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When Parents Wear Dark Glasses: An Experimental Study on Parental Negative Attributions and Parenting Behavior

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Abstract

This experimental study aimed to advance our understanding of parental negative attributions of children's misbehavior (parental interpretations of what causes children's misbehavior) and how they relate to other parental characteristics. Specifically, we examined: (1) How different measures of parental negative attributions relate to cognitive and affective parental characteristics (e.g., stress, temperament, parental self-efficacy); and (2) How reducing negative parental attributions affects parenting. In all steps, we differentiated between two types of negative parental attributions: parent-causal attributions (identifying one's parenting or parent characteristics as cause for the child's behavior) and child-responsible attributions (identifying the child as responsible for the behavior). Data were collected from 78 parents and their 3 to 5-year-old children ($M = 51.67$ months, $SD = 8.56$) in a lab experiment. Parents were randomly assigned to conditions aimed to reduce negative attributions (parent-causal, child-responsible) or a control condition. Results suggest that different parental characteristics tap into complementary aspects of negative parental attributions. Global parental negative attributions were associated with parent negative affect, laxness and positive discipline, and these associations were stronger for parent-causal than child-responsible attributions. Experimental manipulation of parental negative attributions seemed to reduce situation-specific attributions (both parent-causal and child-responsible), but not global attributions, parental self-efficacy or parenting behavior. Our findings suggest parental negative attributions of child's misbehavior may be a node in the complex parenting network of parental cognitions, affect, and behavior. Understanding the causal effects and malleability of negative parental attributions may advance parenting process theory and practice.

Keywords Experiment · Parental attributions · Parental self-efficacy · Parenting stress · Parenting behavior

Highlights

- Parental negative attributions about children's misbehavior are associated with parenting behavior (self-reported and observed) and parental characteristics (stress, temperament, self-efficacy).
- Parent-causal and child-responsible parental negative attributions relate to parent characteristics in different ways.
- Parental negative attributions specific to a context, but not global parental negative attributions, may be modifiable.
- Stimulating positive parental attributions may be a target for interventions, potentially increasing positive parenting and reducing negative parenting.

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1007/s10826-022-02446-3>.

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Parents' negative attributions (i.e., negative interpretations of the causes underlying their child's misbehavior) impact how parents actually 'do' their parenting (Bugental &

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Johnston, 2000a; Johnston et al., 2018). Attributions are thoughts we all have on why things happen and why people do the things they do, which help us understand salient and unpleasant events and other people's behavior. According to a thinking-feeling-reacting pattern (Heider, 1958), our thoughts shape our emotional and behavioral reactions to these negative events and behaviors. The Social Information Processing (SIP) model hypothesizes that parental negative attributions predict harsh and abusive parenting (Milner, 2000, 2003). Indeed, numerous studies have confirmed that parental negative attributions are associated with parenting practices—specifically in challenging parenting contexts, when parents have to deal with defiant and oppositional child behavior (Beckerman et al., 2020; Dix, 1991; Nix et al., 1999; Sawrikar et al., 2018).

Yet, we know surprisingly little about parental negative attributions. The current literature on parental negative attributions is dominated by cross-sectional studies (Beckerman et al., 2017; Crouch et al., 2017; Johnston et al., 2017). While such studies inform us on association between parental negative attributions and parenting behavior, they do not allow us to eradicate alternative explanations for links between negative attributions and parenting, such as reversed causality or third variable explanations. We thus have a limited understanding as to whether these negative attributions are a correlate, outcome, or causal predictor of specific parenting practices. Recent experimental studies have investigated the determinants of negative parental attributions such as stress (Beckerman et al., 2020). Nevertheless, we know little about how different types (e.g., focused on the parent or the child) or levels (e.g., situation specific or global) of parental negative attributions relate to other parental characteristics and parenting behavior. The current multi-method, experimental study builds and expands previous studies on parental negative attributions on child misbehavior via a manipulation of parental negative attributions.

The Role of Parental Negative Attributions in the Parenting Process

Parental negative attributions are particularly activated in cases where the child's behavior poses a challenge, triggers emotions and requests the parent to determine the appropriate response (Johnston & Ohan, 2005). Negative attributions about child's misbehavior (e.g., noncompliance, aggression, opposition, agitation or negative affect) include thoughts about locus (whether the child's misbehavior is caused by the parent, the child, or the situation); stability (to what extent behavior would persist over time); controllability (how much control the child has); and intentionality (whether the child did it on purpose) (Bugental et al., 1998). Such negative attributions on child's misbehavior are not necessarily

problematic. However, when parents consistently interpret the cause of their children's misbehavior in a negative way—as their own fault or their child's fault—this can negatively impact their parenting behavior (Bugental & Johnston, 2000a; Crouch et al., 2017).

There are two types of parental negative attributions on child's misbehavior that may lead to dysfunctional parenting practices (Snarr et al., 2009): parent-causal and child-responsible attributions. These negative attributions differ with regard to the perceived locus (child and parent) and responsibility (intentionality, hostility, controllability) of child's misbehavior. Out of these two types, child-responsible attributions (e.g., “my child likes to see how far he/she can push me”) have been the most widely examined. According to studies based on the SIP model (Milner, 2000), the hypothesis that negative parental attributions focusing on the child's responsibility can make parents feel angry and react in an irritable and hostile or retaliatory manner has been confirmed. These negative attributions are characterized by a belief that misbehavior is under the child's control and is characterized by hostile intent—“my child does this to spite me”—which may lead parents to overreact and use harsh or abusive parenting practices (Beckerman et al., 2018; Crouch et al., 2017; Milner & Crouch, 2013). Indeed, a pioneering experimental study (Slep & O'Leary, 1998) showed that mothers whose child-responsible attributions were increased by manipulation showed more overreactive parenting behavior than mothers who were told that their child was not responsible.

On the other hand, parents may also attribute their child's misbehavior to their own characteristics (e.g., “I am not patient”) or behavior (e.g., “it is hard for me to set limits”) (see Fig. 1). Parents with such parent-causal attributions feel like the child's misbehavior is under their control, and that they are the cause of their child not behaving well. Parent-causal attributions may lead to inconsistency or permissiveness in limit setting (Dix et al., 1986). This specific type of negative parental attribution has been far less studied. This negative parental attribution may be closely related to other parenting cognitions, such as parental self-efficacy (PSE). However, these two cognitions differ on two key elements. First, the parent is at the heart of PSE while the child is at the heart of parental negative attributions. Parental negative attributions specifically address the reasons for their child's misbehavior and who they hold responsible for this misbehavior. As such, they are interpretations of somebody else's negative behavior. Second, PSE is based on a general perception of parenting competence, related to but not necessarily restricted to child's misbehavior. This is the case, however, for the attribution concept. The interpretation of the reason and responsibility for this misbehavior may not

Types	Levels	Global	Situation specific
Parent-causal attribution Attribution about child misbehavior having a locus in the parent.		Attributions related to stable, global, trait-like characteristics of the parent. Example of item: “I am not patient.”	Attributions related to the parent in a specific situation. Example of item: “I am the reason why my child reacts this way.”
Child-responsible attribution Attribution about child misbehavior related to factors under the child’s control, child wilful intent to misbehave and/or child desire to have a negative effect on the parent.		Attributions related to stable, global control or intent of the child. Example of item: “My child likes to see how far he/she can push me.”	Attributions related to the child in a specific situation. Example of item: “My child him/herself could have chosen to react differently in this situation.”

Fig. 1 Conceptualization of parental negative attributions based on Snarr et al.’s model (2009)

necessarily be related to their perception of their own global parenting competence across circumstances or rooted in their feeling of agency as a parent (Bandura, 1977; Coleman & Karraker, 2003).

There is some support for association among these constructs, demonstrating a mediating role of PSE in the relation between parental negative attributions and parenting competence (Cunningham & Renk, 2018). Verhoeven & Huijding, (2021) investigated this relation between PSE and the two types of negative parental attributions. They showed that if mothers felt more efficacious, they were less likely to hold someone responsible for the situation (themselves or their child) and also less likely to respond with negative parenting behavior. Mothers were more likely to respond with a negative parenting behavior when they reported higher levels of child-responsible attributions. Their results specifically showed a cascading effect in which within-person changes in parental self-efficacy were related to changes in attributions, which in turn were related to changes in disciplinary responses. They conclude that PSE and negative attributions may be interrelated, but different, cognitions, are not static but can fluctuate across situations, and are important in shaping parenting behavior. More research is needed to clarify the relation between parental negative attributions focused on the parent or the child and parental self-efficacy, and the necessity or not to distinguish the two types of parental negative attributions.

While parent-causal and child-responsible negative attributions are theoretically distinct and may affect parenting differently (Slep & O’Leary, 1998), they are not mutually exclusive and often co-occur (Snarr et al., 2009). Parents thus may simultaneously hold both types of negative attributions about their child’s misbehavior, feeling that they have a causal role in it and that their child is responsible for it. It is interesting to note that the two types of negative attributions can be inversely related as well. In their experiment, Slep & O’Leary, (1998) did not specifically manipulate parent-causal attributions for the

child’s misbehavior (only child-responsible versus child-not-responsible), but they did observe that mothers who were told their child was not responsible had more parent-causal attributions (e.g., felt they were the cause of their child’s misbehavior), which was unexpected by the authors. They suggested that future research could help “determine the relative impact of each component in the likely cascade of influence” (Slep & O’Leary, 1998; p. 241). There may be two possible “profiles” of negative parental attributions. According to a “somebody-has-to-be-blamed-for” approach, we would expect the two types of parental attributions to be negatively correlated (e.g., “if it is not me, then it’s you”). But according to a “negative attributional style”, we would expect these two types to be positively correlated. The parent would be critical to the child and at the same time having more self-criticism.

Relations of Parental Negative Attributions with Parental Characteristics

Various parent characteristics may contribute to parental negative attributions about their child. First, stress puts parents at risk for adopting more negative attributions as it can affect coping skills (Beckerman et al., 2020). It may result in automatic and rigid rather than controlled and flexible information processing (Shields et al., 2016; van Oort et al., 2017). Second, parent’s temperament may also influence parental cognitions (Belsky et al., 1995; Evans & Rothbart, 2007; Kochanska et al., 2004). These relatively stable and primarily biologically based individual differences in reactivity and self-regulation (Goldsmith et al., 1987; Rothbart & Bates, 2006) include dispositional emotional reactivity and attention processes that impact negative attributions. For example, more negative affect and less effortful control may be associated with more negative parental attributions about their child (Crouch et al., 2017).

Modifying Parental Negative Attributions

Based on previous studies, we know that parents' negative attributions about child misbehavior are relatively stable, but not set in stone. We therefore may be able to modify them (Slep & O'Leary, 1998). Several studies have successfully manipulated negative attributions using videotaped clips of the parent's child negative behavior or affect, or standardized verbal or written scripts about the child's behavior (Johnston & Freeman, 1997; Slep & O'Leary, 1998; Smith & O'Leary, 1995). Research on the related cognitive construct of parental self-efficacy demonstrated that parental self-efficacy beliefs can be effectively manipulated, leading to positive changes in observed parenting behavior (Mouton et al., 2018; Mouton & Roskam, 2015).

How malleable parental negative attributions are may depend on the level of these attributions as well as whether they are context-specific (i.e., children's behavior in a specific situation) or global (i.e., children's behavior more generally) (Bugental et al., 1998). Context-specific negative attributions are appraisals formed via controlled, effortful and conscious processing, and continuously modified by contexts and events. These could thus be modified "in the moment" by new information, such as feedback. Global negative attributions are more stable memory-dependent knowledge structures that involve automatic processing and occur spontaneously. Compared to specific negative attributions, they may be less sensitive to the effects of new information.

In conclusion, parental negative attributions have been described in previous research as complex cognitive processes, both context-specific and global, and potentially malleable. However, no previous study actually looked at whether we can experimentally alleviate the two types of negative parental attributions (child-responsible and parent-causal) at global and specific levels in a context of challenging parent-child interactions. Therefore, in this study we set out to do so, based on a manipulation strategy that builds on the work of Slep & O'Leary, (1998), featuring a video-feedback procedure similar to widely used procedures in parenting interventions (Fukkink, 2008; Mesman et al., 2008).

The Present Study

We aimed to investigate how parental negative attributions, assessed in complementary ways (e.g., measured in global and situation-specific levels), relate to and shape parenting. Two research questions were explored: (1) How different types (parent-causal and child responsible) and levels (situation specific and global) of parental negative

attributions relate to specific affective and cognitive parental characteristics (stress, temperament, parental self-efficacy) and parenting behavior; and (2) How reducing these two types of parental negative attributions affects parenting. This study features a randomized micro-trial, in which we manipulated parental negative attributions on child's misbehavior in a sample of 78 parents of 3-to-5-year-old children. Specifically, we investigated how parental negative attributions shaped parenting in an experimentally induced child frustration task using video-mediated alternative explanations (cf. (Slep & O'Leary, 1998).

We hypothesized that (1) parent-causal attributions are more strongly associated with parental characteristics (positively with parental stress and temperament trait of negative affect; negatively with self-efficacy and temperamental trait of effortful control) and parenting behavior (positively with negative behavior and negatively with positive behavior) than child-responsible attributions; and (2) reducing parental negative attributions, by drawing parents' attention to alternative explanations for children's misbehavior, increases parental self-efficacy, reduces negative parenting (e.g., harsh discipline, laxness, negative affect), and increases positive parenting (e.g., support and positive affect). A third exploratory hypothesis was investigated about potential differences of this effect between the two types of parental negative attributions that were experimentally reduced.

Method

Participants

The sample consisted of 78 parents (73.10% mothers, $M_{age} = 38.69$ years, $SD = 4.07$) with their 3-to-5 year-old child (48.70% girls, $M_{age} = 51.84$ months, $SD = 8.44$). Most parents were highly educated (i.e., higher vocational training or university, 69.3%), raised their child(ren) together with a partner or ex-partner (91.0%), and were from Dutch origin (83.3%). The study data is publicly available on the Open Science Framework website (<https://osf.io/vgbzc/>).

Procedure

The study protocol was approved by the Ethics Review Board of the Faculty of Social and Behavioral Sciences of the University of Amsterdam (certificate number 2018-CDE-9547). Participants signed informed consents prior to participation. The experimental procedure consisted of three steps. First, parents were recruited through a database of the University of Amsterdam. This database contains families who responded to letters inviting parents with newborns in

the city to participate in studies at the university. Parents with a child in the age group of 35 to 70 months of age ($N = 539$) were contacted by email and invited to fill out an on-line screening questionnaire on global parental negative attributions (i.e., the Parental Cognition Scale (PCS) questionnaire, (Snarr et al., 2009). This screening questionnaire was filled out by 208 parents of which 168 parents who scored above the mean score of parents' child-responsible attributions (>2.79 , scale 1–6) and/or parent-causal attributions (>2.26 , scale 1–6) on the PCS were selected. Based on a priori power analysis to detect medium effects with a probability of 0.80, the sample size needed to test our hypotheses was 120 parent-child dyads. 55% of parents had only one type of parental negative attributions (above average in either parent-causal or child-responsible) and 45% had scores above average on both types. 82% of our parents had above average parent-causal attributions and 63% had above average child-responsible attributions.

Second, trained research assistants (master students) called the selected parents for a short interview (i.e., 5-min speech sample or FMSS, see method section) and to fill in an online questionnaire for pre-test measures (global negative attributions, parental self-efficacy, parenting stress, parenting behavior, child behavior, child and parent temperament). Of the selected parents, 78 parent-child dyads confirmed their participation. They did not differ from the 90 non-participating dyads on child's or parent's gender (respectively $X^2 = 2.12$, $p = 0.224$ and $X^2 = 0.00$, $p = 1.00$) or parental global negative attributions, parent-causal: $t(89) = -1.783$, $p = 0.078$ and child-responsible: $t(89) = -1.895$, $p = 0.061$.

Third, parents were invited for a 2-hour lab session at the Family Lab. Almost all parents who participated in the pre-test also came to the lab ($n = 75$), (see Fig. 2). The dyads were randomly assigned to one of three conditions (i.e., child-responsible, parent-causal or control) by drawing a lot from an envelope. The lab session consisted of: (1) A 5-min

warm-up to make parents and children comfortable in the lab setting; (2) A first interaction task consisting of a structured play, frustration (unsolvable game), and recovery task (15 min total). The frustration task was designed to elicit child negative affect and disruptive behavior, to observe parents' behavior in a challenging parenting situation; (3) A break for 15 min while the research assistant prepared the manipulation. During this break, parents completed a short questionnaire on specific parental negative attributions, frustration and comparability of the interaction in the lab with the child compared to home; (4) The manipulation; (5) A second interaction task again consisting of a structured-play, frustration (clean-up and waiting time with the toy visible in a plastic box), and recovery tasks; and (6) A short interview (i.e., 5-min speech sample) and questionnaires at post-test. After the experimental procedure was completed, parents were debriefed on the purpose of the experiment and the manipulation. Parents received a voucher of 15 euros and their children received a small gift for their participation. Two participants were excluded because the manipulation was not implemented according to protocol.

Manipulation

The manipulation consisted of video-feedback. The research assistant selected two or three clips from the video recording of this first interaction in which the child showed negative affect (e.g., irritability, indifference) or disruptive behavior (e.g., cheating, non-compliance, pushing the toys away). After the break, parents watched the selected clips with the research assistant while the child was with a second assistant. The research assistant commented on what happened in the clips using a standardized script, focusing either on the child (child-responsible condition), the parent (parent-causal condition) or neither of them (control). In these comments, the central elements of negative attributions were evoked: locus, stability, controllability and intention, without reinforcing parental self-efficacy. After a short introduction, parents were given different verbatim according to condition allocation (available in supplementary material).

Measures

We adopted a multi-method (questionnaires, observation, speech sample, physiology) approach to avoid shared method variance and to encompass the various elements of parental cognitions and behavior as much as possible. The two types of negative attributions on child misbehavior (child-responsible and parent-causal) were measured at two levels (global and situation-specific) through self-reports. Moreover, we measured parenting behavior in different ways, in terms of parental self-reports and observations of

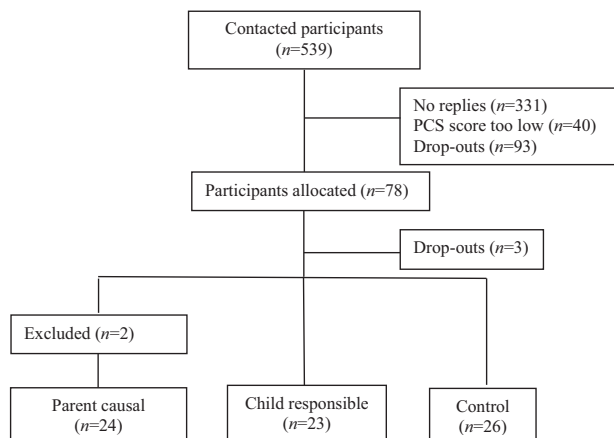


Fig. 2 Flowchart of participants

parent-child interactions. This is important because although these different measurement strategies of parenting are associated, the association is relatively weak (see the meta-analysis of Hendriks et al., (2018). This indicates that parental self-reports and observations provide complementary sources of information, because they measure parenting on different time scales (i.e., momentary and general) and from different angles (i.e., as experienced by parents vs. as observed by outsiders) (De Los Reyes, 2011; Moens et al., 2018).

Parental Cognitions

Global negative parental attributions (see Fig. 1)

The Parental Cognition Scale (PCS) questionnaire (Snarr et al., 2009) measured global negative attributions. It contains 30 items on what parents' thoughts regarding the causes of their child's misbehavior (e.g., I'm not structured enough with my child), on a 6-point Likert scale (1 = always true, 6 = never true). All items are reverse-coded so that a high score reflects more negative attributions and grouped into two subscales: parent-causal or child-responsible attributions. Internal consistency ($\alpha = 0.72$ – 0.83 at pre-test) and test-retest stability ($r = 0.58$ – 0.72 between pre-screening and pre-test) were satisfactory.

Specific parental negative attributions

Parents were asked to describe the cause of their child's negative behavior during the lab visit at pre-test (before manipulation) and post-test (after manipulation) through two items with a 5-point Likert scale (1 = not at all, 5 = to a large extent). One item measured parent-causal attributions (e.g., I am the cause why my child reacts this way) and one item measured child-responsible attributions (e.g., My child him/herself could have chosen to react differently in this situation). These items were developed for this study, drawing from Verhoeven & Huijding, (2021) and experience sampling studies (Larson & Csikszentmihalyi, 2014) that suggest that single/two items that ask about participants' current thoughts/state in a repetitive manner can be successfully used to assess cognitions.

Parental criticism of the child

This was coded from the parents' spontaneous description of their child and their relationship using the 5 min Speech Sample (FMSS; (Magaña et al., 1986), originally designed to assess expressed emotions in the family environment, and acknowledged as a valid and reliable measurement of parental negative attributions (Palm et al., 2019). Seven trained students blind to the conditions coded each speech

sample, with an excellent interrater agreement (ICC ranged from = 0.89 to = 0.99).

Parental self-efficacy

The Me as a Parent questionnaire (Maap, Hamilton et al., 2015) was used to measure parental self-efficacy. The 16 items measure self-efficacy (e.g., I have confidence in myself as a parent), personal agency (I often feel helpless about my child's behavior, reverse-coded), self-sufficiency (I know how to solve most problems that arise with parenting) and self-management among parents (e.g., I stay focused on the things that I need to do as a parent even when I've had an upsetting experience), on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with good internal consistency ($\alpha = 0.89$ at pre-test).

Parental Characteristics

Parental temperament

The Adult Temperament Questionnaire (ATQ, Evans & Rothbart, 2007) was used to measure parental temperament. We used 44 items of the negative affect (e.g., I am usually a patient person, reverse-coded) and effortful control scales (e.g., I often make plans that I do not follow through with), on a 7-point Likert scale (1 = extremely untrue of you, 7 = extremely true of you) with good internal consistency ($\alpha = 0.86$ and $\alpha = 0.82$).

Parenting stress

The Parenting Stress Questionnaire (OBVL; Vermulst et al., 2011). was used to measure self-reported parenting stress. We used 19 items of the parent-child relationship problems scale (e.g., I feel happy with my child, reverse-coded), the depressive mood scale (e.g., I frequently feel good, reverse-coded) and the parental role restriction scale (e.g., Raising my child leaves me with little personal time) on a 4-point Likert scale (1 = not true, 4 = very true) in a total score, with good internal consistency ($\alpha = 0.85$).

Physiological measure of parental stress

Biological dysregulated responses to stress have been identified through physiological activity (Feldman, 2012; Repetti et al., 2002), in particular of the hypothalamic-pituitary-adrenocortical (HPA) axis responsible for cortisol secretion (Stalder et al., 2016). Physiological stress of the parent was measured before manipulation with a saliva sampling of cortisol using the Salivette® system (Salivette®, Sarstedt Inc., Rommelsdorf, Germany; www.sarstedt.com) in which a dry cotton swab is placed in the mouth for 1 min

to passively absorb saliva. Saliva samples were frozen at -20°C until cortisol assay. Upon thawing, samples were centrifuged (5000 rpm for 10 min), the swab was discarded and saliva was collected. Saliva was analysed using a complete enzyme-linked immunosorbent assay (IBL-Tecan, Hamburg, Germany). The within assay CV was 2.2%. Forty-eight participants provided enough saliva for the analysis. Three participants were excluded from the analyses, two pregnant mothers due to unstandardized levels of cortisol during pregnancy (Stalder et al., 2016) and an outlier who had scores above 6 standard deviations.

Parenting Behavior

Self-reported parenting behavior

The Comprehensive Early Childhood Parenting Questionnaire (CECPAQ) was used to measure parenting behavior (Verhoeven et al., 2017). We specifically used 41 items reflecting support (e.g., When my child is having a hard time, I am able to help him/her), lack of structure/laxness (e.g., When my child does something I don't like, I often let it go), harsh discipline (e.g., I slap my child when he/she has done something wrong), and positive discipline (e.g., I explain to my child why certain rules must be followed), on a 6-point Likert scale (1 = never, 6 = always). These scales had satisfactory internal consistency ($\alpha = 0.63$ to $\alpha = 0.92$ at pre-test).

Observed parenting behavior

An adaptation of the Crowell coding scheme (Loop et al., 2017) was used to observe parent's behavior during the interaction with the child. Parent's positive affect (e.g., smiling, expressing pleasure in the interaction), autonomy support (e.g., providing cues for the child to achieve the task), negative affect (e.g., criticism, irritability), withdrawal/task orientation (e.g., not interacting with the child, focusing on performance), controlling behavior (e.g., taking the lead, giving direct instructions), and laxness (e.g., not reacting to the child misbehavior) were coded on a 7-point Likert scale (1 = low frequency or intensity to 7 = high frequency and intensity of the observed behavior) in the three tasks (free play, frustration and recovery). Each scale was first coded globally for each of the three tasks and then a mean score was calculated for each of the six scales across tasks. Coding was done by a trained research assistant; 20% of the tapes was double coded by the first author. Both coders were blind to conditions. The interrater reliability, based on intra-class correlations, was fair according to Cicchetti's guidelines (1994) for the autonomy support scale ($\text{ICC} = 0.58$), good for the controlling behavior scale ($\text{ICC} = 0.65$) and excellent for the

withdrawal, laxness, negative affect and positive affect scales ($\text{ICC} = 0.86\text{--}0.96$).

Outliers were winsorized to three times the interquartile range (above the third quartile or below the first quartile). There were 17 scores (8 for observed laxness, 7 for observed negative affect, 2 for self-reported harsh parenting) at pre-test and 13 scores (5 for observed laxness; 8 for observed negative affect) at post-test that were winsorized.

Analysis plan

Pearson's correlations were used to test how different levels and types of negative parental attributions compare to each other as preliminary exploratory analyses. Second, differences between correlations between the two types of negative parental attributions and parental characteristics and parenting behavior were tested.

Third, to test (1) whether randomization was successful, experimental manipulation was valid and (2) to test the effects of the manipulation on parental outcomes we used (M)ANOVAs. To correct for multiple testing in each step, significance was assessed using false discovery rate (FDR) adjusted p-values with threshold of $q \leq 0.25$ (that is, 25% of the tests declared significant will be false discoveries) (Benjamini & Yekutieli, 2001).

Results

How Different Levels and Types of Negative Parental Attributions Relate to Parental Characteristics and Parenting Behavior?

Pearson correlations between the study variables are presented in Table 1 and differences in correlations between the two types of attributions with BH FDR correction are presented in Supplementary material (Supplementary Material Table S2). First, the two types of negative parental attributions were significantly positively correlated. Parents who had negative child-responsible attributions also had more parent-causal attributions ($r = 0.44$ and $r = 0.32$, for global and specific attributions, respectively). There was no significant correlation between the two levels of negative attributions (global and specific), indicating that global and specific negative attributions may measure different attributions. Global child responsible attributions correlated with criticism on the child but the difference in correlations with global parent-causal attributions was not significant ($z = 1.763$, $p = 0.11$).

Second, parental negative attributions correlated positively with stress and temperament. Parents who experienced more stress, both in terms of higher self-reported stress and higher cortisol levels, also reported more global

Table 1 Correlations between parental negative attributions, parenting practices and predictors at pre-test

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Global child-responsible	3.17	0.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Global parent-causal	2.51	0.56	0.44**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Specific child-responsible	2.80	1.40	-0.11	-0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Specific parent-causal	3.03	1.42	-0.15	-0.07	0.32**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Criticism on child	2.43	1.88	0.48**	0.28**	-0.03	-0.27**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6. Self-reported positive discipline	4.91	0.76	-0.01	-0.40**	0.16	0.22	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7. Self-reported harsh parenting	2.03	0.33	0.39**	0.52**	-0.01	-0.10	0.32**	-0.38**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8. Self-reported laxness	2.45	0.51	0.33**	0.60**	0.05	-0.13	0.32**	-0.45**	0.54**	-	-	-	-	-	-	-	-	-	-	-	-	-
9. Self-reported support	4.85	0.67	-0.14	-0.40**	0.10	0.15	-0.14	0.04	-0.29*	-0.43*	-	-	-	-	-	-	-	-	-	-	-	-
10. Observed positive affect	4.77	0.66	-0.06	0.07	-0.07	0.08	0.03	0.10	-0.07	-0.12	0.13	-	-	-	-	-	-	-	-	-	-	-
11. Observed autonomy support	4.76	0.73	0.01	-0.08	0.34**	0.06	-0.19	0.12	-0.08	-0.26	0.20	0.56**	-	-	-	-	-	-	-	-	-	-
12. Observed negative affect	1.32	0.38	0.01	0.03	0.01	-0.16	-0.01	-0.15	0.20	0.15	-0.20	-0.34**	-0.35**	-	-	-	-	-	-	-	-	-
13. Observed withdrawal	2.09	0.21	-0.05	-0.03	0.06	-0.15	0.03	-0.04	-0.06	0.13	-0.09	-0.64**	-0.61**	0.29*	-	-	-	-	-	-	-	-
14. Observed controlling behavior	2.22	0.80	0.01	0.08	0.15	-0.17	0.10	-0.14	0.26**	0.22	-0.06	-0.36**	-0.53**	0.61**	0.38**	-	-	-	-	-	-	-
15. Observed parent laxness	1.07	0.13	0.04	0.00	-0.04	0.06	-0.01	-0.03	0.22	0.06	-0.08	-0.38**	-0.36**	0.32**	0.27*	0.39*	-	-	-	-	-	-
16. Parental self-efficacy	65.14	6.81	-0.26	-0.54**	0.01	0.07	-0.17	0.50**	-0.35**	-0.61**	0.79**	0.01	0.18	-0.15	-0.04	-0.05	0.00	-	-	-	-	-
17. Parenting stress	35.42	5.92	0.11	0.38**	-0.05	-0.11	0.07	-0.39**	0.15	0.33**	-0.58**	-0.07	-0.16	0.03	0.01	0.05	0.02	-0.51**	-	-	-	-
18. Cortisol	0.17	0.13	0.14	0.37**	-0.17	-0.15	0.10	-0.14	0.28	0.07	-0.20	0.13	-0.17	-0.09	0.01	0.11	0.05	-0.23	0.33*	-	-	-
19. Temperament negative affect	3.45	0.73	0.04	0.38**	0.06	0.06	0.07	-0.15	0.27*	0.21	-0.14	0.10	-0.04	0.00	-0.11	-0.08	-0.04	-0.16	0.41**	-0.29**	-	-
20. Temperament effortful control	4.64	0.76	-0.12	-0.29*	-0.17	-0.00	-0.10	0.33	-0.26*	-0.46**	0.30**	0.14	0.12	0.03	-0.16	-0.12	-0.15	0.32**	-0.30**	-0.04	-0.40**	-

* $p < 0.05$; ** $p < 0.01$

^aNo longer significant after FDR adjustment of p -values; Global parent-causal and child responsible attributions measured by PCS; Criticism measured by FMSS; Parental Self-Efficacy measured by MaAP; Parenting stress measured by OBVL; Self-reported positive discipline, harsh parenting, laxness and support measured by CECPAQ; Observed positive affect, autonomy support, negative affect, withdrawal, controlling behavior, and laxness measured by Crowell; Parent temperament negative affect and effortful control measured by ATQ; cortisol measured in saliva ($n = 47$)

parent-causal attributions, but not more child-responsible attributions. However, the correlations between the two types of attributions and stress and cortisol were not significantly different (respectively, $z = -2.24$, $p = 0.069$; $z = -1.911$, $p = 0.097$).

Furthermore, the parental temperamental dimension of negative affect was associated with global parent-causal attributions. Parents who scored themselves high on negative affect reported more parent-causal attributions. It was not associated with the other type of attributions and the correlations between parent-causal attributions and negative affect were significantly larger than the correlation between child-responsible and negative affect ($z = -2.80$, $p = 0.028$). PSE was also negatively correlated with global parent-causal attributions. Parents who felt competent had fewer global parent-causal attributions. However, this was not significantly different from the correlations between PSE and global child-responsible attributions ($z = 2.517$, $p = 0.055$).

Moreover, negative attributions correlated with parenting behavior in various ways (Table 1).

Harsh and lax parenting behavior correlated positively with global child-responsible and global parent-causal attributions. This correlation was significantly different from the other type of attribution only for laxness ($z = -2.552$, $p = 0.042$). Parents who attributed the cause of their child's misbehavior to themselves reported being lax more than parents who believed it was their child's fault. Similarly, positive parenting (parental support, positive discipline) correlated negatively with global parent-causal attributions. It did not correlate with global child-responsible attributions and the correlation between the different types of attributions and positive discipline ($z = 3.22$, $p = 0.014$) were indeed significantly different (but not for support $z = 2.176$, $p = 0.083$). Specific child-responsible attributions correlated positively with observed autonomy support. The more the parent perceived the child to be responsible for negative behavior in the moment, the more the parent supported the child's autonomy in the interaction task. It did not with other global or specific negative parental attributions and the difference of correlations between the two types of attributions (parent vs child) and autonomy support was significant ($z = 2.082$, $p = 0.042$). In sum, we observed differences between the two types of parental negative attributions in their association with parental characteristics and parenting behavior. Global parent causal attributions correlated more with negative affect, laxness and positive discipline than child-responsible attributions. Interestingly, parent causal and child responsible attributions correlated with each other at global and specific levels, suggesting a potential negative attributional style of parents who seem likely to blame both their child and themselves for their child's misbehavior.

How Reducing Parental Negative Attributions affects Parenting?

Randomization and validity check

The parent-child dyads in the three conditions did not significantly differ on any of the socio-demographics or pre-test values of parenting behavior (observed and self-reported) and parent characteristics (stress, self-efficacy, temperament), MANOVA: $F(24, 120) = 1.01$, $p = 0.47$, Wilk's $\Lambda = 0.69$. This indicates successful randomization.

After interacting with their child, parents confirmed that (1) the interaction tasks (before and after manipulation) were comparable to what happens usually in daily life ($M = 5.08$ and $SD = 0.83$ on 1–6 Likert scale) and (2) that their child had a typical reaction in the lab compared to what they would have shown in a similar situation at home ($M = 5.13$ and $SD = 0.75$ on 1–6 Likert Scale). The two interactions induced similar mild levels of child frustration and parenting stress (respectively $M = 1.74$, $SD = 0.81$ and $M = 2.07$, $SD = 0.55$ at first interaction and $M = 1.72$, $SD = 0.73$ and $M = 1.98$, $SD = 0.59$ at second interaction (scale 1 = not at all to 5 = to a large extent). This indicates the tasks were a valid and reliable way of assessing mild frustration and stress in parent-child interactions.

Effects of the manipulation on parental negative attributions

Repeated measure (M)ANOVA's were conducted to assess changes between pre-test and post-test (i.e., differences over time) and the interaction effect between condition (differences between child-focused, parent-focused and control conditions) and time (i.e., condition \times time) on negative parental attributions, parenting behavior and PSE (see Tables 2–5). Because we expected different effects of the manipulation on the various parenting outcomes, we conducted separate analyses for each outcome (e.g., a MANOVA for observed parenting behavior scales, an ANOVA for PSE).

Effects of manipulation on specific negative attributions

Results show a significant small condition \times time effect on parent-causal specific attributions ($p = 0.01$, partial $\eta^2 = 0.13$) and child-responsible specific attributions ($p = 0.01$, partial $\eta^2 = 0.13$) (see Table 2). For the statement "My child could have done otherwise", agreement increased in the parent-causal and control conditions whereas it decreased as expected in the child-responsible condition. Parents in this latter condition reported the lowest agreement with this statement, which was significantly lower than parents in the parent-causal, but not control, condition (Table 2). This indicates that specific child-responsible

Table 2 Means and standard deviations at pre-test and post-test of specific child-responsible and parent-causal attributions and repeated measures MANOVA on the effect of time and time by condition

Conditions	Parent causal (<i>n</i> = 24)			Child responsible (<i>n</i> = 23)			Control (<i>n</i> = 26)			Wilks' λ	<i>F</i>	<i>df</i>	<i>dfferror</i>	<i>p</i>	Partial η^2	β -1			
	Pre	Post		Pre	Post		Pre	Post											
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>								<i>SD</i>		
Specific parent causal attributions	2.88	1.15	2.88	0.85	2.91	1.41	3.30	1.26	3.38	1.63	2.58	0.99	0.989	0.770	1	70	0.383	0.011	0.139
Time													0.873	5.081	2	70	0.009	0.127	0.804
Condition-by-time													0.989	0.810	1	70	0.371	0.011	0.144
Specific child-responsible attributions	3.13	1.57	3.46	1.32	2.74	1.36	2.22	0.95	2.62	1.27	3.19	1.70	0.869	5.287	2	70	0.007	0.131	0.821
Time																			
Condition-by-time																			

Condition-x-time effects remain significant after FDR adjustment

Table 3 Means and standard deviations at pre-test and post-test of global child-responsible and parent-causal attributions and repeated measures MANOVA on the effect of time and time by condition

Conditions	Parent causal (<i>n</i> = 24)			Child responsible (<i>n</i> = 23)			Control (<i>n</i> = 26)			Wilks' λ	<i>F</i>	<i>df</i>	<i>dfferror</i>	<i>p</i>	Partial η^2	β -1			
	Pre	Post		Pre	Post		Pre	Post											
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>								<i>SD</i>		
Global parent causal attributions	2.57	0.65	2.52	0.68	2.40	0.47	2.32	0.44	2.48	0.53	2.34	0.55	0.947	3.915	1	70	0.052	0.053	0.497
Time													0.988	0.422	2	70	0.657	0.012	0.116
Condition-by-time													1.00	0.012	1	70	0.913	0.000	0.051
Global child-responsible attributions	3.24	0.72	3.29	0.81	2.97	0.65	2.96	0.67	3.20	0.64	3.17	0.74	0.993	0.241	2	70	0.787	0.007	0.869
Time																			
Condition-by-time																			

Table 4 Means and standard deviations at pre-test and post-test of parental self-efficacy and repeated measures ANOVA on the effect of time and time by condition

Conditions	Parent causal (<i>n</i> = 24)		Child responsible (<i>n</i> = 23)		Control (<i>n</i> = 26)		Wilks' λ	<i>F</i>	<i>df</i>	<i>df-error</i>	<i>p</i>	Partial η^2	β -1		
	Pre	Post	Pre	Post	Pre	Post									
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>									
Parental Self-Efficacy	65.25	6.78	66.58	7.85	66.74	6.34	67.56	6.14	64.36	7.30	65.96	5.29			
Time									0.91	6.736	1	68	0.012	0.09	0.725
Condition-by-time									0.97	0.894	2	68	0.412	0.03	0.198

Time effect remains significant after FDR adjustment

attributions were effectively decreased by the experimental manipulation. Their parent-causal attributions increased in this child-responsible condition (in which attributions about the child's responsibility are reduced). Parents agreed with the statement "I am the cause why my child reacts this way" more after the manipulation than before. In the parent-causal condition (in which attributions about the parent's causality are reduced), parents equally agreed with this statement after and before the manipulation. In the control condition, agreement with this statement decreased. However, none of the post-hoc comparisons were significant.

Effects of manipulation on global negative attributions No effect of time or time \times condition was found for the level of global parental negative attributions. The experimental manipulation thus did not affect parents' global parent-causal or child-responsible attributions. In sum, our manipulation seems to have successfully manipulated how parents interpreted their child's behavior in the specific lab situation, but not parents' global negative attributions (Table 3).

Effects of manipulation on parental self-efficacy and parenting behavior

There was a time effect on PSE but no time \times condition effect on PSE (Table 4). PSE increased in all conditions. Moreover, observed and self-reported parenting did not change over time (Table 5) and there was no time \times condition effect on self-reported or observed parenting behavior (Table 5). We therefore found no evidence that the experimental manipulation of negative attributions affected PSE or parenting behavior.

Discussion

Parental negative cognitions have often been linked to how parents actually 'do' their parenting (Bugental & Johnston, 2000a; Johnston et al., 2018). To date, however, we lack information about the exact role cognition of parental negative attributions play in parenting. This experimental study assessed two types of negative attributions and their correlational and causal relations with parental characteristics and parenting behavior among 78 parents and their 3-to-5-year-old children.

The study results showed that different types (child-responsible and parent-causal) and levels (situation-specific and global) of negative parental attributions of child misbehavior are uniquely related to parent characteristics and parenting behavior, and that situation-specific negative attributions seem malleable. However, we found no evidence that changes in situation-specific attributions have a

Table 5 Means and standard deviations at pre-test and post-test of parenting and repeated measures MANOVA

Conditions	Parent causal (n = 24)						Child responsible (n = 23)						Control (n = 26)						Wilks' λ	F	df	df-error	p	Partial η^2	β -1
	Pre		Post		Pre		Post		Pre		Post		Pre		Post										
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD									
Self-reported parenting																									
	4.78	0.83	4.93	0.65	5.13	0.52	5.14	0.53	4.83	0.90	5.13	0.62													
positive discipline	2.06	0.40	2.01	0.42	1.99	0.28	1.84	0.32	2.00	0.28	1.98	0.36													
harsh discipline	2.48	0.51	2.47	0.57	2.38	0.49	2.36	0.46	2.42	0.55	2.48	0.54													
laxness	4.93	0.65	4.91	0.74	4.91	0.59	4.94	0.62	4.78	0.74	4.98	0.53													
support														0.883	2.150	4	65	0.085	0.117		0.605				
Time														0.870	1.174	8	130	0.320	0.067		0.526				
Condition-by-time																									
Observed parenting																									
	4.75	0.72	4.89	0.70	4.71	0.74	4.82	0.96	4.86	0.55	4.76	0.55													
positive affect	4.67	0.77	4.78	0.71	4.78	0.69	4.84	0.87	4.88	0.75	4.84	0.80													
autonomy support	1.36	0.43	1.23	0.25	1.27	0.37	1.37	0.29	1.33	0.35	1.35	0.26													
negative affect	2.22	0.95	1.89	0.93	2.03	0.88	1.97	0.86	2.00	0.62	2.02	0.86													
withdrawal	2.43	1.04	2.04	0.60	2.01	0.65	2.10	0.56	2.16	0.63	2.00	0.52													
controlling behavior	1.09	0.14	1.14	0.24	1.06	0.13	1.11	0.24	1.06	0.12	1.11	0.23													
laxness														0.851	1.901	6	65	0.094	0.149		0.663				
Time														0.855	0.884	12	130	0.565	0.075		0.495				
Condition-by-time																									

direct “spill-over” effect on global negative parental attributions, parental self-efficacy and parenting behavior. What happens between a parent and a child in a specific situation may not directly affect parents’ global negative interpretations of child’s misbehavior or their parenting behavior.

These findings have several implications for theory and research on negative parental attributions, and may inform parenting practice. Specifically, this study indicated that levels and types of parental negative attributions measure unique aspects of these attributions and that they relate to parenting in different ways. For example, parents who reported more parent causal attributions, attributing their child’s misbehavior to their own fault, had more a temperamental trait of negative affect and were laxer. They also reported less positive discipline towards their child. These correlations were significantly higher than for parents who reported child-responsible attributions and attributed the cause of the misbehavior to their child. Parent-causal attributions may trigger complementary negative feelings leading to low positive support (Beckerman et al., 2018; Crouch et al., 2017; Milner & Crouch, 2013). Parent-causal attributions especially appeared as an important node in the parenting network, correlating more strongly with parental behavior and affect than child-responsible attributions. However, the global negative attributions did not correlate with negative attributions of the child’s misbehavior in a specific situation in the lab. This shows the importance of measuring negative attributions at different levels (global and situational) to grasp specific negative attributions in the moment in addition to global negative attributions of parents.

Also, the two types of negative attributions (parent-causal and child-responsible) were positively associated. Thus, parents who reported more negative child-responsible attributions—attributing the responsibility of the negative behavior to their child—also reported more parent-causal attributions—perceiving themselves as a cause of this misbehavior. This may indicate that parents, who encounter difficulties in upbringing situations with their child, do not tend to ascribe these difficulties exclusively to their child or themselves as parents, but rather tend to perceive multiple sources of “blame”, suggesting a negative parental attributional style.

Second, the manipulation affected parents’ situation-specific negative attributions. In line with our expectations, parents in the child-responsible condition, who were given the message that young children are not able yet to self-regulate, decreased their negative attribution on their child’s responsibility. However, in the parent causal and control conditions, the effects on negative attributions were different than expected. Parents in the parent-causal condition did not decrease their parent-causal negative attributions but did increase their child-responsible negative attributions.

This was surprising, because this condition was designed to reduce parent-causal attributions by giving parents the message that situations like these are experienced as difficult by many parents and are simply challenging. Perhaps, this counterintuitive finding could be explained by the fact that this feedback normalized possible difficulties parents experienced, but also emphasized the challenging aspects of the interaction between parent and child. Emphasizing that some aspects of the interaction did not go smoothly may actually maintain or increase, rather than decrease, blaming thoughts, either self-blame or blame on the child. This was also observed for the situation-specific child-responsible negative attribution, which was higher at post-test for parents in the parent-causal condition.

In the control condition, in which parents received no verbal feedback, parents reported an increase in child-responsible attributions and a decrease in their parent causal attributions. When exposed to a video of a challenging moment in the interaction with their child, parents may feel that children are responsible for misbehavior and that they are not, as parents, the cause of it. It seems that although our control condition was specifically designed to not manipulate parent’s negative attributions, by withholding any verbal feedback on a challenging parent-child interaction, merely watching the video of their interaction may have influenced parents.

The manipulation did not affect parents’ global negative attributions, self-efficacy, or parenting behavior. This probably means that in-the-moment, micro-manipulations of parent’s negative attributions of child misbehavior in one specific interaction may not be strong enough to affect parents’ global negative attributions or behavior. This confirms results from previous research showing that negative attributions may be memory-based and sometimes rather reflect parent’s over-learned interpretations than the parenting situation at hand. When negative attributions become automatic, parents may react to child behavior on the basis of past experiences and continue the same reaction to child misbehavior even when this specific reaction is no longer the most appropriate or effective (Fazio et al., 2000; Wood et al., 2002). This is an interesting finding in light of other experimental work on parental cognitions, such as PSE, and may indicate that parental negative attributions are less malleable compared to other cognitions (Mouton & Roskam, 2015).

Implications

Our findings have several implications. First, our study shows the value of distinguishing between parental negative attributions on child misbehavior oriented towards the child (child-responsible) or the parent (parent-causal). First, the relation of these two types of negative attributions to parental characteristics and parenting behavior is somewhat

different, with parent-oriented negative attributions associated with parental outcomes more than child-oriented negative attributions. An open question is whether these parental negative attributions also have a distinct etiology. For example, parent-causal attributions, but not child-responsible attributions, were associated with parental temperament. It may be that specific parent characteristics form a direct (via temperament) or indirect (via stress and feelings of self-efficacy) risk for the development of these specific negative attributions.

Similarly, our study shows the value of distinguishing between global and context-specific negative attributions. The traditional approach to measure negative parental attributions only at a global level, may not be sufficient to understand how negative attributions shape parents' reactions to child misbehavior in a specific context and how they may fluctuate from one situation to the next. In their experimental study on moment-to-moment fluctuation of PSE and negative parental attributions, Verhoeven & Huijding, (2021) show that these parental cognitions fluctuate, above and beyond a global feeling of self-efficacy (as a trait). Moreover, these situational parental attributions relate differently to parenting behavior in various situations. In the experimental setting of this study, parents were asked about their interpretation of the child's misbehavior in the specific circumstance they just experienced, not on their general attributions about child's or parent's fault. This assessment of attributions was indeed differently correlated with other parental characteristics (e.g., they were uniquely positively related to observed parenting behavior, specifically autonomy support) and differently affected by the manipulation compared to global attributions. These may, in part, be driven by the use of different instruments for global and specific attributions (i.e., different number of items and different wording of items) but may also reflect a difference in malleability: the latter may be more flexible and malleable than the former. Our manipulation only affected specific (and not global) negative attributions of child misbehavior. The context in which we assess attributions may thus matter.

Our findings may also indicate that assessing situation-specific and global attributions may provide us with different and complementary information on parenting. Similarly, our findings, and those of others before us (Hou et al., 2019; Moens et al., 2018) suggest that self-reported and observed parenting measures provide complementary information. Parent-causal attributions were stronger related to self-reported parenting behavior, potentially because negative attributions, and their correlates such as stress and self-efficacy, affect the way parents interpret, evaluate, and report on their parenting behavior (Herbers et al., 2017). To further disentangle these constructs future research could combine self-reports with, for example, biophysiological measures.

Previous studies have successfully included measures such as heart rate to disentangle different correlates of parenting behavior (e.g., Deater-Deckard & Bell, 2017).

Conceptually, parental self-efficacy and parent-causal negative attributions may share similar roots. Both reflect parents' cognitions on the (potential) role of the impact of their parenting behavior on their child's behavior. An important distinction is that negative attributions on child misbehavior mainly focus on parents' perception of their role as active agents in shaping their child misbehavior, not their global influence on their child's overall positive development (Bandura, 1977). In our study, parental self-efficacy increased after the manipulation, while specific parental negative attributions were reduced, supporting the notion that parental self-efficacy and negative attributions on child misbehavior may indeed be distinct. One possible explanation is that the lab procedure itself, in which parents make themselves available to play for 2 h with their child, had a positive effect on parental self-efficacy. That said, more research is needed to better disentangle these two constructs, to see where they overlap (and where not) and how they influence each other.

In terms of clinical impact, these results may shed light on three key elements. First, parents' negative attributions are associated with their parenting behavior (harsh and lax parenting, as well as support and positive discipline), suggesting they potentially shape parents' behavior. Combined with our finding that parental negative attributions on child misbehavior seem malleable in specific context, it suggests that addressing parental negative attributions could be an effective strategy for interventions that aim to reduce negative parenting behavior. However, our findings show the complexity of reducing parental negative attributions. In this study, change in situation specific attributions did not affect global negative attributions immediately. If negative attributions indeed precede parenting behavior, automatic global negative attributions of child misbehavior, in particular parent-causal attributions, may contribute to the maintenance of negative parenting behavior and cause parents to be less responsive to interventions targeting this behavior (Fazio et al., 2000; Wood et al., 2002). Second, practitioners working with parents should bear in mind that video feedback may be a powerful tool in parenting intervention, as documented in previous studies (Juffer et al., 2008). Our experiment suggests that watching one's own parenting and child behavior in a stressful situation may affect parenting behavior, self-efficacy and negative attributions, even without verbal feedback. Third, there may be a potential risk of unwittingly increasing parent-causal attributions when attempting to reduce child responsible attributions, as previously observed (Slep & O'Leary, 1998). Indeed, our findings suggest that reducing situation-specific parent-causal attributions increased specific

child-responsible attributions. In a clinical setting it may thus be interesting to identify caregivers' parental negative attribution style (high on parent causal, high on child responsible or high on both types of attributions) which may differentiate caregivers needing different types of support. In our sample, 45% of parents scored high on both types of attributions (before manipulation), blaming both themselves and their child for misbehavior.

Limitations

Several limitations of our study merit attention. First, our convenience sample of parents was modest in size and consisted of mainly high-educated Dutch mothers with moderate to high levels of negative attributions on their child misbehavior, leading to low power in some of the analyses and limited generalizability. The manipulation may have led to different results with parents who had lower levels of negative parental attributions at baseline. Second, different assessments of specific and global negative attributions may partly explain different findings with different attributions. Specifically, the use of one item to assess situation-specific attributions may limit direct comparison with the assessment of global parental negative attributions with multiple items. Third, and related, we were unable to assess possible differences between parents in negative attributions, such as differences between mothers and fathers. Although we actively recruited fathers, and similarly to most studies on parenting, mothers were over-represented in this study (for a review on this topic, see Panter-Brick et al., 2014). Previous research has shown mixed results regarding possible gender differences in negative attributions (Lansford et al., 2011; Palm et al., 2019; Snarr et al., 2009).

In general, our findings show how difficult it is to manipulate one specific aspect of parenting. Watching one's own behavior and/or discussing parenting behavior is likely to have unpredictable and unexpected effects on parents. In our experiment, the feedback parents received may have created a positive feedback loop leading to an increase in parent's feelings of self-efficacy after the second interaction (Jones & Prinz, 2005). It is possible that we manipulated parents in all conditions, including the control. Manipulating other parenting cognitions, such as parental self-efficacy, through verbal and video feedback may be more promising than parental negative attributions (Mouton & Roskam, 2015).

Conclusion

Notwithstanding these limitations, this multi-method, multi-informant experimental study does yield several new insights. First, our findings shed new lights on the different types of parental negative attributions (parent-causal and child-responsible) of child behavior. Second, especially

parent-causal attributions are related to different parenting characteristics and parenting behavior, suggesting this concept holds promise as a potential target node for interventions aimed at the wider network of parenting behavior, emotions and cognitions. At the same time, our findings emphasize that there is still much to learn about how to best reduce parental negative attributions and how to measure them in a valid way. In doing so, this study raises important new questions about, amongst others, the relation between global and situation-specific negative attributions of child behavior during challenging interactions. If we conceptualize parental negative attributions as a node in complex parenting processes, better understanding their causal role could contribute significantly to both parenting theory and practice.

Data Availability

All data is publicly available at the Open Science Framework (<https://osf.io/vgbzcf/>).

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Author Contributions All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by B.M. and J.W. The first draft of the manuscript was written by B.M. and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript and its revision.

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Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Consent to Participate Informed consent was obtained from all individual participants included in the study. Written informed consent was obtained from the parents for their children.

Ethics Approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Faculty of Social and Behavioral Sciences of the University of Amsterdam (No. 2018-CDE-9547).

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