complies with other studies that have observed greater program effectiveness in clinical samples (Lundahl et al., 2006). Some authors speculated that this may be because parents are more motivated to change (Leijten et al., 2015).

Confident Parents would work best for low emotional children?

In the study on child differential sensitivity to parenting (Part II), the results confirm the hypothesis that children would display differential sensitivity to parenting improvements both in the laboratory experiment and the intervention. These preliminary results show that SEB enhancement works best for children with low levels of negative emotionality, which was unexpected.

This leads to conclude that improving self-efficacy seems to have worked better for easier children than for more difficult ones, in term of temperament. This is coherent with the higher effect sizes found in the self-efficacy lab experiment on normally developing children that have lower levels of these difficult temperament traits. Increasing self-efficacy would have worked better with easier children. But this remains intriguing because it is not consistent with the earlier finding on initial EB severity that showed that children with higher level of EB at baseline benefited more from the intervention. Even though temperament trait of emotionality is correlated with CBCL scores, they may measure different concepts that do not overlap.

In the intervention, emotionality appeared as a sensitivity marker for the negative outcome, as found in other research (Slagt, Dubas, & van Aken, 2015). The unexpected direction of sensitivity (less emotional children benefited more) could be explained by several factors. First, parents report the same limited change in negative behavior whether their child is high or low in the control group. But after the intervention, parents of less emotional children see a bigger decrease than for other children. Here, the proximity between the symptom (negative outcome measured by CBCL) and the temperamental trait might explain this effect (see Annexes IV and V). Although this unexpected direction of susceptibility found in this study raises questions, it is not the first time that contradictory findings have been found in susceptibility studies (Weeland, Overbeek, Orobio de Castro, & Matthys, 2015). Replication would be necessary to confirm this exploratory conclusion.

Among the possible interpretations of such results, we hypothesized that these low emotional children may have some callous-unemotional (CU) traits (Högström et al., 2013). Yet, we have no evidence of the presence of such traits because we did not measure them at that time. We did include such a measure for the following parenting intervention that combined both the cognitive dimension of self-efficacy and the behavioral emotion coaching practices, using the Inventory of callous Unemotional traits ICU (Frick, 2004). Another argument leading us to be cautious is that the callous dimension of CU (related to low level of guilt, and empathy) would not be captured at all by the emotionality temperament trait measurement.

“How does it work?”: Therapeutic processes

Confident Parents is a parenting intervention aimed at empowering parents, based on the hypothesis that they will be able to adjust their parenting skills to their child's characteristics and their family functioning. Parents are told at the very first session that the aim of the group is to improve the relationship with their child, by enhancing their well-being and that: *“You, as a parent, have the greatest change potential in the relationship with your child. You are the one that knows him or her best.”* They were told that there will be no explicit coaching on the way to raise their child because they are the best experts of their own child, but the focus will be on what they think, how they feel about themselves as a parent, what are their parenting goals and expectations towards their child, and what they believe is going on for their child.

The intervention consisted in 8 weekly group sessions aiming at improving parent self-efficacy. Groups were composed of 7-11 parents, including both mothers and fathers (75% and 25% respectively in average). During an hour and a half, activities varied from group discussion based on brainstorming and videos, role-plays and personalized video-feedbacks on parent-child interactions. Between sessions, homework was suggested to implement at home with the child issues discussed in group. Each parent received a phone call between sessions to check if the homework was well understood. Groups were animated by two trained psychologists using a programme standardized delivery manual.

This program delivery manual displayed for each session standardized instructions, the precise timetable, the description of the activities and materials as well as standardized answers to possible questions raised by parents. Recommendations were given about how to keep a neutral open and unconditional acceptance attitude towards parents, even when harsh physical punishment was acknowledged by parents. Instructions were also given in order to lead the group discussions in view of staying exclusively focused on parental self-efficacy. No direct instructions were given by the clinicians to parents on how a good parent should deal with a child to avoid weakening parents' self-efficacy and reinforcing the clinicians' expert position. On the contrary, the intervention aimed at empowering parents by making them realize how much they already do and know about their child, by uplifting their negative perceptions often leading to guilt and by reopening their parenting possibilities.

Cognitive processes

Seven main cognitive processes related to Bandura's theory have been used to modify parental SEB:

- Normalization of child externalizing behavior by comparing one's self as a parent to the other participating parents (vicarious experiences)
- Focusing on positive experiences with one's child (performance accomplishment)
- Disputing specific cognitions about parents' high expectations on their parenting role and about children's temperament traits (knowledge on child development)

- Reorientation of cognitive negative bias of the parent toward the child and one self as a parent on positive experiences and getting out of global negative self-efficacy beliefs by specifying self-efficacy for each parenting domain (performance accomplishment)
- Getting out of automatic cycles linking emotional arousal, negative thoughts and negative parenting behavior (identification of emotional states and negative anticipation)
- Receiving positive feed-back on one self as a parent and on the child, received both within the group and outside the group (verbal persuasion)
- Self-evaluation of parenting skills (performance accomplishment)

The clinical vignettes presented below illustrate some of these processes and their effects on parents. For ethical reasons, names and details have been modified to preserve parents' anonymity.

These various therapeutic processes were used in a progressive manner during the intervention. The first session introduced the discussion on each parent's representations of his or her role and the difficulties with the child. Each parent was invited to choose an image representing the relationship with the child and him or her as a parent. It led to making explicit some high-standards demands that parents put on themselves and the social pressure they may feel to "succeed" as a parent, in comparison to what they actually lived at home with their child. The therapeutic process used here was based on disputing specific cognitions about child-rearing and child development (Gavița et al., 2011). Daily difficulties at home and at school were shared among the group, contributing to normalize parents' daily hassle and reduce parents' feelings of powerlessness and guilt. This normalization process contributed greatly to the group building process as well as to a perspective taking process for the parents. Positive feedback was given to each individual parent, based on what the parent brought into the discussion, highlighting their courage and efforts to attend such a group and to acknowledge their difficulties in front of strangers.

Clinical illustration n°1: Normalization

In the first session, Maria explained her difficulties with her son John by opening to the group her helplessness as well as her strong loving feelings for him. She described how she came to the point of being violent with him, but how she was afraid to lose him at the same time. This testimony, perceived as moving yet courageous by the other parents who remained non-judgmental (as requested earlier by the two clinicians as a group rule), contributed to open the discussion in an empathic and open way, allowing each parent to express his or her difficulty and ambivalence. The normalization process took place in the first minutes of this group session and contributed to build the group alliance around the intense difficulty and helplessness expressed by this mother.

In session 2, parents were invited to move from a global negative perspective on their child to a more nuanced look, taking into account both good and bad sides of the relationship and by distinguishing their feeling of competence in each specific field of parenting (instrumental care, affects, teaching, discipline, play). One exercise consisted in drawing a map, in a star shape, of the self-efficacy level in each separate domain. The cognitive process involved here is getting out of negative and globalizing thoughts and increasing self-evaluation skills.

Session 3 focused on the effects of praise, congratulating and complimenting, on both children and parents. This was discussed in terms of emotions and cognitions, in relation to behaviors, as well as physical sensations of parents, when expressing or receiving positive feedback. Videos of dyads outside the group were used for group discussions on this topic, with the aim of focusing parents' attention on positive interaction with their child. The aim was not to teach parents how to praise their child but to identify emotions and physical sensations related to receiving positive feed-backs from others.

In session 4, parents watched a video of an intense temper tantrum of the child in presence of her mother, illustrating the effects of child's negative behavior on the parent (in terms of emotional reaction, physical sensations and thoughts). Role plays were also organized, with some parents playing the role of parents and others the role of children. This contributed to a perspective-taking process for parents and was recalled in the following sessions to identify physical sensations, emotions and thoughts involved in parent-child interactions. Unconscious automatic cognitions and behaviors, along with emotional arousal of parents and children were discussed. The therapeutic aim at stake here was to raise parents' awareness of these automatic processes and increase their anticipation capacity to limit the activation of such processes (Gavița et al., 2011). The metaphor of freewheeling was used to explain these automatic cycles that are fed by unconscious emotional states and negative thoughts that shape both parent and children behaviors. Through this metaphor, the objective is to help each parent identify his own emotions, sensations and thoughts that are automatically activated in difficult parenting situations and anticipate this freewheeling mechanism. This anticipation may modify parent behavior and reduce child difficult behavior.

In session 5, parents were requested to ask a significant other of their choice (their own parents, siblings, best friends, etc.) to give them a positive feedback on their parenting and their child. Effects of these feedbacks were discussed as well as differences in perspective on the same child from different people – mother, father, teacher-illustrating possible negative bias parents may have on their own child. The therapeutic process used here was the reinforcement of self-efficacy through one of Bandura's four sources of parental self-efficacy, i.e. verbal persuasion from significant others (1977).

Clinical illustration n°2: Positive feedback from significant others

Emily decided to ask her own father to tell her what he thought about her as a mother and about the relationship she has with her little boy Mark. It took her several days to call him because she was concerned about what he would say because they had never discussed about it explicitly before. When she shared with the group her father's comments, she was still moved by what he told her. She explained that she cried when listening to her father saying that she was a good mother, dedicated and sensitive. He also explicitly shared with her how proud he was of his grand-son whose joy and witty spirit made him laugh. He also liked his relationship with his mother, their closeness and camaraderie.

In session 6, once the group cohesion and alliance were strong enough, parents were invited to recall a difficult time with their child and identify their thoughts, emotions and physical sensations in this situation, as already discussed in previous sessions with the freewheeling metaphor. Mindfulness was used as a coping strategy with the objective to help parents take a distance from their cognitions, emotions and body sensations in a non-judgmental and acceptance manner (A. Ellis, 2005; Gavița et al., 2011). This exercise was based on evidence-based intervention studies suggesting that this mindfulness approach not only improve severe or chronic disorders but also parent-child interactions (Coatsworth et al., 2015; Corthorn & Milicic, 2015; Dumas, 2005).

In the last two sessions 7 and 8, personalized video-feedback was used to observe and discuss parent-child interactions in the group, for each participating parent (Juffer et al., 2008). It contributed to reinforce parental self-efficacy by providing positive feed-back from other parents of the group and the clinicians, on actual video abstract in which each parent could see themselves with their child. These videos came from assessment observations (at pretest) in which some good specific moments could be selected. Three minute-long abstracts were selected by clinicians to show either a positive interaction or a transition from a negative situation towards a positive resolution, for each parent. In a similar way as in Mouton & Roskam (2015), the hypothesis was that referring to the parents' parenting skills with their own child rather than referring to a general parenting skill implemented with any children, contributes to strengthen self-efficacy. Stimulating parental self-evaluation regarding skills related to parenting behavior has been described also as a potential technique for self-efficacy enhancement (Sanders & Woolley, 2005).

Clinical illustration n°3: Self-observation of positive experience with one's child and positive feed-back from the group

In a 3 minute-video, the group watched Tom and his father getting started on the difficult wooden 3D puzzles. Tom expresses strongly his frustration and stops playing. He gets up and starts to get out of the room. The father finds a way to re-engage his son into the task by using humor, as he does often with his son. He modifies the rule as a joke by saying: "Ok, now we will build a big tower with the wooden pieces". The son is surprised and amused. He turns back to his father, sits down and tries again to put the pieces together to achieve the puzzle.

This video abstract was selected because it illustrates a positive resolution of a situation that began with child non-compliance but led to a return to a positive father-child interaction and child engagement in the task.

Tom's father received positive feed-back from other parents of the group on his use of imagination and humor. "You know your son well; you knew he would be intrigued, you found the way to get his attention. You made him smile and want to go back at your side."

In summary, the seven cognitive processes listed above were implemented in the various sessions of the intervention. Among these processes, normalization, positive feed-back and self-evaluation, as illustrated by the three clinical vignettes, have probably been the most impactful processes, according to parents' comments at the end of the programme. Making negative cycles more conscious through the identification of automatic thoughts, emotions and physical sensations has also been a key process. To have a clearer understanding on these processes, it would be helpful to measure their use and their impact by asking parents about them during the programme. This will be discussed further in the paragraph on measuring program compliance and integrity (p.180).

Importance of therapeutic alliance

The various activities presented earlier rely on a therapeutic alliance to be fully efficacious. Therapeutic alliance is described as a factor influencing intervention efficacy (Schmidt, Chomycz, Houlding, Kruse, & Franks, 2014). Defined as the affective and collaborative components of the client-therapist relationship (Elvins & Green, 2008), it has been identified as playing a putative role in both treatment process and outcome. In a recent study on the Triple P parenting programme, Schmidt and al (2014) showed that higher levels of parents rated therapeutic alliance were associated with greater gains in parenting skills and parental sense of competence. Parental rated therapeutic alliance was also associated with greater improvements in child conduct problems for mothers, but not fathers.

In the *Confident Parents* program, therapeutic alliance between participating parents and clinicians was assessed with the Working Alliance Inventory (Horvath & Greenberg, 1989) at post-test for parents of the experimental group (WAI-short, 12 items, client

version, translated in French (Corbière et al., 2006), see Annex IX. A global score was calculated for the 12 items using a 7 point Likert type scale, with two reversed items (i.e. “We agree on what is important to work on” or “I have doubts about what we are trying to accomplish.”). Treatment satisfaction was also measured at post-test through a global item using a Visual Analogue Scale (VAS (Wewers & Lowe, 1990), from 1 to 10.

Alliance was correlated with parent SEB change (using a differential score of self-efficacy) between baseline and follow-up with $r = .49$ ($p < .05$) suggesting that the higher the alliance, the higher the increase in parental self-efficacy, or vice-versa. Correlations between therapeutic alliance and child EB change reported by the parent between baseline and follow-up (using a differential score of CBCL) was $r = -.52$ ($p < .05$) suggesting that a high alliance with clinicians is associated with greater improvement. For observed behavior, of both parents and children, there was no significant relationship. Here again, observed behavior seems to be unrelated to other covariates.

As discussed in Part II in the study on the negative effects of parenting programs, the higher the alliance between the participating parent and the clinicians, the weaker is coparenting (see Annexes VIII and IX). We notice that this link is strengthening with time. The correlation between the two variables at baseline was $r = -.14$ then $r = -.25$ after the intervention and $r = -.30$ at follow-up. These correlations suggest that when alliance increases during the course of the program, coparenting decreases. Nevertheless, these results have to be interpreted with caution, considering the limited size of our sample ($n=37$), which certainly contributes to making these correlations not significant and the difference between these correlation coefficients at the three measuring times not significant as well ($Z = 0.45$, $p > 0.10$).

Another issue to be raised is that this therapeutic alliance building process may be particularly active during the first encounter. Playing with the child, using the Crowell procedure, may be a therapeutic step for some dyads already (Loop et al., revised). Some programs, such as Theraplay, use play as a therapeutic process (Hong, 2015; Wettig et al., 2011). An argument in favor of a possible impact of the first encounter between parents and clinicians is the fact that positive effects are already visible in the control group, as mentioned earlier about the Placebo effect issue. Parents did not receive any intervention yet but already modified positively the report of their child externalizing behavior at post-test. The engagement of the clinicians in the testing procedure, the explanation of the study, may be perceived as an act of caring and may contribute to modify parents' representations. This could be due also to child development which could have a decreasing effect on externalizing behavior, as we know that older children tend to show less EB. But the time frame between the pretest and post-test assessments (two months) is rather limited for such an effect of normal development on parent-child interactions.

Focused interventions: a way forward in parenting research?

Answers on “Does it work” and “For whom” allow us to widen our conclusions to a larger reflection on parenting intervention. In parenting research, how to help families in the most adjusted manner is a key issue. To respond to this ambitious goal, the evaluation of existing interventions’ efficiency is one way, mostly done through meta-analyses. But an additional role of evaluation, often neglected, is to provide a test of the theory on which the program is based (Deković, Stoltz, et al., 2012).

Another way is to explore new intervention paths, which is in line with the studies discussed in this dissertation. Both ways contribute to tailoring interventions to the needs and strengths of parents and children and their context. This implies to gain knowledge on what works for whom and under which circumstances, which is a relatively new issue in intervention research (Stoltz, Deković, et al., 2013).

Micro-trials can contribute to these objectives in several ways. They are defined as randomized experiments, testing the effects of relatively brief and focused environmental manipulations designed to suppress specific risk mechanisms or enhance specific protective mechanisms (Howe et al., 2010). They do not bring about full treatment or prevention effects in distal outcomes. “Micro-trials are designed to test the malleability of specific risk or protective factors and to provide information concerning whether and how specific program components bring about meaningful change in those factors”, (p.346). That way, they can be considered as a bridge between laboratory studies and full-scale intervention trials, providing key tests of whether and under what circumstances a risk or protective factor is a suitable candidate for targeting.

The MOST methodology suggested by Collins brings complementary suggestions (2014). She advocates a preference for addressing important research questions in the field of intervention by means of a chain of highly focused studies, with the results of each study informing the design of each subsequent study, rather than on relying on a single large study. She suggests three phases. First, a screening phase uses theory-based experimentation to select the important components worth exploring further, through randomized experiments. Second, a refining phase consists of investigating the interactions between the component tested in the first phase and covariates and determining appropriate dosage levels and components combination. Third, a confirmation phase leads to use results from the first two phases to build an intervention, for which the components are well understood. This way, the risks are limited to conceive interventions as “black boxes” with little knowledge on what is actually done and why in the intervention. Such methodology provides several advantages. It allows the testing of more creative approaches in a cost-effective and relatively rapid ways. Innovations that show potential can be incorporated into refined intervention tested in the confirming phase. On the contrary, innovations that do not work out can simply be discarded.

A nuance may be expressed in the field of parenting which is characterized by a quite complex conceptual network. How focused can be a micro-trial considering that many

parenting variables are intertwined: self-efficacy, affects (positive and negative), emotional and behavioral responsiveness, emotion coaching practices, communication skills, coparenting, etc. Can we manipulate only one risk or protective factor? We have to keep in mind that manipulating one of these variables has probable effects on other variables that may impact the parent-child relationship. This intertwining mechanism is probably more acute in an intervention where many issues are discussed by parents than in a laboratory setting. But despite this limitation, developing micro-trials that are focused as much as possible and comparing them remain an interesting way forward in parenting research, as illustrated below.

In the H2M research, several micro-trials were experimented in line with the first phase of MOST. This opened the possibility to compare effect sizes of similar outcomes, which is one of the biggest added values of micro-trials, both for theory and intervention. Several comparison studies contributed to the goal of disentangling parenting variables' effects and identifying which are the best parenting variables to manipulate and for whom.

First, Loop and colleagues (Loop et al., submitted) compared the *Confident Parents* program to another parenting intervention micro-trial using a similar design (8 week-long, groups of parents, clinical sample). The main difference between the two interventions lies in their content. The second intervention combines two components: a parenting behavioral component focusing on parental emotion coaching practices with the cognitive component of parental self-efficacy (a condensed version in four weeks). Both interventions differed only by the number of manipulated variables (2 versus 1) and the nature of the variables (cognitive versus combined behavioral and cognitive). The goal was to identify which parenting intervention format (one-variable versus two-variable) caused higher behavioral adjustment in children. *Confident Parents* was found to lead to a greater decrease in children's EB reported by parents at follow-up. Results were inversed concerning children's positive observed behavior, with a greater improvement in the two-variable intervention at post-test and follow-up. Results illustrate that interventions' format has specific effects and interventions are not interchangeable according to their format.

Second, a comparison between *Confident Parents* and another parenting intervention micro-trial focusing on parental verbal responsiveness (Roskam, Brassart, Loop, et al., 2015) concluded that both interventions were effective in decreasing aggressive child behavior observed by parents and observed non-compliance. However, the improvement of self-efficacy had an effect on reducing child behavior across a slightly larger spectrum than the enhancement of verbal responsiveness since it was also effective in reducing observed child's irritability.

Third, another comparison study in H2M looked at the differences in targeting the child or the parent. Four micro-trial interventions based on a similar design (each focusing on one variable: child inhibition, child social cognition, parental self-efficacy or parental verbal responsiveness) were compared. Two targeted the child, the other two the parents

(of which *Confident Parents* on SEB). Roskam and colleagues (submitted) showed that the four programs were all effective to reduce EB among preschoolers reported by their parent. Their effectiveness was moderated neither by their orientation towards the child or the parent, nor by their content. This suggests that several effective solutions exist to improve behavioral adaptation in preschoolers. Interestingly, this comparison confirmed that the content of interventions for preschoolers' EB did not have a moderating effect on parent reported EB, as in the meta-analytic review. But they could have different effects if other assessments were used to measure child EB, in particular through observation.

It was also suggested in a fourth comparison study (Roskam, Brassart, et al., 2016) that focused micro-trials can have effects on other parenting covariates. It has been demonstrated by Roskam & al. (2016) that focused parenting programs can also have effects on other parenting variables, such as behavioral and emotional responsiveness, positive affect, irritability, supportive or controlling parenting practices and not only on their targeted variable. Enhancing a specific parenting variable impacts other parenting constructs through widespread effects in a cascading manner. This may be particularly true for a cognitive variable such as parental SEB. Such a cognitive variable may have implications for many internal and implicit beliefs, linked to various parenting covariates.

Such comparisons of micro-trials can contribute to improve significantly clinical support provided to families with preschoolers showing externalizing behavior. They highlight the possible variety of interventions that can be proposed to families, considering that these interventions are all evidence-based and have similar effect size when parent reports are used to assess child EB. This paves the way to propose to families a tailored clinical response based on families' needs, strengths and availability. Before entering a program, a pre-assessment of children's and parents' characteristics (SES, child initial EB severity, temperament, inhibition, social cognition, parental self-efficacy, etc.) should be done.

Back to the model: Confrontation of results with theory

Results confirm a causal relationship between parental self-efficacy and both child and parent behaviors. This relationship varies according to the parenting or child outcome (figure 3). Our findings confirm results of previous studies showing that effect sizes of parental programs are largest for parental cognitions, somewhat smaller for parenting behavior and smallest for child outcomes (Kaminski et al., 2008). This can be partly explained by the fact that parenting is a proximal outcome while child behavior is a more distal outcome, even though it is the final target of parenting programs. A sleeper effect might contribute to explain this difference in outcome but would need long-term assessments to be verified (Deković, Stoltz, et al., 2012).

Parental self-efficacy and child externalizing behavior

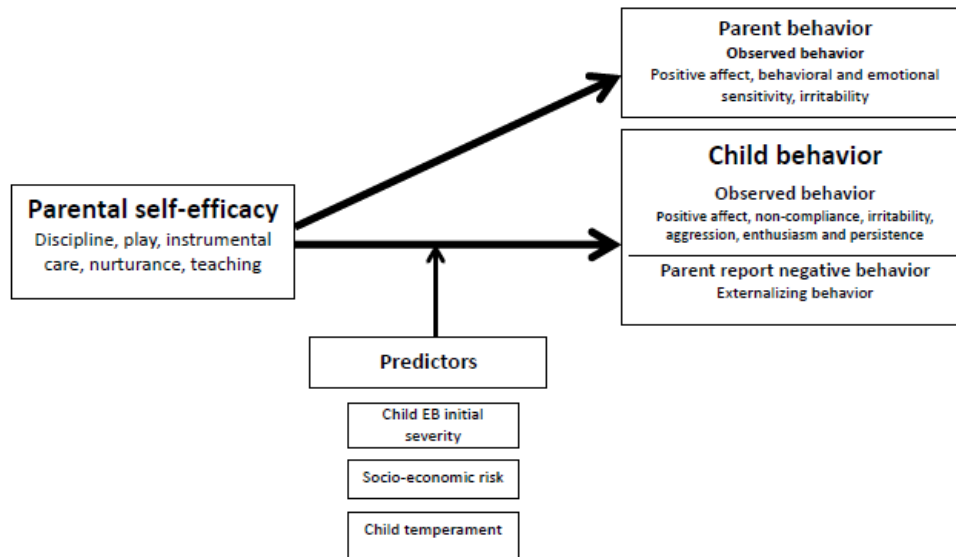


Figure 3: Dissertation causality model of parental self-efficacy on child behavior

Results also vary according to the type of study (experimental versus intervention) and the positive or negative valence of the outcome (positive versus negative behavior), as well as the informant (parent report versus observer), with higher effects reported by the parents, compared to observer's assessment of both parent and child behavior. Last, results vary also according to child initial EB severity, SES risk and temperament. Among the three foreseen predictors, results confirm their contribution to explaining this relationship between parental self-efficacy and child behavior. The more difficult children were initially, the more they benefited from the intervention, whereas socio-economic risk predicted a reduced effect. In terms of child temperament, children with low levels of negative emotionality benefited more from the intervention.

Confronted to our theoretical model, results of our studies did provide insight on what works and for whom. The question of "why" or "how did it work" was explained in terms of therapeutic processes based on theory. The link between parent behavior and child outcomes was not tested here because it was not the research question of this dissertation. While it would be most interesting, this would require a different methodological design allowing complex mediational analyses and could constitute a full new doctoral research (Stoltz, Deković, et al., 2013).

Limitations

One of the basic principles in research might be that the best time to design an experiment is after it is finished (Collins, 2014). This implies that the worst is the beginning, when least is known and when key decisions must be taken on methodological

design, measurements instruments, sample selection, etc. This leads inevitably to unexpected difficulties and limitations. Several of them will be explained in this section.

Methodological limitations

Limited sample size and recruitment

Both empirical studies testing parental self-efficacy had limited sample sizes, though adequate for this type of micro-trial studies (Brown et al., 2012; Brown & Liao, 1999; Howe et al., 2010). The limited sample size is related to recruitment. The recruitment phase took several months for each study. Considering the time frame and the collaborative nature of the H2M research, this impacted both the time dedicated to recruitment and the number of baseline measures to include for our joint control group. I was involved as the first author in one experiment and two intervention studies and actively involved as second author in one other experiment and one other intervention study during the course of this doctoral dissertation.

Waitlist control group design and limited assessments

Second, no measures were available at follow-up for the control group, due to the waitlist design, which is a common limitation in intervention studies. Such design uses a control group which becomes later the experimental group. This way, an intervention is provided to all families that would be left without intervention if they were kept as an exclusively control group. Considering the difficulties these families go through with their child's externalizing behavior, this would not be ethical. The drawback of such design is the lack of comparison with a control group at follow-up, since this group became experimental in the meantime.

Also, extra assessments during the intervention, in addition to baseline, post-test and follow-up, would have increased the opportunity to explore further change mechanisms.

Measuring Parental self-efficacy

First, the measurement of the cognitive variable of parental self-efficacy is based exclusively on self-report without the possibility to complement it with observational or multi-informant measures. This is a psychometric limitation usual in the cognitive parenting field and not specific to this study. It is also sensitive to a test-retest effect when measured in a short time frame.

This is why in the first study, no pretest-posttest comparison was possible for SEB because we could not ask parents to fill in the questionnaire a second time so close to the first one. It seemed inadequate because of a possible test-retest effect for such a cognitive measurement using a 25 item questionnaire. This was also the case in other experimental studies in which self-efficacy was enhanced (Cassé et al., 2015). A shorter questionnaire with only a few items could have been used to overcome this hindering. Nevertheless, the fact that the dyads of the experimental group behaved more positively than those of the control group supported the influence of the self-efficacy manipulation. In the second

study, we could measure the change induced by the intervention, which led to a medium effect size of Cohen's $d=.75$ at post-test and even larger at follow-up ($d=1.35$).

Yet, the questionnaire used in our studies offered some advantages. The Global Scale for parental Self-efficacy (Echelle Globale du Sentiment de Compétence Parentale or EGSCP) used here (Meunier & Roskam, 2009a), see Annex III, is inspired by a questionnaire of Coleman & Karraker (2003), the SEPTI for toddlers and school-aged children. Other instruments are commonly used to measure parental self-efficacy, such as the Parenting Stress Index or PSI, a 15-item scale rated on a 6-point scale (Abidin, Flens, & Austin, 2006) or the Parental Sense Of Competence (PSOC), a 16-item rated as well on 6-point scale (Johnston & Mash, 1989). The EGSCP is based on 42 items and assess self-efficacy according to specific parenting domains (a short version exists with 25 items). Its assessment of self-efficacy has the advantage to be more specific than with the PSI or the PSOC, which measure a global parental self-efficacy and also include other dimensions such as parental knowledge on child development or parental satisfaction.

Though in the intervention study, we referred to specific domains, a global SEB measure was used in both studies in order to keep a reasonable number of variables for the statistical analyses. This was possible because the five scales correlated significantly ($r=.25$ to $.71$) and the global measure consistency was good ($\alpha=.71$ to $.76$). But, in the intervention study, we had to exclude the instrumental care scale because it did not correlate with the other domains. The specificity of this scale may be explained by the fact that parents of externalizing children may feel competent to provide daily basic instrumental care to their child (feeding, bathing, clothing, etc.). Their feeling of competence in other domains such as discipline, playing or teaching may be more affected by the behavior of their child. Analyses of effects in specific self-efficacy domains done in the Roskam & al study (2015) on a sub-sample of at-risk preschoolers, showed that the domains of discipline (Cohen's $d=.80$ at post-test and 1.05 at follow-up) and teaching (Cohen's $d=1.24$ at post-test and $.76$ at follow-up) were the most improved by the *Confident Parents* program. These analyses showed differences between domains that could be further explored.

When exploring the issue of consistency of these SEB domains with other parenting measures used here, in particular the observed parent behaviors (detailed in the section on observing child and parent behaviors), we have to acknowledge that parent observed behaviors are only partially overlapping with the self-efficacy domains. A strong conceptual connection is visible for the nurturance scale of SEB with the positive affect scale in Crowell. A more indirect relation can be found between the play and teaching SEB scales with the emotional and behavioral responsiveness Crowell scales. This limited consistency between parent SEB and behavior measures may have contributed to shallowed effects on parent behaviors of the *Confident Parents* program.

Measuring child externalizing behavior

As discussed earlier, child EB is a complex outcome to assess and needs to be evaluated by different informants using different methods. Analyses in our meta-analytic review showed that there was a difference in effect sizes in the 35 selected studies related to the informant. Participating parents reported higher effects than other parents, teachers or observers. This discrepancy was confirmed in our empirical studies, as detailed earlier. This result underlines the necessity to use a multi-informant and multi-method methodology, as done here (Meunier, Roskam, Stievenart, et al., 2011).

Concerning the CBCL, which is a list of symptoms of EB (see Annex IV), we also found moderate correlations between the observed behavior of the child measured by the Crowell child scales and the EB scale of CBCL completed by the parent ($r=.30$) in the validation of Crowell. This may illustrate that child behavior is only partly the same in various real-life situations than in a particular parent-child interaction (Loop et al., revised).

This leads to reflect on what is measured exactly with the CBCL. While it is one of the most commonly used measure in the field of externalizing behavior of children, its use raises some questions. It may be a representation that the parent has on his child's difficult behavior, with the risk of a parental bias. But an informant bias does not necessarily imply that the information is not valid. The CBCL measure may not only contain information on the child but also on the parents themselves. We may hypothesize that parenting programs mainly lead to change in parents' representations of themselves and of their child, that later modifies the parents' interactions with their child, rather than to a direct and observable decrease of children's EB. We tested this hypothesis in a collaboration study combining both samples of *Confident Parents* with the combined cognitive and behavioral intervention on parental emotion coaching strategies (Roskam, Loop, Mouton, & Stievenart, submitted). Parents' representation of their child was measured with the first Five Minutes Sample Speech or FMSS (Magaña et al., 1986). Results show higher correlations between parents' reports and representations than between parents' reports and observed behavior of their child. Nevertheless, these correlations remain moderate and they were visible at baseline and post-test but not at follow-up. These results do not confirm a parent reporting bias, which would have challenged the way efficacy of parenting programs is measured but they give some support to the relevance of such treatment for children's EB. They highlight the potential usefulness of change in parents' representations of their child as a key ingredient to trigger concrete change in children's behavior on a longer run. We could imagine that positive change in parents' representation of their child would contribute to improve parent-child relationship that in turn would induce an improvement in child's behavior. Additional research, including a mediational analysis with a later follow-up measure, would be needed to verify this hypothesis.

Another limitation to discuss is the specificity of the outcome. Being part of the wider H2M research, we opted for the global EB scale of the CBCL to allow comparisons between

studies. Also, we were concerned with keeping a reasonable number of variables for our analyses. So we mostly used the EB scale. But in the Roskam & al study (2015) on the at-risk sub-sample, we tapped into these differences in EB symptoms. A separate analysis of the effects of Confident Parents was done for aggression behavior and attention problems showing a bigger effect on aggression at follow up in particular (Cohen's $d=.30$ at post-test and $d=.74$ at follow-up for aggression compared to $d=.25$ at post-test and $d=.30$ at follow-up for attention).

Micro-trials method pleads for specific proximal outcome, that is to say more precise measurement of EB, even focusing on a specific behavior such as compliance. Here, if we had used specific scales of the CBCL or even focus on non-compliance for instance, we could have identified the oppositional and defiant profiles of some children in our samples who may request particular support. Social learning based interventions have been shown to be modestly effective for these children and for conduct disorder (Matthys et al., 2012). This is even more the case for the few children that we may have in our sample with high Callous-Unemotional traits or CU who benefit less from parenting interventions (Högström et al., 2013). We introduced a measure of such CU traits (ICU, (Frick, 2004)) in the last intervention study we collaborated to (Loop et al., submitted).

Complementary methods have been developed in the H2M research to overcome these limitations. The Unfair Card Game (Roskam, Stievenart, et al., 2016) is an interesting observation paradigm using a computerized frustration task to elicit positive affect, negative affect, agitation and inattention coded on a Likert-type scale of 1-5. Unfortunately, this instrument is not suitable for repeated measures because of a test-retest effect. Three different versions were designed, based on the similar trick scenario but with a variety in gender (boy/girl) and objects moving on the screen. But despite this variety, the child remembers the end of the story and is not interested to play anymore. Another limitation of this instrument relates to the positive affect scale that may be ambiguous to interpret. Some children do smile when they feel surprise or discomfort without real positive affect.

The second measure developed in the H2M study is the 3AAP (Roskam, Brassart, Houssa, et al., 2015), a device measuring child's motor activity. It is an innovative and promising tool because it provides an objective physiological measure of agitation. We included it in the *Confident Parents* study but we decided not to use these data for two main reasons. First, the 3AAP may be less suitable for oppositional children who tend to refuse to wear it. Therefore our data may have been biased with an under-representation of oppositional children. Second, when used in repeated measures, like in our pretest/post-test/follow-up design, children tended to move more each time they came, as they became more comfortable with us and the tasks. Like the Unfair Card Game, the 3AAP offers a good opportunity to get complementary measures of EB when using a single assessment time.

Measuring child temperament

As discussed in our child differential sensitivity study in part II, research on child differential susceptibility has confirmed that temperament can be an interesting proxy measure to use to check for susceptibility to parenting (Slagt, Dubas, & van Aken, 2015). In our studies, child temperament was measured with the CCIT (Rowe & Plomin, 1977) but questions aroused about its adequacy to measure child temperament for a sensitivity to parenting analysis. The main argument for this limitation is the comorbidity with the CBCL. Several items of the CCIT are very close to those of the CBCL. This created confusion between a symptom (EB measured by the CBCL) and a temperament stable trait (measured by the CCIT), see Annexes IV and V.

Also, one should keep in mind that temperament and certain environments maybe correlated (Plomin & Simpson, 2013). Highly active children may provoke parental irritability and less positive behavior. Moreover, temperament is not as stable as it is considered to be in the literature (Van Den Akker et al., 2010). This is particularly true for preschoolers who have already interacted with their parents countless times.

Would a composite measure for temperament traits be a good measure, instead of separate temperament traits? Literature does not confirm this hypothesis, as emotionality is in fact shown to be a good marker for susceptibility, better than activity (Slagt, Dubas, & van Aken, 2015), as confirmed in our results.

Measuring parenting practices

Parenting practices have not been measured in all our studies. They were assessed in the first experimental study, by the Preschool Parent Form of the Evaluation of Parental Practices (EPEP) of Meunier and Roskam (2009b), see Annex VI. It is a 40 item self-report questionnaire yielding to nine factors: Positive parenting, autonomy, rules, monitoring, discipline, inconsistent discipline, harsh punishment, ignoring and material rewarding. A five-point Likert-type scale is provided for each item ("never" to "always"). Two dimensions can be built as second-order factors: control (discipline, harsh punishment, ignoring) and support (positive parenting, autonomy and rules). Although validated with 565 parents, this parenting practices measure did not provide sufficient information to be kept in our analyses.

In the first study on the experiment Confident Mothers, the support scale did not correlate with observed behaviors of mothers and children. This scale measures autonomy, positive parenting and limit setting, which are not directly related to the scales of the observed interactions, with the exception of positive parenting. This confirms the pattern found in the Crowell validation article, in which whereas low to moderate correlations have been found with controlling childrearing behavior, no association was displayed with supportive behavior (Loop et al., revised). Similar trends were found in a comparable parenting intervention to increase parent verbal responsiveness (Roskam, Brassart, Loop, et al., 2015; Roskam, Brassart, et al., 2016).

Because of this discrepancy and the wish to limit the number of questionnaires to be filled in by parents, we decided to not include the EPEP in our following studies. But it would have been interesting to analyze parenting practices reported by parents, beyond observed parent behavior. This might have provided more insight into the question of the relation between parental cognition and parenting behavior, in other words to what extent parents behave according to how they feel about themselves as a parent.

It may have contributed to have limited information on the relation between parental self-efficacy and parent behavior. But even though what is going on between parental self-efficacy and actual parenting practices is not completely documented here, parent observed behavior provides information on how the parent behaves in real time with his child.

Observing child and parent behaviors

In several of our studies, we made the choice to focus our analyses on two child outcomes (CBCL EB scale reported by the parent; observed positive behavior) and one parenting outcome (positive observed parenting). For the observed outcomes, we combined different scales to build a second-order factor. For instance, for the child, we inversed the negative scales of irritability, non-compliance and aggression and calculated a sum score with the positive scales of positive affect, enthusiasm and persistence. For the parent, we inversed the negative scales of irritability and calculated a sum score with the positive scales of positive affect, emotional and behavior sensitivity. In the experimental study, we used a factorial analysis to build a factorial score for the child and the parent.

This was done for two main reasons. First, we were concerned with limiting our conclusions to the most pertinent data and analyses. Second, for the parenting measure, we based our choice on recent findings by Garden and colleagues in their study of the mediators of the Incredible Years program (Gardner et al., 2010). They concluded that improvement in positive parenting appears to be a key factor mediating change in child EB, more than the reduction in harsh parenting. This was confirmed in the study of the multisystemic program where the increase in parental self-efficacy improved positive discipline but had no effect on inept discipline (Deković, Asscher, et al., 2012).

Yet, in the child differential study, we used separate scales for negative and positive behaviors, both for the child and the parent. Analyzing separately positive observed behavior (with positive affect, enthusiasm and persistence) and negative observed behavior (with irritability, non-compliance and aggression) brought complementary contrasting results, as discussed in the earlier main conclusions section. Here again, this methodological choice was made according to the research question as detailed in the Table 3 below.

Table 3. Crowell scores in the various studies

Study	Research question	Population	Crowell measures
Confident Mothers	1. Can we manipulate SEB? 2. What effects on child and parent behaviors?	N=42 Community sample mothers	2 Factorial scores: - Child positive behavior (6 scales) - Positive parenting (4 scales)
Confident Parents	What are the effects of a SEB intervention on parent and child behaviors?	N=80 At risk and clinical sample Mothers and fathers	4 Sum scores: - Child positive behavior (6 scales) in free play - Child positive behavior (6 scales) in frustration - Parent positive behavior (4 scales) in free play - Parent positive behavior (4 scales) in frustration
Child differential sensitivity	Do children benefit differently from a SEB parenting intervention depending on their temperament?	N=114 Community, at risk and clinical samples Mothers and fathers	4 Sum scores: - Child positive behavior (3 scales) - Child negative behavior (3 scales) - Parent positive behavior (3 scales) - Parent negative behavior (1 scale)
Negative effects	Do interventions have negative effects on coparenting?	N=60 At risk and clinical sample	Only CBCL, no Crowell measures

Measuring program compliance and integrity

When reflecting on what mechanisms can explain the effects of intervention (“How did it work”), it is also worth understanding to what extent each group received the same intervention, and to what extent parents practiced at home what was suggested and discussed in the group sessions.

Along therapeutic alliance, a measure of program compliance by parents and program integrity respected by clinicians was envisaged. An observer measured program integrity across the five parent groups of *Confident Parents*. We measured the duration of each session, the duration of each task during each session, the duration of the clinicians’ talking during each session and the duration of phone calls between sessions. We also included data on the two main therapeutic processes used in the program: frequency of normalization sentences and positive feedbacks during each session.

Concerning the parents’ adherence to treatment (Pierce et al., 2010), we measured the participation of each parent during sessions, by counting their talking time during each session, and their homework commitment. This way we could have controlled for the extent to which parents implemented what was discussed in group sessions and how this affected the program’s effectiveness.

This first attempt to measure integrity and adherence to treatment was preliminary and remains to be further developed. A first grid was built but it proved difficult to use in real time by an outsider observer. The main difficulty was to identify clearly each parent and to measure various elements simultaneously in a reliable way. This would request to view the video-tapes each time for each element to measure, which proved very time-consuming. Considering that it was not a central research question for this study, we decided to postpone the finalization of this compliance and integrity grid.

Analyzing data for causality and prediction

Our statistical analyses contributed to answer our research questions about parental self-efficacy's effects on child behavior ("Does it work?" and "For whom?"). Analyses of variances (one-way or for repeated measures), t-tests and intra- and inter-group (Cohen's *d* and Morris' *ES*) effect size calculations provided information on these effects. Hierarchical lineal modeling analyses completed these by providing further insight on predictors of effects. Eventually, regression and Regions of Significance analyses contributed to test the differential sensitivity hypothesis.

No mediational analyses were done on the link between parental self-efficacy, parenting behavior and child behavior. Several reasons explain this absence of mediational analyses in our studies. First, it was not one of our research questions. The main issue at stake here was to evaluate direct effects of parental SEB on child behavior and for that, we did not demonstrate that the change in parental self-efficacy preceded change in child behavior. Mediational analyses done in other studies have already documented the change mechanism between parental self-efficacy and child behavior, through the improvement of positive parenting (Deković, Asscher, et al., 2012).

In consequence, mothers' and children's behaviors are measured at the same time in the laboratory study using a global score for all tasks. This does not provide a temporal precedence necessary for this type of analysis. It is only when tasks are analyzed separately that such a mediation analysis can be carried out, as it was done in a similar micro-trial experiment (Loop & Roskam, 2016). In the intervention study, we had three different measurement times (pre-test/post-test and follow-up). But the small sample size probably limited statistical power necessary for a mediational analysis. We intended to check if the change in parental self-efficacy between pretest and post-test predicted positive parenting at post-test which in turn would predict child behavior at follow-up (observed positive and reported negative behavior). Unfortunately, prerequisites for mediation analyses were not met. The correlations between some of our variables using change scores with limited variance were not significant. Also, the intervention effect on child observed behavior was not of sufficient magnitude to justify examination of the mediational model because we had no significant effect at post-test.

We could have used another measure of parenting, such as the questionnaire on parenting practices, to enter in the mediation. But, as mentioned earlier in the limitations, we had no such measure. Also, we had only three measuring times, at pre-test, post-test and follow-up, which might not be sufficient to provide insight on the mechanism of change. The criterion of temporal precedence necessary to infer causality implied to use here change scores which are not the most precise scores to capture all the reality of data. Therefore, we could not demonstrate that the change in the proposed mediator (positive parenting behavior) preceded change in the outcome (child behavior).

Causality, one part of the whole story?

The last limitation relates to the two research questions of this dissertation. Is looking for a causality link between parental self-efficacy and child EB not too ambitious? While it is one of the main purposes in science, causality seeking has its limits in such a complex conceptual network as parenting. Here, we were looking at the link between two different persons (a parent and a child) and between two different dimensions (cognition and behavior). Providing evidence of causality between parent cognition and child behavior is per se telling only part of a bigger story on what is going on between a parent and a child.

This limitation translates into the two research questions that are tackled in this dissertation. The first relates to “is there a causality relationship between parental self-efficacy and child externalizing behavior?” The second, linked to the first one, questions if an intervention can increase parental self-efficacy in view of reducing child externalizing behavior. These questions are necessarily related because we needed to first test if parental self-efficacy could be manipulated and if it changed something in the child and parent’s behaviors. But, to some extent, we could consider that these two questions belong to two different spheres in terms of implications; the first one is more related to research, the second more to clinical work.

This dissertation has provided more answers on the second question than on the first. The attempt to implement theory into an intervention for families in need is one of the assets of this dissertation. The experimental study provided some evidence of a possible causal relationship between parental self-efficacy enhancement and child more positive behavior, as well as with mothers more positive behavior. The intervention study provides less clear answers on that question, because of its methodological design and its mixed results. Regression analyses are based on correlations that do not prove the direction of causality in the change. But it did prove that child EB was reduced following a parenting program on parental self-efficacy.

This leads us to remain cautious with our conclusions about causality. As Burke and Loeber explain (page 2), “efforts to identify mechanisms of treatment for children with behavioral problems are complicated” (Burke & Loeber, 2015). These problems are heterogeneous (opposition, aggressiveness, attention-seeking for instance) and there may be many ways out of EB as there are many ways in, according to the developmental principle of multifinality (Cicchetti & Rogosch, 1996). For instance, comorbidity with child internalizing behavior (anxiety and depression) is one of the many ways in EB, a depressed child might be aggressive or oppositional as well. This is an issue that has not been explored here but contributes to the complexity of understanding child EB.

Another difficulty lies in the fact that probably no single mechanism will be sufficient to explain the outcomes. “There remains a great level of need regarding evidence as to how these interventions affect outcomes, and whether there are general treatment effects across outcomes, or specific treatment effects on particular mechanisms, which in turn influence particular outcomes”, (p. 2) (Burke & Loeber, 2015). The interplay between parent and child on the one hand, and cognition and behavior, without mentioning

emotion, is constant. This makes “attempts to establish primacy of any one over the others [are] fraught with difficulty”, had already stated Teti, p.240 (1996).

Future research suggestions

Some of the limitations listed above open the way to further research. New research questions were also raised during the doctoral process, either from the data but mostly from the clinical experience developed during the *Confident Parents* program. Five main questions arose:

- Is reinforcing self-efficacy good for every parent and child?
- Should we reinforce self-efficacy resilience and not only its strength?
- Should we reinforce other parental cognitions?
- Are all parents sensitive to such parenting intervention?
- Do mothers and fathers benefit equally from such a self-efficacy enhancement?

Reinforcing self-efficacy for every parent?

The first question to be raised is the extent to which parents with a high level of SEB are better at raising a child with externalizing behavior. In our studies, the most confident parents (with the highest level of SEB) had the easiest children (with the lowest scores in EB), in line with previous correlational research (Donovan et al., 1990). Also, in *Confident Parents*, the results showed that an increase in SEB predicted a decrease in child EB. However, some parents may not see the problem with their child as acute as other observers (school teacher, other parent or clinician). Their report of their child's EB might be biased, as already discussed. We also realized that the relation between parental SEB and parents' observed behavior was weaker than with the children's observed behavior. Correlations were never significant between parental self-efficacy and parent behaviors. They were significant between parental self-efficacy and child behavior in frustration tasks at baseline ($r=.22$) and follow-up ($r=.38$) but not at post-test. They were never significant during free-play. Not all parents may behave more effectively when they feel better about their parenting competence, but they still may see their child more positively and their child may behave more positively with them, as shown by the results on CBCL. An explanation could be found in the issue raised by Wilson et al (2014) about the non-linearity of the relation between SEB and parenting behavior. On the question whether parents with strong SEB are the best parents, Wilson et al. demonstrated that this is not always the case. In fact, the relation is more curvilinear than strictly linear. Parents with a moderate level of SEB demonstrated the best parenting behavior, while parents with high SEB were less adequate when interacting with their child. In their study, mothers who reported high SEB were also rated as low in sensitivity (introducing toys when their child was already busy, restricting their child's access to toys, physically manipulating their child and violating their child's proximal space, for instance).

They concluded that parenting programs need to develop strategies for reaching parents who enter with high levels of confidence but lack knowledge of positive parenting practices. This is in line with the experimental research of Donovan (Donovan, Leavitt, & Taylor, 2005) on illusory control, showing that high parental self-efficacy is not always associated with more positive outcomes. Illusory control is found when there is a mismatch between self-efficacy and actual performance, in the sense that parents feel more competent than they actually are. This illusory control might have detrimental consequences when confronted with failure, with more depressive symptoms and more interpersonal problems as shown in a study of first-time mothers who had high prenatal expectations that were not met at post-partum (Harwood, McLean, & Durkin, 2007). Consequences for the child could also be detrimental to his development. It is interesting to note that fathers have been found to be more inclined to illusory control than mothers (Meunier & Roskam, 2009a). We will discuss this gender issue later on.

In the *Confident Parents* study, parents participated on a voluntary basis and most came because they felt there was a problem with their child and they were not satisfied in their parenting. They were willing to initiate a change and take part in this change. They agreed to participate actively in a program focusing on them, not their child. They had lower SEB than other parents. The group mean of parental self-efficacy, using a 1-5 scale, was lower in our *Confident Parents* sample ($M=3.02$, $SD=.72$) than both the mean of the experimental study non-clinical sample ($M=4.14$, $SD=.48$) and the validation sample of the EGSCP ($M=4.10$, $SD=.61$).

This has clinical implications. It confirms the added-value of assessing parental self-efficacy prior to suggest an intervention. In this particular case, parents with high self-efficacy could come for help, expressing hostile causal attributions on their child's behavior and requesting a child intervention. They could be better candidates for an intervention on parenting practices rather than on reinforcing a self-efficacy that is already high, even if it is probably based on an illusory control. Also, a way to reach these high self-efficacy parents who may use negative parenting could be to collaborate with institutions working with maltreating families. Of course, the way to work on parental self-efficacy would have to be adapted.

Reinforcing self-efficacy resilience or contingency?

Another way to enhance parental self-efficacy could be to go beyond high or low levels or illusory control, and to check self-efficacy resilience or contingency (Cassé et al., 2015). Self-efficacy may not be as stable as conceived in literature (Deković, Asscher, et al., 2012). To what extent self-efficacy remains strong, in other words resilient, against subsequent negative performance feedback? Is it better to have a stable and resilient parental self-efficacy, not influenced by external factors, considering that they can be either positive (such as a parenting intervention) or negative (a negative feed-back or child negative outcome)? Or is it better to have a flexible or contingent self-efficacy, influenced positively by positive feed-backs, but also by negative feed-backs or when you face a negative experience with your child?

Cassé and colleagues (2015) tested this self-efficacy resilience in an experimental design and concluded that positive verbal persuasion used to enhance self-efficacy increased the negative impact of subsequent caregiving failures because of a mismatch between false self-efficacy feed-backs and experiences. This contradicts the idea that self-efficacy resilience and level derive from the same sources and highlights the differences between a high self-efficacy and a resilient self-efficacy.

Research on self-esteem might be helpful in understanding this issue of resilience versus contingency (Bos, Huijding, Muris, Vogel, & Biesheuvel, 2010). Contingent self-esteem is described as a fragile component of self-esteem and refers to the extent to which self-esteem is contingent upon outcomes and achievements (Kernis, 2002). People with high contingent self-esteem are preoccupied with their performance and the evaluations of others. Their level of self-esteem fluctuates depending on their failures or successes. This implies that they continuously have to be successful in order to feel good about themselves (Crocker & Wolfe, 2001).

If individual differences in self-efficacy resilience would exist, could we conceive self-efficacy resilience or contingency as a proxy to parental differential susceptibility, for instance to a parenting intervention? One issue would be therefore to measure this resilience. Cassé (2015) tested it in an experimental design but it could be interesting to be able to measure it through a questionnaire. That could provide information on to what extent the parent can modify his self-efficacy thanks to the intervention. Another issue would be to test to what extent self-efficacy resilience and not only the level of self-efficacy could be improved by an intervention.

Parental sensitivity to intervention?

This leads to the question of parents' sensitivity to parenting intervention. Beyond child's sensitivity to parenting intervention already widely documented, we should also explore parents' individual differences in reaction to intervention. Its analysis could contribute to a better understanding of change processes occurring in parenting intervention. This is particularly pertinent considering that it is the parent who is manipulated in parenting intervention and not the child directly.

The role played by parents' own temperament could also be worth taking into account. Less studied in literature so far, it could contribute to an understanding of the dynamics of the dyad, in a goodness of fit perspective (Thomas & Chess, 1985). We could put forward a vantage sensitivity hypothesis for parents with a high level of anger-emotionality, for instance (Slagt, Dubas, Denissen, et al., 2015). Sociability could also be a key temperament trait.

In all our studies, the temperament of the parent was measured using the Emotionality, Activity and Sociability Adult Temperament Survey (EAS), based on Buss and Plomin's conception of temperament (Buss & Plomin, 1975; Nærde, Røysamb, & Tambs, 2004). Further analyses could be done to check any parent sensitivity to the self-efficacy intervention. This would contribute to recent research based on parent's personality

which showed little evidence for parent sensitivity, in relation to support from their spouse or adolescent child (Slagt, Dubas, Denissen, et al., 2015).

Other aspects of parental cognitions?

Other potential mechanism candidates responsible for change in parenting and child behavior could also be explored. Parental cognitions such as causal attributions, implicit theories, parental goals or readiness for change could be good candidates. Among these various aspects of parental cognition, causal attributions may play a key role. When a parent attributes the cause of his child's difficulty to the child himself, and perceives an intention to behave this way, the parent-child relationship is often put under pressure (Coles, Pelham, & Gnagy, 2010; Donovan & Leavitt, 1985; Gerdes & Hoza, 2006; Morrissey-Kane & Prinz, 1999; Slep & O'Leary, 1998). Some parenting interventions have included a component on causal attributions and showed interesting results on the quality of the parent-child relationship and child outcomes (Wiggins, Sofronoff, & Sanders, 2009).

This interest for causal attributions comes also from the discussions held in the groups of *Confident Parents*. These attributions were particularly present with parents using negative parenting practices. As discussed earlier, it may also be a cognition worth to assess and modify with parents having high self-efficacy beliefs and using negative parenting practices.

Gender issue in parenting intervention?

Last issue to further investigate, the gender difference between fathers and mothers could not be fully explored in this dissertation as it was not a main research question, but revealed some interesting trends to be confirmed. Literature tends to show that fathers have a higher level of self-efficacy than mothers. Domains in which fathers and mothers feel competent also differ. Fathers have a higher self-efficacy than mothers in discipline and mothers a higher one is nurturance and instrumental care, confirming gender stereotypes (Meunier & Roskam, 2009a). They also show that associations between parental self-efficacy and parenting behavior is stronger for mothers than fathers (Slagt et al., 2012). Fathers' SEB might be more influenced by their child's temperament than mothers (Sevigny & Loutzenhiser, 2010). Last, as discussed earlier, it is suggested that fathers who strongly believe that there are good childrearing practices which are appropriate in all situations exert more control over their child. Such an excessive belief in the controllability of the child's development may be close to the "illusion of control" concept. Such illusory beliefs depend on treating non-contingent events as if they were contingent, overestimating one's own control (Meunier & Roskam, 2009a).

In *Confident Parents*, a comparison between mothers (n=60) and fathers (n=20) in the entire sample (N=80) shows that their level of parental self-efficacy and their observed behavior differs. At baseline, fathers have a higher self-efficacy than mothers ($t(78) = -1.98, p=.05$) and their observed behavior as a parent is more positive ($t(78) = -2.07, p<.05$). The observed behavior of children when fathers interact with them is also more

positive than when mothers interact with their children ($t(78) = -1.99, p=.05$). But mothers and fathers do not differ when reporting negative child behavior. It is interesting to note that the evolution over time varies also according to parents' gender. There is no spontaneous modification for fathers in the control group ($n=10$), while mothers' self-efficacy ($n=33$) improves already without intervention ($t(32) = -2.86, p<.05$), as well as their positive observed behavior ($t(32) = 2.09, p<.05$) and their report on negative child behavior that tends to decrease ($t(32) = 1.80, p=.08$). Immediately after intervention, in comparison to baseline, mothers continue to improve in these three outcomes (reports on child EB, mother observed behavior and self-efficacy), while fathers now tend to increase their self-efficacy ($t(8) = -2.11, p=.07$) and report less EB for their child ($t(8) = 2.70, p<.05$). At follow-up (compared to baseline), all outcomes improve for mothers while fathers increase their self-efficacy ($t(9) = -4.25, p<.005$) and report less EB in their child ($t(9) = 3.22, p<.01$). Nevertheless, the limited size of the fathers' sub-sample (25% of total sample, $n=20$), which leaves only 10 fathers in each sub-sample of control and experimental parents, leads to interpret these results with caution, some effects may be under estimated.

In conclusion, differences between fathers and mothers are interesting to note. Results show that mothers modify more quickly their self-efficacy beliefs and negative representation of their child, even before the intervention begins. Fathers, who have in average at baseline a higher self-efficacy than mothers and a more positive observed behavior as a parent, increase their self-efficacy and report less EB in their child significantly at follow-up. This result confirms other research showing differences between fathers and mothers on self-efficacy (Murdock, 2013; Seigny & Loutzenhiser, 2010), as well as effects of parenting intervention. As we saw earlier, the effect of intervention on their coparenting differed for fathers and mothers. Fathers benefited from the intervention as far as their cooperation with their coparent is concerned, while mothers had a less positive perception of their coparenting immediately after the intervention. Schmidt and al (2014) showed that therapeutic alliance was associated with greater improvements in child conduct problems for mothers, but not fathers.

Concluding remarks

In spite of these shortcomings, the studies presented and discussed in this dissertation contribute to the field of parenting research, by implementing experimental results into an innovative *Confident Parents* program for clinical EB and at-risk children. It provides strong arguments demonstrating that self-efficacy is a relevant parenting variable to be targeted and manipulated in parenting interventions to reduce preschoolers' externalizing behavior. It confirms that parenting might not be exclusively about applying universal good or bad parenting practices (with the exception of harsh punishment) but rather about adapting to a demanding child. This adaptation by parents was made possible through an enhanced parental self-efficacy, more positive parental representation of the child and probably more positive parenting behaviors and affects (having more pleasure with the child). This was visible through parents' reports of their child's behavior, reports

on their own parental self-efficacy and their observed positive parenting behavior, more than on the child's observed behavior.

One of the added-values of this research was to focus on parental self-efficacy as the independent variable to manipulate, looking at the left side of the explanatory model used in this dissertation (Figure 3). The aim was not to provide an overall understanding of possible change mechanisms between parenting and child behavior but to clarify how to manipulate parental self-efficacy by testing and implementing a strongly theory-based and focused intervention and to check its efficiency by analyzing its effects on children.

The effects of *Confident Parents* varied according to the initial severity of EB in the child (the more severe, the more benefit gained from the program), the level of SES risk (the lowest risk, the more benefit gained from the program) and the child temperament (the easier the child, the more benefit gained from the program). These results have clinical implications for parenting intervention targeting parents of externalizing preschoolers. They demonstrate the interest of working on parental self-efficacy but also for whom it is the most adequate. This conclusion highlights the importance of assessing children's and parents' strengths and risks before suggesting a parental support to a family. Parent reports on their own self-efficacy, parenting practices, coparenting, temperament would be an asset for clinicians to provide the most suitable support to the parent. Reports on their child's behavior, temperament, callous-unemotional traits would also contribute to tailor an intervention with higher intervention effects potential.

This tailoring could be done on the basis of the analysis of the needs, strengths and resources of families. Parents who are inclined to self-reflection on their parenting and resent directive programs could be suggested a self-efficacy program. Parents more inclined to find short-term solutions with a highly externalizing child with a difficult temperament could be suggested to first participate in a more directive behavioral-cognitive program. An adaptation of the *Confident Parents* program could lead to a shorter version (four weeks) with a booster session 6 to 12 months later. It could be used alone or in combination with a more behavioral program. This non-directive cognitive program could have greater effect if engraved in a more practical program or after a child oriented program, which would allow parents to accumulate positive experiences with their child before enhancing their self-efficacy. Clinicians should also remain attentive to possible secondary effects on coparenting.

This dissertation illustrates the clinical leverage power of parental self-efficacy for preschoolers' difficult behavior and opened parenting intervention to wider horizons outside parenting behavior coaching, giving back to parents a sense of agency in their parenting.

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Annex I: List of abbreviations

Abbreviation	Term	Use
3AAP	Triaxial accelometry for preschoolers	Direct physiological measure of child agitation
CBCL	Child Behavior Checklist	Parent-reported questionnaire on child externalizing behavior
CCTI	Colorado Childhood Temperament Inventory	Parent-reported questionnaire on child temperament
Crowell	Parent-child interaction	Observation paradigm for parent and child behaviors
EB	Child Externalizing behavior	Child outcome reported by the parent
ECP	Emotion Coaching Practices	Parental practice to regulate child's emotions
H2M	Hard to Manage Children	Research program on preschoolers' externalizing behavior
IQ	Intellectual Quotient	Child control variable
SEB	Parental self-efficacy beliefs	Parental cognition
SES	Socio-Economic Status	Parent control variable
UCG	Unfair Card Game	Direct observation of child behavior
WPPSI-III	Weschler Intelligence Scales 3 rd edition	Direct measure of child intellectual abilities

Annex II: Publications

Publications of the dissertation:

1. Mouton, B., Loop, L., Stievenart, M. & Roskam (in revision), Parenting programmes to reduce preschoolers' external behavior: A meta-analytic review of their behavioral or cognitive orientation, *Child and Family Behavior Therapy*.
2. Loop, L., Mouton, B., Brassart, E., Roskam I., (revised), The observation of child behavior during parent-child interaction: the psychometric properties of the Crowell procedure, *Journal of Child and Family Studies*.
3. Mouton, B. & Roskam, I., (2015), Confident Mothers, easier children: a quasi-experimental manipulation of mothers' self-efficacy, *Journal of Child and Family Studies*, 24:2485-2495..
4. Mouton, B., Loop, L., Roskam, I. (submitted), Confident Parents: A parental self-efficacy program to reduce preschoolers' externalizing behavior, *Journal of cognitive psychotherapy*.
5. Mouton, B., Loop, L., Roskam, I (submitted), Child differential sensitivity to parenting: A micro-trial perspective, *International Journal of Behavioral Development*.
6. Mouton, B., Loop, L., Stiévenart, M., Brassart, E. & Roskam, I. (2015), Par-delà de l'efficacité des interventions auprès de parents d'enfants difficiles, de possibles effets délétères ?, revue *Enfance*, numéro spécial « Parentalités différentes », n°3, 2015.

Other publications in collaboration

7. Loop, L., Mouton, B. & Roskam, I. (2015). Comment intervenir auprès des parents d'enfants difficiles ? Les aider à se sentir compétents ou leur montrer comment faire ? In I. Roskam & M. Mikolajczak (eds). *Psychologie de la parentalité tome II: Thématiques contemporaines, Stress et défis de la parentalité*, De Boek.
8. Roskam, I., Brassart, E., Loop, L., Mouton, B., Schaelstraete, M-A., (2015), Stimulating parents self-efficacy or verbal responsiveness, what is the best way to decrease children's externalizing behaviors? *Behaviour Research and Therapy*, Vol. 72, no.1, p. 38-48 (2015).
9. Roskam, I., Brassart, E., Loop, L., Mouton, B., Schaelstraete, M-A., (2015), Do parenting variables have specific or widespread impact on parenting covariates? The effects of manipulating self-efficacy or verbal responsiveness. *Child and Family Behavior Therapy*, 38:2, 142-163.
10. Roskam, I., Brassart, E., Houssa, M., Loop, L., Mouton, B., Volckaert, A., Mahau, P., (2015), Show me how your wrist moves, and I will tell you how agitated you are! Towards an objective measure of preschoolers' motor agitation. *J Child Adolesc Behav* 3:210.

11. Roskam, I., Stievenart, M., Brassart, E., Houssa, M., Loop, L., Mouton, B., Volckaert, A., Nader-Grosbois, N., Noel, M-P., Schaelstraete, M-A., (2015), The Unfair Card Game: a promising tool to assess externalizing behavior in preschoolers. *Pratiques psychologiques*. 22 (2016), pp. 61-73.
12. Roskam, I., Brassart, E., Houssa, M., Loop, L., Mouton, B., Volckaert, A., Nader-Grosbois, N., Noel, M-P., Schaelstraete, M-A., (submitted), Child-or parent-oriented focused intervention: Which is the better way to decrease children's externalizing behaviors? *Behavior Research and Therapy*.
13. Loop, L., Mouton, B., Stievenart, M., Roskam, I., (revised), One or many? Which and how many parenting variables should be targeted in effective interventions to reduce children's externalizing behavior? *Behavior Research and Therapy*.

Annex III: Questionnaire on parental self-efficacy (EGSCP)

Voici une liste d'affirmations concernant la relation que vous entretenez avec votre enfant. Indiquez pour chaque affirmation dans quelle mesure vous êtes d'accord avec ce qui est indiqué. Vous pouvez choisir entre les propositions de réponse suivantes :

1. Pas d'accord 2. Peu d'accord 3. D'accord 4. Très d'accord 5. Tout à fait d'accord

Cochez la case de votre choix après chaque affirmation. Vous ne pouvez cocher qu'une seule case par affirmation. Il y aura peut-être des affirmations dont vous allez penser : « j'aimerais agir différemment. » Indiquez toutefois ce que vous faites réellement. Il n'y a pas de bonnes ou de mauvaises réponses. Merci de répondre le plus sincèrement à chacune des 27 affirmations.

	Pas d'accord	Peu d'accord	D'accord	Très d'accord	Tout à fait
1) J'éprouve certaines difficultés pour parvenir à ce que mon enfant écoute ce que je dis.	☐	☐	☐	☐	☐
2) Je suis parvenu(e) à établir un rythme de vie (lever, coucher) sain et régulier pour mon enfant.	☐	☐	☐	☐	☐
3) Mon enfant sent que je le comprends lorsqu'il est blessé ou triste.	☐	☐	☐	☐	☐
4) Je ne suis pas très doué(e) pour obtenir de mon enfant qu'il ait un rythme de vie régulier.	☐	☐	☐	☐	☐
5) Je pense ne pas être apte à établir avec mon enfant une routine de sommeil.	☐	☐	☐	☐	☐
6) Je suis capable de sentir quand mon enfant est en détresse.	☐	☐	☐	☐	☐
7) Quand mon enfant se fâche, je peux en général le gérer en restant calme.	☐	☐	☐	☐	☐
8) Jouer fait partie de la relation que j'ai avec mon enfant...relation dans laquelle je me débrouille très bien.	☐	☐	☐	☐	☐
9) J'éprouve certaines difficultés à pouvoir expliquer des choses à mon enfant avec des mots qu'il comprend.	☐	☐	☐	☐	☐
10) Je suis un chouette partenaire de jeu pour mon enfant.	☐	☐	☐	☐	☐
11) Je ne suis jamais à court d'idée lorsqu'il s'agit de jouer avec mon enfant	☐	☐	☐	☐	☐
12) Mon enfant se comporte souvent de manière très différente de celle que je souhaite	☐	☐	☐	☐	☐
13) Je suis capable de m'impliquer activement dans les jeux avec mon enfant	☐	☐	☐	☐	☐
14) Bien que je voudrais aider mon enfant à apprendre des choses sur le monde qui l'entoure, je ne me sens pas très doué(e) dans ce domaine.	☐	☐	☐	☐	☐
15) Je pense que mon enfant sent à travers mes faits et gestes combien je l'adore	☐	☐	☐	☐	☐
16) Je suis très adéquat(e) lorsqu'il s'agit de réconforter mon enfant	☐	☐	☐	☐	☐
17) J'ai l'impression de n'avoir aucun contrôle avec l'hygiène de vie (sommeil, nourriture) de mon enfant	☐	☐	☐	☐	☐
18) J'ai réussi avec succès à ce que mon enfant ait un rythme régulier	☐	☐	☐	☐	☐
19) Malgré mes efforts, je n'arrive pas à avoir beaucoup d'influence sur la manière dont mon enfant se comporte	☐	☐	☐	☐	☐
20) Je ne suis probablement pas la personne idéale pour apprendre à mon enfant les choses qu'il a besoin de savoir	☐	☐	☐	☐	☐
21) J'ai parfois l'impression que je ne maîtrise pas assez la direction que prend la vie de mon enfant	☐	☐	☐	☐	☐
22) Mon enfant se sent très aimé de moi	☐	☐	☐	☐	☐
23) Généralement, mon enfant m'obéit et j'en suis satisfait	☐	☐	☐	☐	☐
24) Lorsque mon enfant enfreint les limites que je lui mets, ça me décourage fortement	☐	☐	☐	☐	☐
25) M'installer près de mon enfant pour lui lire une histoire ou pour lui apprendre quelque chose est facile pour moi.	☐	☐	☐	☐	☐

Annex IV: Child Behavior Check-List (CBCL)

Voici une liste de caractéristiques qui s'appliquent à des enfants âgés de 18 mois à 6 ans. Veuillez répondre à tous les énoncés du mieux que vous pouvez même si certains semblent peu appropriés à votre enfant. Pour chaque item, indiquez jusqu'à quel point le comportement décrit s'applique à celui de votre enfant actuellement en encrant le chiffre correspondant sur l'échelle suivante :

0	1	2
Ne s'applique pas (d'après ce que vous en savez)	S'applique plus ou moins ou parfois	S'applique souvent ou toujours

1. Ne peut se concentrer ou porter attention de façon soutenue	0 1 2	17. Est de mauvaise humeur, se met en colère	0 1 2
2. Ne peut rester tranquillement assis ; a un comportement agité hyperactif	0 1 2	18. Est un enfant nerveux ou tendu	0 1 2
3. Ne peut attendre ; veut tout avoir immédiatement	0 1 2	19. Agresse physiquement les autres	0 1 2
4. S'accroche aux adultes ou est trop dépendant	0 1 2	20. A des gestes mal coordonnés ou est maladroit(e)	0 1 2
5. Se rebelle	0 1 2	21. Les punitions n'ont aucun effet sur son comportement	0 1 2
6. Exige qu'on satisfasse immédiatement ses demandes	0 1 2	22. Passe rapidement d'une activité à une autre	0 1 2
7. Détruit les choses qui appartiennent aux autres enfants ou à sa famille	0 1 2	23. Crie beaucoup	0 1 2
8. Est désobéissant	0 1 2	24. Est facilement gêné(e) ou embarrassé(e)	0 1 2
9. Ne semble pas se sentir coupable après s'être mal comporté(e)	0 1 2	25. Est égoïste ou ne partage pas	0 1 2
10. Est facilement frustré(e)	0 1 2	26. Est têtu(e), maussade ou irritable	0 1 2
11. Se vexe facilement	0 1 2	27. Fait des crises de colère	0 1 2
12. Se bagarre souvent	0 1 2	28. Est un enfant trop craintif ou anxieux	0 1 2
13. Devient trop perturbé(e) lorsqu'il ou elle est séparé(e) de ses parents	0 1 2	29. N'est pas coopératif(ve)	0 1 2
14. Frappe les autres	0 1 2	30. Est un enfant malheureux, triste ou déprimé	0 1 2
15. Blesse les animaux ou les gens involontairement	0 1 2	31. Lorsqu'on est ensemble, s'éloigne en marchant sans raison ni but apparent.	0 1 2
16. Semble malheureux(se) sans raison	0 1 2	32. Veut beaucoup d'attention	0 1 2

Annex V: Colorado Childhood Temperament Inventory (CCTI)

Pour chaque phrase, indiquez jusqu'à quel point le comportement décrit s'applique à celui de votre enfant actuellement en encerclant le chiffre correspondant sur l'échelle suivante :

1	2	3	4	5
Mon enfant n'est pas du tout comme cela	Mon enfant est rarement comme cela	Mon enfant est parfois comme cela	Mon enfant est souvent comme cela	Mon enfant est tout à fait comme cela

+	1. Mon enfant préfère les jeux calmes et inactifs aux plus énergiques	1	2	3	4	5
	2. Mon enfant se fait facilement des amis	1	2	3	4	5
	3. Mon enfant est très amical avec les étrangers	1	2	3	4	5
	4. Mon enfant tolère bien la frustration	1	2	3	4	5
	5. Mon enfant a besoin de temps pour être à l'aise avec les étrangers.	1	2	3	4	5
	6. Quand mon enfant commence à pleurer, je peux facilement le distraire	1	2	3	4	5
	7. Mon enfant se met à courir dès qu'il se lève le matin	1	2	3	4	5
	8. Mon enfant a tendance à être timide	1	2	3	4	5
	9. Mon enfant s'énervé facilement	1	2	3	4	5
	10. Mon enfant a tendance à être un peu sensible	1	2	3	4	5
	11. Mon enfant réagit intensément quand il est contrarié	1	2	3	4	5
	12. Mon enfant s'agite et pleure souvent	1	2	3	4	5
	13. Mon enfant est très sociable	1	2	3	4	5
	14. Si on lui parle, mon enfant arrête de pleurer	1	2	3	4	5
	15. Mon enfant abandonne facilement dès qu'il rencontre des difficultés	1	2	3	4	5
	16. Mon enfant est très énergique.	1	2	3	4	5
	17. Mon enfant pleure facilement	1	2	3	4	5
	18. Quand mon enfant se déplace, il le fait en général tranquillement	1	2	3	4	5
	19. Mon enfant joue avec le même jeu pendant un long moment	1	2	3	4	5
	20. Quand il est énervé par une situation inattendue, mon enfant se calme rapidement	1	2	3	4	5
	21. Mon enfant est toujours en mouvement	1	2	3	4	5
	22. Mon enfant passe d'un jeu à l'autre rapidement	1	2	3	4	5
	23. Face à un jeu plus difficile, mon enfant abandonne facilement	1	2	3	4	5
	24. Mon enfant arrête de s'agiter dès que quelqu'un lui parle ou le prend	1	2	3	4	5
	25. Mon enfant poursuit sa tâche jusqu'à ce qu'il ait réussi	1	2	3	4	5

Annex VI: The Preschool Parent Form of the Evaluation of Parental Practices (EPEP-PPSF)

Nous vous proposons 40 affirmations pour lesquelles nous vous demandons d'indiquer dans quelle mesure vous faites ce qui est indiqué.

Vous pouvez choisir entre les propositions de réponse suivantes : jamais, peu, parfois, souvent ou toujours. Cochez la case de votre choix après chaque affirmation, une seule case par affirmation.

Il y aura peut-être des affirmations dont vous allez penser : « j'aimerais agir différemment ». Indiquez toutefois ce que vous faites réellement, le plus sincèrement possible. Il n'y a pas de bonnes ou de mauvaises réponses.

		Jamais	Peu	parfois	souvent	toujours
1.	Je demande à mon enfant de s'adapter aux habitudes de notre famille.	☐	☐	☐	☐	☐
2.	Quand mon enfant fait quelque chose qu'il/elle ne peut pas, je le/la punis.	☐	☐	☐	☐	☐
3.	J'apprends à mon enfant à respecter la loi.	☐	☐	☐	☐	☐
4.	Je surveille les endroits que mon enfant fréquente.	☐	☐	☐	☐	☐
5.	J'apprends à mon enfant à se tenir aux règles qu'on a établies ensemble.	☐	☐	☐	☐	☐
6.	J'apprends à mon enfant à régler lui-même/elle-même ses problèmes.	☐	☐	☐	☐	☐
7.	Je donne une fessée ou une claque à mon enfant quand il/elle a fait quelque chose qu'il/elle ne peut pas.	☐	☐	☐	☐	☐
8.	J'apprends à mon enfant à être poli à l'école.	☐	☐	☐	☐	☐
9.	Quand mon enfant est impoli ou se comporte mal, je le/la punis.	☐	☐	☐	☐	☐
10.	Même quand mon enfant mérite une punition, il m'arrive de fermer les yeux sur son comportement.	☐	☐	☐	☐	☐
11.	Quand mon enfant se montre trop agité/perturbateur, je le/la punis.	☐	☐	☐	☐	☐
12.	Je donne une récompense à mon enfant, quand il a fait quelque chose dont je suis content(e).	☐	☐	☐	☐	☐
13.	Quand mon enfant semble avoir un problème, je parle avec lui/elle de ce qui le/la préoccupe.	☐	☐	☐	☐	☐
14.	Je donne une fessée/une claque à mon enfant quand il n'obéit pas.	☐	☐	☐	☐	☐
15.	Je ne réagis pas toujours de la même façon quand mon enfant se comporte mal (parfois je le punis, parfois je le laisse faire).	☐	☐	☐	☐	☐
16.	Il arrive que je menace de punir mon enfant et que pour finir, je ne le/la punisse pas.	☐	☐	☐	☐	☐
17.	Je surveille les ami(e)s que mon enfant fréquente.	☐	☐	☐	☐	☐
18.	Quand j'ai puni mon enfant, il arrive que je mette plus vite fin à la punition que ce qui était convenu au départ.	☐	☐	☐	☐	☐
19.	Quand mon enfant fait quelque chose qu'il/elle ne peut pas, je lui jette un regard plein de colère et je l'ignore ensuite.	☐	☐	☐	☐	☐
20.	Quand mon enfant enfreint une règle et mérite une punition, il m'arrive de le laisser faire sans le punir.	☐	☐	☐	☐	☐
21.	Je pose des questions sur les passe-temps et les intérêts de mon enfant.	☐	☐	☐	☐	☐

		jamais	parfois	toujours
			peu	souvent
22.	Quand mon enfant fait bien ce que je lui demande, je le récompense par un petit cadeau.	☐	☐	☐
23.	Je surveille et m'informe du comportement que mon enfant peut avoir à l'extérieur (amis, école,...).	☐	☐	☐
24.	Quand je revois mon enfant après sa journée à l'école, je prends le temps de m'occuper un moment de lui/d'elle.	☐	☐	☐
25.	J'apprends à mon enfant à prendre lui-même/elle-même des décisions.	☐	☐	☐
26.	Quand mon enfant fait quelque chose qu'il/elle ne peut pas, je lui adresse la parole seulement quand il se comporte mieux.	☐	☐	☐
27.	Quand mon enfant m'énerve ou m'exaspère, il m'arrive de lui infliger une punition corporelle (fessée, claque,...).	☐	☐	☐
28.	Quand mon enfant veut me raconter quelque chose, je prends le temps de l'écouter.	☐	☐	☐
29.	Le soir je parle avec mon enfant de la journée écoulée et de la journée suivante.	☐	☐	☐
30.	J'apprends à mon enfant à s'adapter aux règles de l'école.	☐	☐	☐
31.	Quand mon enfant est opposant/défiant, je lui donne une claque/une fessée.	☐	☐	☐
32.	J'apprends à mon enfant à être autonome lorsqu'il est à l'extérieur (amis, école,...).	☐	☐	☐
33.	Quand mon enfant répond, ment ou se dispute, je le/la punis.	☐	☐	☐
34.	Quand mon enfant a un comportement exemplaire, je lui donne une petite surprise ou une récompense.	☐	☐	☐
35.	Quand mon enfant est allé seul quelque part, je vérifie si ça s'est bien passé (ex : anniversaire,...).	☐	☐	☐
36.	Lorsque mon enfant dépasse les bornes, je l'ignore et ne lui adresse plus la parole pendant un long moment.	☐	☐	☐
37.	Quand mon enfant ne se tient pas à ce qu'on a convenu ensemble (ex : ranger ses jeux, faire une tâche), je le/la punis.	☐	☐	☐
38.	Lorsque mon enfant exagère par son comportement, je l'ignore après lui avoir lancé un regard sombre et insistant.	☐	☐	☐
39.	Quand mon enfant a fait quelque chose d'interdit, je ne lui parle plus jusqu'à ce qu'il/elle se soit excusé(e).	☐	☐	☐
40.	Je laisse mon enfant acheter quelque chose quand il/elle a fait quelque chose de bien.	☐	☐	☐

Annex VII: The Confusion, Hubbub, and Order Scale (CHAOS)

Veillez indiquer (en entourant V ou F) si les phrases suivantes sont vraies ou fausses pour vous à la maison.

- | | |
|--|-------|
| 1. Il y a vraiment peu de tapage à la maison | V / F |
| 2. On peut généralement mettre la main sur les choses dont on a besoin | V / F |
| 3. On a toujours l'air d'être débordés | V / F |
| 4. On est généralement capables de bien s'en sortir, de dominer la situation | V / F |
| 5. Quoi qu'on fasse, on est toujours en retard | V / F |
| 6. C'est un vrai zoo à la maison | V / F |
| 7. A la maison, on peut se parler les uns aux autres sans être interrompu | V / F |
| 8. Il y a souvent de l'agitation à la maison | V / F |
| 9. Quoi que notre famille fasse comme projets, ils n'aboutissent généralement pas | V / F |
| 10. On ne peut pas s'entendre penser à la maison | V / F |
| 11. Je suis souvent crispé par les conflits des autres à la maison | V / F |
| 12. Notre maison est un bon endroit pour se relaxer | V / F |
| 13. Le téléphone occupe beaucoup notre temps à la maison | V / F |
| 14. A la maison, l'ambiance est calme | V / F |
| 15. Pour bien commencer la journée, nous avons un train-train régulier à la maison | V / F |

Annex VIII: The Coparenting Scale (CPS)

Elever mon enfant avec l'autre parent

Voici quelques questions concernant la coparentalité, c'est-à-dire le fait d'élever son enfant en partenariat avec l'autre parent (soutien mutuel, partage des responsabilités, etc.). Pour chaque question, sélectionnez la réponse qui décrit le mieux la manière dont l'autre parent et votre (vos) enfant(s) et vous-même collaborez ensemble en tant que parents.

Selon votre situation familiale, la personne que vous désignez comme l'autre parent est celle avec qui vous partagez l'éducation de votre (vos) enfant(s). Cette personne peut être soit le parent biologique de l'enfant, soit le beau-parent (en cas de séparation et de nouveau couple). Merci de l'indiquer ci-dessous.

- ☐ Parent biologique de l'enfant avec qui vous vivez au quotidien
- ☐ Parent biologique de l'enfant dont vous êtes séparé(e)
- ☐ Beau-parent : personne avec qui vous vivez qui n'est pas le parent biologique de l'enfant
- ☐ Vous élevez seul(e) votre enfant, sans partager son éducation avec une autre personne.

Dans ce dernier cas, ne complétez pas les questions suivantes.

Indiquez pour chaque affirmation dans quelle mesure cela vous correspond. Cochez la case de votre choix après chaque affirmation. Vous ne pouvez cocher qu'une seule case par affirmation. Vous avez sept possibilités de réponses, variant de 1 « Pas du tout d'accord » à 7 « Tout à fait d'accord ».

Ici non plus, il n'y a pas de bonnes ou de mauvaises réponses. Merci de répondre le plus sincèrement à chacune des 33 affirmations.

[illegible]

	Pas du tout d'accord			Neutre			Tout à fait d'accord
	1	2	3	4	5	6	7
5 Cette personne et moi avons les mêmes buts pour notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
6 Cette personne préfère s'occuper de ses intérêts personnels plutôt que d'être un parent responsable.	☐	☐	☐	☐	☐	☐	☐
7 C'est plus facile et plus marrant de jouer seul avec l'enfant (les enfants) que ça ne l'est quand cette personne est également présent(e).	☐	☐	☐	☐	☐	☐	☐
8 Cette personne et moi avons des idées différentes au sujet de l'éducation de notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
9 Cette personne me dit que je fais un bon travail en tant que parent ou me fait savoir que je suis un bon parent.	☐	☐	☐	☐	☐	☐	☐
10 Cette personne et moi avons des idées différentes à propos du régime alimentaire de notre (nos) enfant(s), de son (leur) sommeil, ou d'autres routines.	☐	☐	☐	☐	☐	☐	☐
11 Cette personne fait parfois des plaisanteries ou des commentaires sarcastiques (moqueurs) sur la manière dont je suis parent.	☐	☐	☐	☐	☐	☐	☐

	Pas du tout d'accord			Neutre			Tout à fait d'accord
	1	2	3	4	5	6	7
12 Cette personne n'a pas confiance en mes compétences en tant que parent.	☐	☐	☐	☐	☐	☐	☐
13 Cette personne est sensible aux sentiments et aux besoins de notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
14 Cette personne et moi avons des points de vue différents à propos de ce qui est acceptable ou non dans le comportement de notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
15 Cette personne essaie de montrer qu'il (elle) est meilleur(e) que moi pour s'occuper et prendre soin de notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
16 Je me sens proche de cette personne lorsque je le (la) vois jouer avec notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
17 Cette personne a beaucoup de patience avec notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
18 Nous discutons souvent avec cette personne de la meilleure manière de rencontrer les besoins de notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐

	Pas du tout d'accord			Neutre			Tout à fait d'accord
	1	2	3	4	5	6	7
19 Lorsque nous sommes tous les trois ensemble, cette personne essaie parfois d'entrer en compétition avec moi pour attirer l'attention de notre enfant.	☐	☐	☐	☐	☐	☐	☐
20 Cette personne sape mon autorité.	☐	☐	☐	☐	☐	☐	☐
21 Cette personne fait des sacrifices personnels pour m'aider à prendre soin de notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
22 Nous évoluons et gagnons en maturité à travers nos expériences en tant que parents.	☐	☐	☐	☐	☐	☐	☐
23 Cette personne apprécie mon investissement dans mon rôle de parent.	☐	☐	☐	☐	☐	☐	☐
24 Lorsque je suis à bout en tant que parent, cette personne me donne le soutien supplémentaire dont j'ai besoin.	☐	☐	☐	☐	☐	☐	☐
25 Cette personne me fait sentir que je suis le meilleur parent possible pour notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐

	Pas du tout d'accord			Neutre			Tout à fait d'accord
	1	2	3	4	5	6	7
26 Le stress dû au fait d'être parent, a fait que cette personne et moi avons évolué séparément/différemment.	☐	☐	☐	☐	☐	☐	☐
27 Cette personne n'aime pas être ennuyé(e) par notre (nos) enfant(s).	☐	☐	☐	☐	☐	☐	☐
28 Le fait d'être parent nous a donné un but pour l'avenir.	☐	☐	☐	☐	☐	☐	☐

Les questions suivantes concernent les situations où vous ne vous retrouvez seul(e) qu'avec cette personne et l'enfant concerné par cette recherche (par exemple, dans la même pièce, la même voiture, en sortie à l'extérieur...).

Nous allons vous demander de nous dire combien de fois par semaine les situations suivantes ont lieu. Vous ne devez prendre en considération que les fois où vous n'êtes que tous les trois ensemble (même si c'est juste quelques heures par semaine).

Pour les propositions suivantes, vous avez 7 possibilités de réponses, variant de 1 pour « Jamais » à 7 pour « Très souvent (plusieurs fois par jour) ».

Lorsque vous n'êtes rien qu'à trois, combien de fois par semaine :

	Jamais		Parfois (1 ou 2 fois/se maine)		Souven t (une fois par jour)		Très souvent (plusieurs fois par jour)
	1	2	3	4	5	6	7
29 Vous trouvez-vous dans des échanges tendus avec cette personne ?	☐	☐	☐	☐	☐	☐	☐
30 Vous disputez-vous avec personne au sujet de votre enfant, en présence de celui-ci ?	☐	☐	☐	☐	☐	☐	☐
31 Vous disputez-vous à propos de votre relation ou de sujets conjugaux sans lien avec votre enfant, lorsque celui-ci est présent ?	☐	☐	☐	☐	☐	☐	☐
32 L'un d'entre vous ou vous deux dites des choses cruelles et blessantes à l'autre, en présence de votre enfant ?	☐	☐	☐	☐	☐	☐	☐
33 Criez-vous l'un sur l'autre alors que votre enfant peut vous entendre ?	☐	☐	☐	☐	☐	☐	☐

Annex IX: The Working Alliance Inventory (WAI)

Questionnaire ALLIANCE

Consignes:

Dans ce questionnaire, il y a des énoncés qui décrivent différentes façons qu'une personne pourrait penser et se sentir à propos des personnes qui ont animé le groupe auquel elle a participé. Si l'énoncé décrit toujours la façon dont vous pensez ou vous vous sentez, encerclez le nombre 7. Si cela ne s'applique jamais à vous, encerclez le nombre 1. Vous pouvez aussi encircler un nombre entre ces deux extrêmes pour indiquer les variations. Merci de choisir une seule possibilité par énoncé.

Énoncés	Jamais	Rarement	Occasionnellement	Parfois	Souvent	Très souvent	Toujours
1. Mes animateurs et moi, nous nous entendons sur les étapes à suivre pour améliorer ma situation.	1	2	3	4	5	6	7
2. Mes animateurs et moi avons tous confiance en l'utilité de nos activités en séances de groupe.	1	2	3	4	5	6	7
3. Je crois que mes animateurs m'aiment bien.	1	2	3	4	5	6	7
4. J'ai des doutes à propos de ce que nous essayons d'accomplir lors de nos rencontres.	1	2	3	4	5	6	7
5. J'ai confiance que mes animateurs sont capables de m'aider.	1	2	3	4	5	6	7
6. Nous travaillons à l'atteinte de buts sur lesquels nous nous sommes entendus.	1	2	3	4	5	6	7
7. Je sens que mes animateurs m'apprécient.	1	2	3	4	5	6	7
8. Nous nous entendons sur ce qui est important à travailler.	1	2	3	4	5	6	7
9. Mes animateurs et moi avons développé une confiance mutuelle.	1	2	3	4	5	6	7
10. Mes animateurs et moi avons des idées différentes sur ce que sont mes vrais problèmes.	1	2	3	4	5	6	7
11. Nous avons établi une bonne compréhension mutuelle quant aux types de changements qui seraient bons pour moi.	1	2	3	4	5	6	7
12. Je crois que ce que nous faisons pour régler mon problème est adéquat.	1	2	3	4	5	6	7