



The role of maternal emotion regulation in controlling parenting during toddlerhood: an observational study

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Abstract

This study investigated the protective role of maternal adaptive emotion regulation in applying controlling parenting practices while assisting their toddler in completing two different problem-solving tasks. More specifically, the role of maternal emotion regulation was examined relative to significant situational (i.e., task difficulty) and child-related (i.e., toddlers' temperamental negative affectivity) risk factors for controlling parenting. Results showed that (1) mothers' integrative emotion regulation was negatively related to observed maternal control across tasks, (2) mothers were more controlling during a difficult task compared to an easy task, and (3) toddlers' temperamental negative affectivity related positively to the use of observed maternal control, albeit only during a difficult task. These results highlight the relevance of maternal emotion regulation processes during parenting practices beyond contextual and temperamental correlates. Directions for future research and clinical implications are discussed.

Keywords Emotional regulation · Parenting · Observation · Temperament · Toddlerhood · Self-determination theory

Parents play a prominent role in guiding their toddlers towards the achievement of a set of socio-emotional and cognitive skills that are essential for a healthy socialization (Verhoeven et al. 2019). Beyond parents' degree of involvement, the way parents actually show their involvement plays a decisive role throughout the socialization process (e.g., Moroni et al. 2015). Studies anchored in Self-Determination Theory (SDT, Deci and Ryan 2000; Ryan and Deci 2017) have consistently shown in this regard that parents' controlling, relative to their autonomy-supportive, involvement hinders toddlers' adequate socialization (Hindman and Morrison 2012; Laurin and Joussemet 2017; Walker and MacPhee 2011) and psychosocial development (Bernier et al. 2012, 2010; Matte-Gagné and Bernier 2011; Laurin et al. 2015). Parental control, as defined within SDT, involves the use of demanding, domineering and even intrusive practices,

such as pressuring language (e.g., “You must”, “You have to”), and parents taking over tasks which children can actually accomplish independently (Grolnick 2003). Whereas controlling parenting practices pressure toddlers to think, act, or feel in specific ways, autonomy-supportive practices nurture toddlers' own feelings, preferences and interests (Côte-Lecaldare et al. 2016; Mageau et al. 2015; Soenens and Vansteenkiste 2010). Indeed, autonomy-supportive parents foster children's sense of volition and psychological freedom, notably by taking children's frame of reference and by creating room for initiative, dialogue, and choices (Ryan et al. 2006). For instance, instead of giving demanding instructions when a three-year old is struggling with a task (e.g. a puzzle), or even taking over the task (i.e. controlling parenting; Weinstein et al. 2019), parents may ask their toddlers whether they can use any help and follow their toddlers' pace in solving the task (i.e. autonomy-supportive parenting; Wuyts et al. 2017).

Although intervention programs teach parents how to adopt a more favorable attitude towards autonomy support and corresponding practices (e.g., Joussemet et al. 2014), parents may still tend to use controlling practices, particularly when confronted with emotionally challenging situations (e.g., Robichaud et al. 2020) or when raising a toddler

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with specific temperamental vulnerabilities (e.g., Laukkanen et al. 2014). Studies have indeed shown that parents are more likely to use controlling practices when toddlers display elevated negative affect while struggling with difficult tasks (Neitzel and Stright 2004). However, not all parents seem to turn to controlling parenting in such circumstances (e.g., Robichaud et al. 2020), suggesting that parental coping processes may play a prominent role in this respect. According to Dix (1991), emotions are at the heart of parental competence. Dix's theoretical model argues that parental affective processes, next to situational aspects and child temperament, influence parents' parenting behaviors. According to this model, emotions experienced by parents are vital for effective parenting. When well-regulated, emotions may prompt more adaptive parenting practices. In contrast, when emotions are too weak, too strong, or poorly matched to child-rearing tasks, they may undermine parenting.

To better understand how parents actually cope with distress and negative affect during interactions with their toddlers and how this coping relates to controlling parenting, the current study focused on parents' capacity for emotional integration (Roth et al. 2019). Specifically, using a rigorous design with multiple informants, we sought to examine whether higher levels of mothers' integrative emotion regulation would predict lower use of controlling practices when providing assistance to their toddlers during problem-solving tasks. While examining the role of maternal integrative emotion regulation, we also considered the roles of task difficulty as well as toddlers' temperamental negative affectivity, two factors hypothesized to trigger controlling parenting.

Antecedents of controlling parenting

Conceptual models identifying antecedents of controlling parenting (Belsky 1984; Grolnick 2003) propose that several pressures may underlie parents' controlling involvement with their children. In addition to pressures residing "within" parents' own functioning (i.e., parents' personal characteristics), pressures originating from "above" (i.e., situational factors) and "below" (i.e., children's characteristics) are suggested to affect parenting.

Task difficulty

Research on the role of situational factors has shown that parents more often adopt a controlling approach in situations that trigger negative emotions in their children or themselves (e.g., Robichaud et al. 2020). In guided-learning settings (i.e., where parents socialize children by scaffolding their learning of important cognitive and socioemotional skills, Grusec and Davidov 2010; Pomerantz and Grolnick 2017),

controlling parenting practices often arise when parents perceive the task as too difficult for their child to accomplish. For instance, in an experimental study among parents and their elementary school children, parents were found to guide their child in a more controlling manner when they noticed that their child was going to fail the task (Wuyts et al. 2017). These findings mesh with Grolnick's (2003, 2009) argument that parents are naturally inclined to protect their children from potential harm. Thus, when noticing potential failure, parents may be prompted to invest extra effort in an attempt to prevent failure and to alleviate distress associated with failure. Yet, not all provided assistance may be helpful as some parents may adopt a controlling approach, for instance by interfering with their children's task completion rhythm and by instructing them in a pressuring way. Such a controlling approach has been found to be counterproductive because it does not foster optimal learning motivation in children (e.g., Wuyts et al. 2017), nor does it help children to cope more adequately with negative emotions during task completion (e.g., Roth et al. 2009).

Child temperament

In addition to situational factors, children's temperamental characteristics can also activate a more controlling parental approach. Temperament refers to genetically based and relatively stable differences in children's way of reacting to environmental stimulations and changes, as well as to children's capacity to regulate these reactions (Rothbart and Bates 2006). Temperamental characteristics can be hierarchically organized in three broad dimensions: surgency, effortful control, and negative affectivity (Putnam et al. 2002; Rothbart and Bates 2006). Focusing on the latter dimension, negative affectivity denotes children's tendency to experience and display negative affect such as discomfort, fear, and frustration (Putnam et al. 2006). A few studies in toddlers revealed that negative affectivity is positively related to parents' use of controlling practices (Armour et al. 2017; Walling et al. 2007). Expressions of negative affectivity probably elicit heightened levels of emotional distress in parents which generate more controlling parental reactions (e.g. Carson and Parke 1996; Fabes et al. 2001). This evidence suggests that parents' own emotion regulation style may play an important role in the way they approach their children's and their own negative affect, with adaptive emotion regulation being functional in preventing parents from translating negative emotions into controlling practices (e.g., Aunola et al. 2017).

Integrative emotion regulation

According to Self-Determination Theory (Ryan and Deci 2017), *integrative emotion regulation* (Roth et al. 2019) is the most effective way to deal with negative emotions.

Emotional integration is characterized by an openness to and sensitivity for emerging emotions, such that emotions are accessed in full awareness (Roth et al. 2009).¹ From the SDT perspective, emotions are seen as informational inputs that need to be addressed rather than minimized. Through a receptive and accepting attitude towards emotions, individuals become able to make informed decisions on how to respond to various situations (LeDoux 1995; Ryan and Deci 2017; Ryan et al. 2006; Vansteenkiste et al. 2010). Take the example of a mother coming home after a busy day at work. When interacting with her toddler, she is easily irritated. This negative emotion contains interesting information and may be interpreted by a highly emotional-integrative mother as a signal that her energy is depleted. This self-reflection may then help her to realize that her toddler is not to blame for her irritability, as she is the one that needs some time to recover from work and reload her resources. When encountering this situation repetitively, the high emotional integrative mother may decide at some point to go to work by bike, so that she creates some time to relax between work and home.

Empirically, such an integrative emotion regulation style has been positively associated with individuals' self-worth (Brenning et al. 2015) and well-being (Benita et al. 2019). Emotional integration also comes with a host of interpersonal benefits, such as greater empathic responding, more prosocial behavior and a greater capacity for intimacy (for a review, see Roth et al. 2019). Importantly, parental emotion regulation may also influence how parents handle emotionally charged situations during parent–child interactions. More specifically, parents high on integrative emotion regulation may *generalize* their openness regarding their own emotions toward openness for their children's negative emotions. When children display negative affect during a task, parents high on emotional integration would thus be able to stay attuned to what is emotionally salient for their child, rather than immediately striving to reduce their child's distress. Moreover, because emotional integration allows parents to regulate their own emotions more effectively, parents

adopting this regulation style may have more resources and psychological energy to remain receptive for their child's perspective. In sum, parental integrative emotion regulation may go hand in hand with a greater sensitivity for children's display of emotions, more empathy with children's viewpoint, and a greater capacity for mentalizing, all of which represent skills that prevent mothers from resorting to controlling strategies (Mageau et al. 2017; Sharp and Fonagy 2008; Slade 2005). Indirect evidence for this hypothesis was provided by Brenning et al. (2020), who demonstrated an association between mothers' maladaptive emotion regulation (i.e., emotional dysregulation) and mothers' self-reported controlling parenting practices. However, no study to our knowledge investigated the potential protective role of mothers' emotional integration against their engagement in controlling parenting practices.

In addition to yielding a potential direct negative relation with controlling parenting, integrative emotion regulation may also play a buffering role in the relation between other sources of pressure (e.g., task difficulty and temperamental negative affectivity) and controlling parenting. If integrative emotion regulation indeed plays a protective role when parents are confronted with emotional distress, this regulation style could be of vital importance to prevent parents from controlling practices when facing pressuring conditions. Yet, this potential buffering role of integrative emotion regulation also remains to be empirically examined.

The present research

The first, and most central, aim of the present study was to examine the role of emotional integration in mothers' reliance on controlling practices. We hypothesized that mothers high on emotional integration would generally engage in less controlling parenting while assisting their toddler during problem-solving tasks (hypothesis 1; H1). We expected this effect of maternal integrative emotion regulation to occur above and beyond the role of task difficulty and toddlers' temperament. With regard to task difficulty, we hypothesized that mothers would generally use more controlling behaviors during the hard task, compared to the easy one (H2). From a temperamental perspective, we expected a positive relation between toddlers' negative affectivity and observed maternal control (H3).

Another, more exploratory, goal was to investigate the interplay between the three potentially important antecedents of controlling parenting – that is, emotional integration, task difficulty and toddlers' temperamental negative affectivity. Because no previous studies examined the interplay between these three factors, their interactions were examined in a more tentative fashion. First, we considered the possibility that emotional integration would attenuate the

¹ One construct strongly linked to integrative emotion regulation is mindfulness (see Roth et al. 2019 for more information on the link between emotional integration and other conceptual frameworks). Mindfulness is defined as nonjudgmental awareness of one's present moment experiences (Chambers et al. 2009). Although integrative emotion regulation and mindfulness are overlapping with regard to the component of receptive awareness (Deci et al. 2015), integrative emotion regulation goes beyond awareness and also involves active interest taking in one's inner emotional world, with the aim of responding more adequately to emotional events. Integrative emotion regulation thus involves a coordination of emotional experiences with other aspects of the self (i.e., needs, values, and aspirations) and with situational circumstances (Schultz and Ryan 2015). The resulting understanding of one's emotions is used to regulate the expression or withholding of emotions in a more volitional way.

hypothesized pressure-eliciting role of both task difficulty and toddlers' temperamental negative affectivity (H4). Finally, we explored the interaction between task difficulty and toddlers' temperament, thereby examining the possibility that a more difficult task would be particularly likely to elicit controlling parenting among toddlers with more temperamental negative affectivity (H5).

To investigate the present study's research aims, we asked mothers to help their toddlers solve two tasks of varying difficulty levels, and assessed whether mothers' use of controlling parenting practices (as coded by an independent observer) would depend on (1) task difficulty (induced experimentally), (2) toddlers' temperamental negative affectivity (reported by fathers), and (3) mothers' emotion regulation style (reported by mothers). By measuring each study variable relying on a different informant, problems associated with shared method variance, such as artificial inflation of associations, were avoided. To ensure that the effect of the three assessed predictors would be specific to the observed situation (rather than a mere reflection of mothers' general tendency to be controlling), we controlled for mothers' general level of controlling parenting (self-reported by mothers). The effects of task difficulty, toddlers' temperament and maternal integrative emotion regulation were hence expected to occur above and beyond the contribution of overall parenting. Further, we controlled for several sociodemographic variables (i.e., mothers' age, marital status and educational level; toddlers' age and gender) that could potentially render parents more likely to engage in controlling parenting practices (Laird 2011). As a final goal of the present study, we aimed to address the replicability of our results by replacing task difficulty with an observational rating of toddlers' negative affect and struggle during the two tasks (both coded by an independent observer). In doing so, we hypothesized to replicate our main results with these two observational measures of task difficulty (H6).

Methods

Participants

The current sample was drawn from a broader longitudinal project on maternal well-being during the transition to motherhood (blinded for review). Data from this broader project have been reported in a number of publications (blinded for review), although none of these publications included the variables used in this report. Specifically, for the purpose of this study, we relied on data collected at Wave 4 (approximately three years postnatal). Of the 214 mothers participating at Time 1 (i.e., a prenatal assessment during pregnancy), 126 (58,88%) participated again at Time 4, twenty-six mothers did not wish to participate, and 62 mothers could not be

reached. Although there was substantial drop-out, no significant difference was found between mothers who stayed in or dropped out of the study in terms of age ($F=0.04$, $p>0.05$), marital status ($F=0.08$, $p>0.05$) and education level ($F=0.04$, $p>0.05$). Furthermore, Little's missing completely at random (MCAR) test was non-significant, $\chi^2(948)$ of 751.63 ($p>0.05$), indicating that data were likely to be missing at random.

The sample of the current study consisted of 126 mothers ($M=28.16$ years; $SD=3.29$ years) and their toddlers (50.8% boys, $M=35.41$ months; $SD=5.94$ months). The majority of mothers was married or lived together with their partner (97.6%), 1 woman was divorced and lived alone, 1 woman was divorced and lived together with a new partner (who was not the biological father of the participating toddler), and 1 woman had always been a single mother. Regarding participants' highest level of education, 19% of mothers had a secondary school degree, 57.1% a bachelor's degree diploma, and 23.8% a master's degree diploma.

Procedure

Data collection

In the context of a developmental psychology course, undergraduate students were asked to contact all mothers who had participated in Wave 1 ($N=214$). Students followed a two-hour information session in which they were trained by the first author to approach potentially interested mothers and to collect the data in a standardized and deontological correct way. Students made home visits to all mothers who agreed to participate in the follow up study and handed them a set of paper and pencil questionnaires. Students also organized the videotaping of a mother-toddler interaction in the home context. Interactions were videotaped using digital camcorders. The camcorder was positioned on a fixed spot with maximum view of the mother, the toddler, and the task. Participation in the study was voluntary and confidentiality was guaranteed. An informed consent form was signed by all participating mothers. Ethical approval for this study was granted by the host university's Institutional Review Board (IRB 2015/74).

Experimental manipulation

The (within-person level) experimental manipulation of task difficulty was performed using a procedure developed by Whipple et al. (2011). Specifically, we asked mothers to help their toddlers with two tasks of increasing difficulty (i.e., building a tower and making a puzzle). All mothers were told that the objective of these two minutes-tasks was to evaluate the skill level of the toddler. Mothers were also told that they could help their toddler with the tasks if they

wanted to. In the first (easy) task, toddlers had to build a tower. In the second (hard) task, toddlers had to make a puzzle that was too difficult to complete at their developmental stage.

Measures

Observed maternal control

To assess mothers' use of controlling practices during the problem-solving tasks, we used Whipple et al.'s (2011) rating system. This comprehensive system includes four scales (i.e., verbalization, volition, competence and flexibility), each representing a controlling subscale as well as an autonomy-supportive subscale. More specifically, the four controlling subscales consist of (1) verbalizations in which mothers give redundant instructions, use a stern tone of voice and provide backhanded praise, (2) induced pressure by mothers who impose their own rhythm, thereby interfering with their toddler's pace and failing to build in opportunities for choice, (3) a focus on incompetence in which mothers' behaviors highlight their toddler's failure by intervening too quickly or too excessively in light of the toddler's expressed preferences, and (4) inflexibility in which mothers do not tolerate distraction from the task and rigidly demand their toddler to stay focused. The autonomy-supportive subscales consisted of (1) verbalizations in which mothers encourage their toddler when performing the task, use an inviting tone in communication that reflects their availability, support and praise, (2) support of volition in which mothers follow their toddler's pace, provide opportunities to actively participate to arrive at a shared goal, and guide their toddler while also offering enough time to explore the task, (3) a focus on competence development in which mothers only intervene when the task becomes too difficult for their toddler, thereby adjusting the task difficulty towards their toddler's skill level, and (4) flexibility in which mothers allow distraction from the task and patiently ask the toddler to re-focus on the task when distracted.

Each controlling subscale was scored on a scale from 1 (*not controlling*) to 5 (*very controlling*) and each autonomy-supportive scale was scored on a scale from 1 (*not autonomy-supportive*) to 5 (*very autonomy-supportive*). Because only a minority of toddlers was distracted from the tasks (27.78%), the flexibility subscale was not relevant to many participants and was therefore excluded from the subsequent analyses (as was the case in previous studies using the same rating system, see e.g., Bernier et al. 2014).

With regard to the coding procedure, an expert panel of three researchers specialized in Self-Determination Theory gathered during three panel meetings to observe and code 10 videotapes. During these meetings, researchers refined and elaborated Whipple's coding guidelines and added

meaningful examples for each of the observed behaviors in order to increase interrater agreement. During the third meeting, each expert independently coded nine videos using the updated list of behaviors. Problems or doubts raised during the coding process were registered and discrepancies in interpretations of different parenting behaviors were discussed. This led to a final refinement of the coding guidelines and to the addition of some more illustrative examples. A team of three observers then independently coded the videotapes using the elaborated coding guidelines. To assess interrater agreement, a randomly selected sample of 25% ($N = 32$) of videotapes was coded by an independent rater. Interrater reliability across tasks was satisfactory for all subscales ($ICCs$ ranging from 0.74 to 0.77), except for autonomy-supportive verbalization, $ICC = 0.57$ (Portney and Watkins 2009). The interrater reliability of the total index score computed across these subscales (which we used for our main analyses – see the procedure described below) was satisfactory, $ICC = 0.84$.

To examine whether the 6 subscales used in this study (i.e., 3 domains [verbalization, volition, and competence] \times 2 styles [controlling and autonomy-supportive]) could be summarized into one index score of controlling (versus autonomy-supportive) parenting, we conducted two exploratory factor analyses (EFA), one for each task (Tabachnick and Fidell 2013). The EFAs pointed to a one-factor solution, with scree tests revealing clear elbows after the first factor (Cattell 1966) and with all variables loading strongly on this factor (all loadings ≥ 0.51). This one-factor EFA solution explained 66% and 68% of the variance in the easy and the difficult task, respectively. Given these findings, and based on past procedures using the same coding scheme (Landry et al. 2008), the scores of the three autonomy-supportive subscales were subtracted from the scores of the three controlling subscales, thus yielding an overall index score for controlling (relative to autonomy-supportive) parenting. We then re-coded the values of this index score on a scale from 1 to 11, such that a value of 6 represented a similar dose of controlling and autonomy-supportive behaviors. Scores below 6 indicated less controlling behaviors than autonomy-supportive behaviors and scores above 6 indicated more controlling behaviors than autonomy-supportive behaviors. A score of 11 thus represented a maximal amount of controlling behaviors paired with a minimal amount of autonomy-supportive behaviors. The reliability coefficient of this index score was satisfactory in both tasks, both $\alpha s \geq 0.88$.

Maternal integrative emotion regulation

Mothers filled out a 4-item version of the integrative regulation subscale of the *Emotion Regulation Inventory* (ERI; Roth et al. 2009). The four items describe mothers' integrative reactions to negative emotions. Using a 5-point response

scale (1 = *Completely not true*; 5 = *completely true*), mothers indicated the extent to which they believed that each of the four statements on integrative regulation were true for them (e.g., “When I experience negative feelings, I usually try to understand where that feeling comes from”). Previous research has provided evidence for the internal structure and validity of this scale (Benita et al. 2017; Brenning et al. 2015; Shahar et al. 2019). In the current study, Cronbach’s alpha was 0.75.

Toddlers’ temperamental negative affectivity

Fathers were asked to fill out the negative affectivity subscale of the short form of the *Early Childhood Behavior Questionnaire* (ECBQ; Putnam et al. 2006). This subscale consists of twelve items describing toddlers’ negative emotional reactions to various situations. For each item, fathers indicated on a 7-point response scale (from 1 ‘never’ to 7 ‘always’) how often in the past week the described reaction occurred. A sample item for negative affectivity reads: “When ‘no’ was said, how often did your child become sad and weepy?”. A “non applicable” response option was provided in case the proposed situation had not occurred during that week. This response option (which was used by fathers in 4.16% of instances) differs from the response option “never”, which refers to cases where the situation did occur, but the expected reaction of the toddler was not displayed. The ECBQ very short form scale has yielded acceptable internal consistency and good validity in previous research (Putnam et al. 2006). In the current study, Cronbach’s alpha was 0.64.

Maternal general controlling parenting style

We assessed mothers’ general controlling parenting style with the 8-item Psychological Control Scale (PCS; Barber 1996) and with 7 items from the ‘Autonomy-Support’ subscale of the Perceptions of Parents Scale (POPS; Grolnick et al. 1991). A sample item of the PCS reads: ‘I am always trying to change how my child feels or thinks about things’. A sample item of the Autonomy-Support scale reads: ‘Whenever possible, I allow my child to choose what to do’. The psychometric quality and validity of both scales is well-established (Barber et al. 2005; Grolnick et al. 1991). Participants rated the items on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). As in previous studies (e.g., Soenens and Vansteenkiste 2005), a single composite score for control versus autonomy-support was computed by reverse-scoring the autonomy support items and by averaging the scores of the psychological control and (reverse-scored) autonomy-support items. Cronbach alpha of this scale was 0.79.

Observed toddlers’ display of negative affect and struggle

To evaluate the validity of our experimental manipulation of task difficulty (and to conduct exploratory analyses), an independent observer rated toddlers’ displayed negative affect and struggle during the easy and difficult tasks. To rate the level of negative affect, the observer used a 5-point Likert scale ranging from 1 (*no negative affect was elicited by the task*) to 5 (*very much negative affect was elicited by the task*). For observed struggle, the observer used a scale that ranged from 1 (*toddler was not struggling at all during the task*) to 5 (*toddler was struggling most of the time*). To assess interrater agreement, a randomly selected sample of 25% ($N=32$) of videotapes were coded independently by a second rater. Interrater reliability, calculated using intraclass correlation coefficients (ICC) was acceptable for both constructs, both $ICCs \geq 0.84$.

Plan of analysis

To test the hypotheses, we performed a series of multilevel regressions in MPlus 8.0, using the maximum likelihood robust (MLR) estimator (Muthen and Muthen 2017). We used a multilevel approach because the data had a nested structure, with observed maternal (and toddler) behaviors in the two tasks being nested within each mother-toddler dyad.

Preliminary analyses

We first determined whether, in addition to mothers’ general controlling parenting style, any sociodemographic variables had to be added as covariates in the analyses. Repeated measures ANOVA were performed, with observed maternal control as a dependent variable (and task as a within-person level variable) as well as a MANCOVA with toddlers’ temperament and maternal integrative emotion regulation as dependent variables. Toddlers’ gender, mothers’ educational level and marital status were entered as fixed factors, and mothers’ and toddlers’ age were entered as continuous covariates. If a sociodemographic variable related significantly to one of the three variables, we added this variable to the model.

After determining which sociodemographic covariate to include in the main analyses, all between-person level missing data were imputed relying on the EM estimator, generating 20 data sets which we then aggregated into a single one. As for within-person level data, we handled missing values in our main analyses using multilevel statistics with the maximum likelihood robust (MLR) estimator.

Main analyses

In the main analyses we used a model building approach (see supplemental material online for descriptions of the equations used at each step of the model). In a first step, we regressed observed maternal control on task difficulty at the within-person level, while allowing the intercepts of these variables and the slope of their association to vary randomly at the between-person level. This enabled us to verify whether task difficulty predicted an increase in observed maternal control at the within-person level, and whether significant between-person level variation occurred in (1) observed maternal control across tasks (such that between-person level variables might predict observed maternal control across tasks) as well as in (2) the effect of task difficulty on observed maternal control (such that between-person level variables might moderate the strength of this effect). The statistical significance of the between-person level variation was determined using MPlus 8.0's version of the Wald test (which calculates the ratio between the between-person level variance of a given variable or slope and its standard error).

If significant variation occurred at the between-person level, we included in a second step our covariates and the between-person level variables of interest (i.e., integrative emotion regulation and temperament). This allowed us to examine whether integrative emotion regulation and temperament could (1) predict observed maternal control across tasks, and (2) moderate the effect of task difficulty on observed maternal control.

As a third and final step, we included the interaction term between integrative emotion regulation and temperament to examine their interactive effect on observed maternal control across tasks. Given the relatively small sample size (and corresponding limited statistical power), we did not include the three-way interaction between the three predictors (mothers' integrative emotion regulation, toddlers' temperament and task difficulty) in the main analysis. For exploratory purposes, we do provide information about this three-way interaction as supplemental material online. Provided that an interaction effect was significant, we intended to report simple effects at one standard deviation above and below the mean of the relevant variables.

Supplementary analyses

In an attempt to address the replicability of the main results, we repeated twice the two first steps of the statistical procedure used for our main analyses, but replaced task difficulty by observational measures of toddlers' (1) negative affect and (2) struggle.

Results

Preliminary analyses

Background variables

An examination of the associations between potential sociodemographic covariates and our variables of interest revealed that only maternal education level had a significant effect on observed maternal control, $F(2, 110)=9.52$, $p < 0.001$, with more highly educated mothers being less controlling during both tasks. No effects were found for toddlers' temperament and maternal integrative emotion regulation at the multivariate level. Therefore, only maternal educational level was added as an additional covariate to mothers' general level of controlling parenting in subsequent analyses.

Missing data

8.60% of data were missing on average per retained variable ($SD = 9.16\%$; $Range = 0.00\%$ to 22.22%). Conducting the Little's MCAR test for our between-person level variables suggested that data were missing completely at random, $X^2(13)=9.161$, $p = 0.761$. We thus imputed all between-person level missing data.

Correlation between variables

Table 1 presents the means, standard deviations, and correlations between all variables used in the main and exploratory analyses. Inspection of the correlates of observed maternal control revealed a negative association with maternal integrative emotion regulation and a positive association with observed toddlers' display of struggle, both during the easy and the hard task, as well as across tasks. Observed maternal control was also positively associated with toddlers' temperamental negative affectivity as well as with observed toddlers' display of negative affect during the difficult task (and also across tasks for observed toddlers' display of negative affect). Examining the correlations between predictors revealed no significant relation between any construct, except for one negative association between maternal integrative emotion regulation and observed toddlers' display of negative affect in the hard task.

Manipulation check

Descriptive statistics of observed toddlers' display of negative affect and struggle during the tasks revealed little display of negative affect across tasks, with toddlers obtaining

Table 1 Means, standard deviations and correlations between study variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Observed maternal control (easy task)	4.20	1.46	1											
2. Observed maternal control (hard task)	4.73	1.68	0.63*	1										
3. Observed maternal control (across task)	4.47	1.43	0.80*	0.92*	1									
4. Maternal integrative emotion regulation style	4.10	0.59	-0.26*	-0.21*	-0.27*	1								
5. Toddlers' temperamental negative affectivity	2.78	0.54	0.01	0.21*	0.13	-0.08	1							
6. Maternal general controlling style	1.77	0.37	-0.04	0.03	-0.00	-0.28*	-0.10	1						
7. Maternal education level	2.05	0.66	-0.33*	-0.28*	-0.34*	0.16	-0.15	-0.06	1					
8. Observed toddlers' struggle (easy task)	3.06	0.99	0.24*	0.11	0.19*	-0.02	-0.00	-0.06	-0.09	1				
9. Observed toddlers' struggle (hard task)	3.98	0.79	0.20*	0.40*	0.34*	-0.08	0.14	0.18	-0.03	0.32*	1			
10. Observed toddlers' struggle (across task)	3.53	0.73	0.27*	0.30	0.32*	-0.06	0.05	0.06	-0.09	0.85*	0.77*	1		
11. Observed toddlers' negative affect (easy task)	1.24	0.71	0.05	0.07	0.07	0.04	0.00	-0.02	-0.08	0.46*	0.29*	0.48*	1	
12. Observed toddlers' negative affect (hard task)	1.48	0.86	0.34*	0.37*	0.40*	-0.21*	0.02	0.15	-0.08	0.15	0.32*	0.27*	0.41*	1
13. Observed toddlers' negative affect (across task)	1.36	0.66	0.26*	0.28*	0.32*	-0.12	0.01	0.08	-0.10	0.34*	0.37*	0.43*	0.80*	0.87*

* $p < .05$

Table 2 Standardized main, interaction and random effects for our main analyses, presented per step in a model building approach

	Step 1	Step 2	Step 3
<i>Fixed effects</i>			
Task difficulty	.16*	.16*	.16*
Integrative ER		-.21*	-.21*
Negative affectivity		-.05	-.05
Task difficulty *integrative ER		.04	.04
Task difficulty * negative affectivity		.21*	.21*
Integrative ER* negative affectivity			.004
<i>Random effects</i>			
e_{ij}	3.09*	3.04*	3.03*
u_{0j}	6.20*	6.31*	6.33*
u_{1j}	2.60*	2.77*	2.68*

ER emotion regulation

* $p < .05$

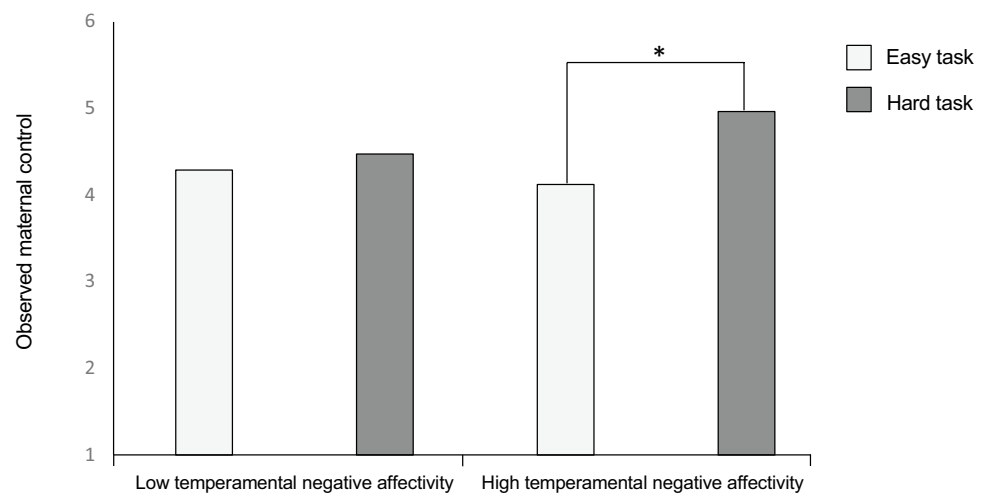
an average score of 1.36 across tasks on a 5-point scale. Still, paired samples t-test showed that toddlers were rated on average as displaying significantly more negative affect during the difficult task ($M = 1.48, SD = 0.86$), compared to the easy one ($M = 1.25, SD = 0.71$), $t(122) = 3.042, p = 0.003, d = 0.27$. Descriptive statistics did reveal moderate levels of struggle across tasks, with toddlers obtaining an average score of 3.53 across tasks on a 5-point scale. Paired samples t-test revealed that toddlers were rated as struggling significantly more during the difficult task ($M = 3.97, SD = 0.80$) than during the easy one ($M = 3.08, SD = 0.99$), $t(118) = 9.16, p < 0.001, d = 0.84$.

Main analyses

Within-subjects level

A significant main effect of task difficulty on observed maternal control was observed (Table 2), $\beta = 0.16, p < 0.001$, such that mothers were found to be more controlling during the difficult task compared to the easy task. The variance around the intercept of observed maternal control varied significantly, $\sigma^2/S.E. = 6.20, p < 0.001$, suggesting that between-person level variables may be associated with observed maternal control. Examining the variance around the slope of the relation between observed maternal control and task difficulty also revealed significant variation, $\sigma^2/S.E. = 2.60, p = 0.009$, suggesting that between-subject variables may moderate this relation. We thus included the between-person level variables of interest (i.e., maternal integrative emotion regulation and child temperament) in our model to examine whether, while controlling for maternal educational level and general controlling style, they could explain these observed variations.

Fig. 1 Two-way interaction with task difficulty as the independent variable, toddlers' temperamental negative affectivity as the moderator and observed maternal control as the dependent variable, while controlling for mothers' integrative emotion regulation style, mothers' general controlling style and mothers' education level. Bars marked with an asterisk differ at $p < .05$



Between-person level

Between-person level variables in a second step of our model revealed a significant association between integrative emotion regulation and observed maternal control, $\beta = -0.21$, $p = 0.010$ (i.e., first main research aim), indicating that—while controlling for toddlers' temperamental negative affectivity, mothers' general level of controlling parenting and mothers' education level—, mothers who scored higher on integrative emotion regulation were observed to be less controlling across tasks. In contrast, toddlers' temperamental negative affectivity was unrelated to observed maternal control, $p = 0.679$.

Entering the between-person level variables in our model also revealed a significant cross-level interaction (i.e., second research aim). Specifically, toddlers' temperamental negative affectivity significantly moderated the effect of task difficulty on observed maternal control, $\beta = 0.21$, $p = 0.006$, whereas maternal emotional integration did not, $p = 0.528$. As shown in Fig. 1, examining the simple effects of the significant interaction revealed that observed maternal control increased with task difficulty when toddlers scored high on temperamental negative affectivity, $\beta = 0.28$, $p < 0.001$, but did not when toddlers scored low, $p = 0.308$.

Finally, we entered as a third step the interaction term between integrative emotion regulation and temperamental negative affectivity in our model. This revealed that observed maternal control could not be understood from an interaction effect between these two constructs, $p = 0.956$.²

² As part of our broader study on parenting, we also assessed mothers' perceptions of their toddler's temperamental negative affectivity. Analyzing this variable revealed that (1) mother and father reports of toddlers' temperament positively correlated with one another, $r = .36$, $p < .001$, and that (2) mother and father reports correlated in the exact same way with observed maternal control. More specifically, both did not significantly correlate with observed maternal control in the easy task, both $ps \geq .372$, and both negatively cor-

Supplementary analyses

To address the replicability of the main effect of task difficulty on observed maternal control, we examined whether toddlers' negative affect and struggle (which can be seen as indirect indicators of task difficulty) would also relate to more observed maternal control. This analysis also served as an internal replication of the interaction obtained between task difficulty and toddler's temperamental negative affectivity (Fig. 1).

In the analysis replacing task difficulty with observed toddlers' display of negative affect, we first found a significant main effect of observed toddlers' negative affect on observed maternal control, $\beta = 0.20$, $p < 0.001$. Thus, and in line with the results of our main analyses, mothers were observed to be more controlling when their toddlers were rated as displaying more negative affect. Neither the interaction between toddlers' display of negative affect and maternal integrative emotion regulation, $p = 0.164$, nor the interaction between toddlers' display of negative affect and toddlers' temperamental negative affectivity, $p = .416$ were significant in the prediction of observed maternal control.

Re-running the model with observed toddlers' display of struggle offered similar results to those found with observed toddlers' display of negative affect. Indeed, there

Footnote 2 (continued)

related with observed maternal control in the hard task, both $rs = -.21$, both $ps \leq .021$. Running our main analyses using mothers' report of toddlers' temperament also revealed the exact same results as those reported with fathers' report of toddlers' temperament, with the exception of a marginal rather than significant interaction effect between task difficulty and toddlers' temperament, $p = .073$. Nonetheless, unpacking this marginally significant interaction revealed the exact same simple effects as those observed with fathers' report of toddlers' temperament, both in terms of direction and of significance.

was a significant main effect of observed toddlers' struggle on observed maternal control, $\beta = 0.31$, $p < 0.001$, such that mothers were more controlling when their toddlers displayed more struggle. Yet, observed toddlers' struggle did not significantly interact with maternal integrative emotion regulation, $p = 0.426$, nor with toddlers' temperamental negative affectivity, $p = 0.081$, to predict observed maternal control.

Importantly, in each of these models, the main effect of maternal integrative emotion regulation on observed maternal control remained significant, both $ps \leq 0.022$. Overall, these additional analyses underscore the replicability of the main effect of task difficulty on observed maternal control and the robustness of the main effect of maternal integrative emotion regulation on observed maternal control. No additional evidence was obtained for the interaction between task difficulty and temperamental negative affectivity, indicating that this interaction should be interpreted with caution.

Discussion

The goal of this study was to examine the potential protective role of self-reported maternal integrative emotion regulation against the use of observed controlling practices in situations with various sources of pressure, such as task difficulty and child temperament. Using a multi-method and multi-informant design, mothers were asked to assist their toddlers in completing two problem-solving tasks of varying difficulty. Controlling parenting practices were coded during the interaction, while ratings of temperamental affectivity were provided by fathers. We explored whether mothers' integrative emotion regulation negatively predicted their engagement in controlling practices across tasks and to what extent emotional integration could buffer the effects of two other potential triggers of controlling parenting, namely task difficulty (and related observational measures of negative affect and struggle) and toddlers' temperamental negative affectivity.

The unique role of emotion regulation, task difficulty and negative affectivity

The results revealed several main effects, suggesting that different sources of influence predict mothers' engagement in controlling practices. First, as hypothesized, mothers high on integrative emotion regulation were on average less controlling across tasks (i.e., first research aim; H1). Mothers' openness and sensitivity to their own emotions thus seem to generally prevent them from resorting to controlling strategies. This association may be explained by the fact that mothers high on integrative emotion regulation may maintain an open stance towards their children's perspective, without being overwhelmed by negative emotions themselves. Such

openness then allows mothers to stay more attuned to what their child really needs. Moreover, because mothers high in emotional integration are more at ease with their own emotions, they may have more psychological resources available to engage in greater empathizing and reflective functioning, which are all capacities that lead mothers to be less controlling (Dieleman et al. 2020; Luyten et al. 2017; Sharp and Fonagy 2008; Slade 2005).

Second, the results revealed that mothers were more controlling during the difficult task, compared to the easy one (H2). This result was corroborated by a set of supplementary analyses where we found that toddlers' observed negative affect and struggle, which were observed to be more elevated when toddlers solved the difficult task, predicted more observed maternal control. Also, the finding is in line with previous studies among elementary school children (Dumont et al. 2014; Pomerantz and Eaton 2001; Wuyts et al. 2017), suggesting that task difficulty indeed constitutes a situational antecedent of controlling parenting. Yet, significant variation in the strength of this relation occurred, suggesting that mothers differed in the extent to which they respond to the more challenging situation with a controlling response. This variation raised the possibility that between-person level variables could explain this heterogeneity and highlighted the relevance of examining situation \times person interaction effects. Finally, the results did not show a direct link between toddlers' overall negative affectivity and observed maternal control across tasks (H3). It remains possible, however, that toddlers' temperament interacted with either task difficulty or mothers' emotion regulation to predict mothers' usage of controlling practices.

Interplay between emotion regulation, task difficulty and negative affectivity

Out of all possible interactions between the predictors included in this study, one interaction reached statistical significance. Specifically, we observed a significant relation between toddlers' temperament and controlling parenting during the difficult task, but not during the easy one (H5). Possibly, mothers of a child high on temperamental negative affectivity anticipate that their child will not be able to handle the challenges of a difficult task. To prevent an outburst of frustration, they take over the task and provide pressuring instructions to get the task done. One way to verify this possibility is to run our main analyses again, but this time separating (rather than averaging) the six observational measures of maternal behaviors in order to examine the extent to which each maternal behavior is predicted by the interplaying role of task difficulty and child temperament. Conducting these analyses for discussion purposes revealed the exact same pattern of interaction effects as the one observed with our composite score of observed maternal control. These

findings suggest that mothers indeed take over the task to a greater extent and provide more pressuring instructions to children with high temperamental negative affectivity in the hard task, compared to the easy one (in addition to using less autonomy-supportive behaviors).³

Yet, exploratory analyses in which we replaced task difficulty by observational measures of toddlers' display of negative affectivity and struggle failed to replicate this result, thereby questioning the replicability of this interaction effect. In order to better understand these results, future research would benefit from also examining the role of mothers' perceptions of their toddlers' behaviors. Whereas we only considered the effect of situationally induced task difficulty and observed toddlers' behavior, mothers' perceptions of their toddlers' negative affect and struggles may play a more prominent role in mothers' use of control compared to the more objective indicators of difficulty and challenge. A related possibility is that maternal perceptions of difficulty and challenge mediate effects of the objective indicators on the use of controlling practices.

Somewhat unexpectedly, integrative emotion regulation did not buffer the impact of task difficulty or temperamental negative affectivity on observed maternal control (H4). It remains possible that it would do so in other settings or across time. Some studies indeed suggest that the protective role played by integrative emotion regulation becomes more pronounced with repeated exposures to a distressing situation (e.g., Roth et al. 2019; Weinstein and Hodgins 2009). More specifically, scholars have proposed that individuals adopting an integrative emotion regulation style, and hence taking a non-judgmental interest in the emotions that are elicited by a given new situation, could become *immunized* to the adverse emotional effects of similar situations in the future (rather than right away) (Roth et al. 2014).

Future directions

In line with the abovementioned immunization hypothesis, future research may address the question whether parents who adopt more integrative emotion regulation indeed not immediately refrain from using controlling practices, but nevertheless do so in later interactions involving a similar task. Parents high on emotional integration may indeed learn a lot from their emotions and responses during a first encounter with a novel challenging task, thereby leading them to respond more adequately during a following encounter. This hypothesis could be tested by administering the present study's tasks twice, with a given time interval

between both, hence allowing to examine whether mothers who score higher on integrative emotion regulation would show less controlling practices during the second exposition, compared to those who score lower.

Further, previous research has underscored parental self-efficacy as a resource for optimal parenting (Mejia et al. 2016). Because mothers high on emotional integration are more attuned to and at ease with their own emotions that occur during interactions with their children, they may experience more parental self-efficacy in such settings and, in turn, be less prompted to adopt a controlling approach. They may even be better at scaffolding the task and providing adequate help such that the struggling child is better able to deal with the encountered challenge.

Future studies could also examine the interplay between parental integrative emotion regulation and other potential antecedents of controlling parenting. For instance, studies could examine the buffering role of integrative emotion regulation in effects of different parental factors (e.g., parents' personality), child factors (e.g., children's behavioral problems) and environmental factors (e.g., residing in a poor-quality neighborhood or receiving inadequate social support) that increase risk for controlling parenting (Grolnick 2003). Such studies could also examine whether the relation between parents' integrative emotion regulation style and controlling practices applies in other domains of socialization than the guided learning domain (Grusec and Davidov 2010), such as the protection domain (where parents are required to respond to their child's appeals for help during episodes of distress; Grusec 2019) or the control domain (where parents need to respond to their children's rule-breaking behaviors; Mageau et al. 2018).

Finally, it would be important to replicate the present study with fathers to determine whether findings generalize across parental gender. A growing body of research also stresses the possibility of carry-over effects between parents, with characteristics of one parent affecting the behaviors of the other parent (see e.g., Brenning et al. 2017). As such, future research could use an Actor Partner Interdependence Model (APIM; Kenny et al. 2006) to estimate both actor-effects (e.g., effects of maternal emotion regulation on maternal parenting) as well as partner-effects (e.g., effects of maternal emotion regulation on paternal parenting).

Limitations

Although the present research has several strengths (including the use of multiple informants and the inclusion of various statistical controls) and may offer interesting avenues for future studies, there are some limitations that should be considered when interpreting and discussing the results. First, whereas task difficulty was manipulated, mothers' integrative emotion regulation style and toddlers' temperament was

³ More detailed information on the results with the six separated observational measures of maternal behaviors is available in the supplementary material online.

not. Consequently, it is difficult on the basis of the current results to establish directionality in the relation between controlling practices and these variables. Although maladaptive emotion regulation and perceived temperamental negative affectivity are expected to increase risk for controlling parenting (Armour et al. 2017; Brenning et al. 2020), parental control could also trigger reactance in children, thereby further eliciting parents' maladaptive emotion regulation and reinforcing parents' perception of the toddler's temperament (Kochanska et al. 1997). Future longitudinal research, which allows modelling cross-lagged effects after controlling for stability of the key constructs (i.e., emotional integration and controlling parenting), may provide insights into the direction of such potential effects.

Second, the level of attrition and relatively limited sample size has impeded statistical power to some extent, and may hence have played a role in our ability to find and reproduce existing interaction effects. Future research should invest even more in the recruitment and follow-up of participants. Third, future research would benefit from recruiting a more diversified body of participants. The current sample was rather selective and homogeneous, consisting predominantly of married and highly educated Caucasian participants. Future research, using a more heterogeneous sample, would allow us to examine whether results can be replicated in more vulnerable populations (e.g., single parent families).

Finally, the presentation order of tasks was not counterbalanced, such that the easy task was always completed prior to the difficult one. Consequently, it is difficult to determine whether the observed increase of controlling practices between the easy and the difficult task was actually due to an increase of task difficulty, or merely to methodological confounds (e.g., a fatigue effect stemming from toddlers or mothers). However, the short duration of each task (i.e., 2 min per task) as well as the inclusion of an experimental manipulation check add a certain amount of confidence in the idea that the results may be, at least partially, due to the increase of difficulty in the tasks.

Conclusion

The way in which parents interact with their children is an important determinant of children's successful socialization and general development. When parents take over tasks (reflecting a controlling parental approach), children have less opportunity to learn and may even develop feelings of incompetence or insecurity. In contrast, when parents follow their children's pace and ask whether help is needed (reflecting an autonomy-supportive approach), children are more likely to learn and to feel confident in their ability to deal with challenges. By identifying (the interplay of) various factors likely to play a role in parents' suboptimal

parenting strategies, research can contribute to the development of intervention programs that may help parents foster their children's development. By examining the extent to which integrative emotion regulation plays a protective role in applying controlling practices and by examining the interaction with situational and child-related factors, the present study made a significant step in this direction. More specifically, the current findings suggest that the effectiveness of parenting interventions could be enhanced by teaching parents about the importance of integrative emotion regulation during parent–child interactions. Future research may further elucidate the protective role of parents' emotion regulation style by examining its relevance in other settings, among fathers, across different domains of socialization, and with alternative methodologies.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

- Armour, J. A., Joussemet, M., Kurdi, V., Tessier, J., Boivin, M., & Tremblay, R. E. (2017). How toddlers' irritability and fearfulness relate to parenting: A longitudinal study conducted among Quebec families. *Infant and Child Development*. <https://doi.org/10.1002/icd.2062>.
- Aunola, K., Viljaranta, J., & Tolvanen, A. (2017). Does daily distress make parents prone to using psychologically controlling parenting. *International Journal of Behavioral Development*, *41*, 405–414.
- Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, *67*, 3296–3319.
- Barber, B. K., Stolz, H. E., Olsen, J. A., & Maughan, S. L. (2005). Parental support, psychological control, and behavioral control: Assessing relevance across time, culture, and method. *Monographs of the Society for Research in Child Development*, *70*(4), 1–151.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*, 83–96. <https://doi.org/10.2307/1129836>.
- Benita, M., Benish-Weisman, M., Matos, L., & Torres, C. (2019). Integrative and suppressive emotion regulation differentially predict well-being through basic need satisfaction and frustration: A test of three countries. *Motivation and Emotion*. <https://doi.org/10.1007/s11031-019-09781-x>.
- Benita, M., Levkovitz, T., & Roth, G. (2017). Integrative emotion regulation predicts adolescents' prosocial behavior through the mediation of empathy. *Learning and Instruction*, *50*, 14–20.
- Bernier, A., Carlson, S. M., Deschênes, M., & Matte-Gagné, C. (2012). Social factors in the development of early executive functioning: A closer look at the caregiving environment. *Developmental Science*, *15*, 12–24. <https://doi.org/10.1111/j.1467-7687.2011.01093.x>.

- Bernier, A., Carlson, S. M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development, 81*, 326–339. <https://doi.org/10.1111/j.1467-8624.2009.01397.x>.
- Bernier, A., Matte-Gagné, C., Bélanger, M. E., & Whipple, N. (2014). Taking stock of two decades of attachment transmission gap: Broadening the assessment of maternal behavior. *Child Development, 85*, 1852–1865.
- Brenning, K., Soenens, B., Van Petegem, S., & Vansteenkiste, M. (2015). Perceived maternal autonomy support and early adolescent emotion regulation: A longitudinal study. *Social Development, 24*, 561–578.
- Brenning, K., Soenens, B., Van Petegem, S., & Kins, E. (2017). Searching for the roots of overprotective parenting in emerging adulthood: Investigating the link with parental attachment representations using an actor partner interdependence model. *Journal of Child and Family Studies, 26*, 2299–2310. <https://doi.org/10.1007/s10826-017-0744-2>.
- Brenning, K., Soenens, B., Van der Kaap-Deeder, J., Dieleman, L., & Vansteenkiste, M. (2020). Psychologically controlling parenting during toddlerhood: The role of mothers' perceived parenting history and emotion regulation style. *Journal of Child and Family Studies*. <https://doi.org/10.1007/s10826-020-01719-z>.
- Carson, J. L., & Parke, R. D. (1996). Reciprocal negative affect in parent-child interactions and children's peer competency. *Child Development, 67*, 2217–2226. <https://doi.org/10.2307/1131619>.
- Cattell, R. B. (1966). The screen test for the number of factors. *Multivariate Behavioral Research, 1*(2), 245–276. https://doi.org/10.1207/s15327906mbr0102_10.
- Chambers, R., Gullone, E., & Allen, N. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review, 29*, 560–572.
- Côté-Lecaldare, M., Joussemet, M., & Dufour, S. (2016). How to support toddlers' autonomy: A qualitative study with child care educators. *Early Education and Development, 27*, 822–840.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227–268. https://doi.org/10.1207/s15327965plii1104_01.
- Deci, E. L., Ryan, R. M., Schultz, P. P., & Niemiec, C. P. (2015). Being aware and functioning fully: Mindfulness and interest-taking within self-determination theory. In K. W. Brown, J. D. Creswell, & R. M. Ryan (Eds.), *Handbook of mindfulness: Theory, research, and practice* (pp. 112–129). New York: Guilford Press.
- Dieleman, L., Soenens, B., De Pauw, S. S. W., Prinzie, P., Vansteenkiste, M., & Luyten, P. (2020). The role of parental reflective functioning in the relation between parents' self-critical perfectionism and psychologically controlling parenting towards adolescents. *Parenting: Science and Practice, 20*, 1–27.
- Dix, T. (1991). The affective organization of parenting: Adaptive and maladaptive processes. *Psychological Bulletin, 110*, 3–25.
- Dumont, H., Trautwein, U., Nagy, G., & Nagengast, B. (2014). Quality of parental homework involvement: Predictors and reciprocal relations with academic functioning in the reading domain. *Journal of Educational Psychology, 106*, 144–161. <https://doi.org/10.1037/a0034100>.
- Fabes, R. A., Leonard, S. A., Kupanoff, K., & Martin, C. L. (2001). Parental coping with children's negative emotions: Relations with children's emotional and social responding. *Child Development, 72*, 907–920. <https://doi.org/10.1111/1467-8624.00323>.
- Grolnick, W. S. (2003). *The psychology of psychological control: How well-meant parenting backfires*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Grolnick, W. S. (2009). The role of parents in facilitating autonomous self-regulation for education. *Theory and Research in Education, 7*, 164–173. <https://doi.org/10.1177/1477878509104321>.
- Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school-achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*, 508–517. <https://doi.org/10.1037/0022-0663.83.4.508>.
- Grusec, J. E. (2019). *Principles of effective parenting: How socialization works*. New York: Guilford.
- Grusec, J. E., & Davidov, M. (2010). Integrating different perspectives on socialization theory and research: A domain-specific approach. *Child Development, 81*, 687–709. <https://doi.org/10.1111/j.1467-8624.2010.01426.x>.
- Hindman, A. H., & Morrison, F. J. (2012). Differential contributions of three parenting dimensions to preschool literacy and social skills in a middle-income sample. *Merrill-Palmer Quarterly, 58*, 191–223. <https://doi.org/10.1353/mpq.2012.0012>.
- Joussemet, M., Mageau, G. A., & Koestner, R. (2014). Promoting optimal parenting and children's mental health: A preliminary evaluation of the how-to parenting program. *Journal of Child and Family Studies, 23*, 949–964. <https://doi.org/10.1007/s10826-013-9751-0>.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York: The Guilford Press.
- Kochanska, G., Clark, L. A., & Goldman, M. S. (1997). Implications of mothers' personality for their parenting and their young children's developmental outcomes. *Journal of Personality, 65*, 387–420.
- Laird, R. D. (2011). Correlates and antecedents of parental psychological control in early adolescence. *Parenting Science and Practice, 11*, 72–86. <https://doi.org/10.1080/15295192.2011.539510>.
- Landry, R., Whipple, N., Mageau, G., Joussemet, M., Koestner, R., DiDio, L., et al. (2008). Trust in organismic development, autonomy support, and adaptation among mothers and their children. *Motivation and Emotion, 32*, 173–188. <https://doi.org/10.1007/s11031-008-9092-2>.
- Laukkanen, J., Ojansuu, U., Tolvanen, A., Alatupa, S., & Aunola, K. (2014). Child's difficult temperament and mothers' parenting styles. *Journal of Child and Family Studies, 23*, 312–323.
- Laurin, J. C., & Joussemet, M. (2017). Parental autonomy-supportive practices and toddlers' rule internalization: A prospective observational study. *Motivation and Emotion, 41*, 562–575.
- Laurin, J. C., Joussemet, M., Tremblay, R. E., & Boivin, M. (2015). Early forms of controlling parenting and the development of childhood anxiety. *Journal of Child and Family Studies, 24*, 3279–3292.
- LeDoux, J. E. (1995). Emotion: Clues from the brain. *Annual Review of Psychology, 46*, 209–235.
- Luyten, P., Nijssens, L., Fonagy, P., & Mayes, L. C. (2017). Parental reflective functioning: Theory, research, and clinical applications. *The Psychoanalytic Study of the Child, 70*, 174–199.
- Mageau, G. A., Lessard, J., Carpentier, J., Robichaud, J. M., Joussemet, M., & Koestner, R. (2018). Effectiveness and acceptability beliefs regarding logical consequences and mild punishments. *Journal of Applied Developmental Psychology, 54*, 12–22. <https://doi.org/10.1016/j.appdev.2017.11.001>.
- Mageau, G. A., Ranger, F., Joussemet, M., Koestner, R., Moreau, E., & Forest, J. (2015). Construction and validation of the perceived parental autonomy support scale (P-PASS). *Canadian Journal of Behavioural Science, 47*, 251–262. <https://doi.org/10.1037/a0039325>.
- Mageau, G. A., Sherman, A., Grusec, J. E., Koestner, R., & Bureau, J. S. (2017). Different ways of knowing a child and their relations to mother-reported autonomy support. *Social Development, 26*, 630–644.
- Matte-Gagné, C., & Bernier, A. (2011). Prospective relations between maternal autonomy support and child executive functioning: Investigating the mediating role of child language ability. *Journal of Experimental Child Psychology, 110*, 611–625. <https://doi.org/10.1016/j.jecp.2011.06.006>.

- Mejia, A., Ulph, F., & Calam, R. (2016). Exploration of mechanisms behind changes after participation in a parenting intervention: A qualitative study in a low-resource setting. *American Journal of Community Psychology*, 57(1–2), 181–189. <https://doi.org/10.1002/ajcp.12020>.
- Moroni, S., Dumont, H., Trautwein, U., Niggli, A., & Baeriswyl, F. (2015). The need to distinguish between quantity and quality in research on parental involvement: The example of parental help with homework. *The Journal of Educational Research*, 108, 417–431. <https://doi.org/10.1080/00220671.2014.901283>.
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (Vol. 8). Los Angeles, CA: Muthén & Muthén.
- Neitzel, C., & Stright, A. D. (2004). Parenting behaviours during child problem solving: The roles of child temperament, mother education and personality, and the problem-solving context. *International Journal of Behavioral Development*, 28, 166–179. <https://doi.org/10.1080/01650250344000370>.
- Pomerantz, E. M., & Eaton, M. M. (2001). Maternal intrusive support in the academic context: Transactional socialization processes. *Developmental Psychology*, 37, 174–186. <https://doi.org/10.1037/0012-1649.37.2.174>.
- Pomerantz, E. M., & Grolnick, W. S. (2017). The role of parenting in children's motivation and competence: What underlies facilitative parenting? In A. J. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (pp. 566–585). New York: Guilford Publications.
- Portney, L. G., & Watkins, M. P. (2009). *Foundations of Clinical Research: Applications to practice* (3rd ed., p. 82). London: Pearson Education.
- Putnam, S. P., Gartstein, M. A., & Rothbart, M. K. (2006). Measurement of fine-grained aspects of toddler temperament: The early childhood behavior questionnaire. *Infant Behavior and Development*, 29, 386–401. <https://doi.org/10.1016/j.infbeh.2006.01.004>.
- Putnam, S. P., Sanson, A. V., & Rothbart, M. K. (2002). Child temperament and parenting. In M. Bornstein (Ed.), *Handbook of parenting* (2nd ed., Vol. 1, pp. 255–277). Mahwah, NJ: Lawrence Erlbaum Associates Inc.
- Robichaud, J.-M., Roy, M., Ranger, F., & Mageau, G. A. (2020). The impact of environmental threats on controlling parenting and children's motivation. *Journal of Family Psychology*. <https://doi.org/10.1037/fam0000657>.
- Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology*, 45, 1119–1142. <https://doi.org/10.1037/a0015272>.
- Roth, G., Benita, M., Amrani, C., Shachar, B. H., Asoulin, H., Moed, A., et al. (2014). Integration of negative emotional experience versus suppression: Addressing the question of adaptive functioning. *Emotion*, 14, 908–919. <https://doi.org/10.1037/a0037051>.
- Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. *Development and Psychopathology*. <https://doi.org/10.1017/S0954579419000403>.
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In W. Damon, R. M. Lerner, & N. Eisenberg (Eds.), *Handbook of child psychology: Vol. 3: Social, emotional, and personality development* (pp. 99–166). New-York: Wiley.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford Publishing.
- Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychopathology: Vol. 1. Theory and methods* (2nd ed., pp. 295–849). New York: Wiley.
- Schultz, P. P., & Ryan, R. M. (2015). The "why," "what," and "how" of healthy self-regulation: Mindfulness and well-being from a self-determination theory perspective. In B. D. Ostafin, M. D. Robinson, & B. P. Meier (Eds.), *Handbook of mindfulness and self-regulation* (pp. 81–94). New York: Springer.
- Shahar, B. H., Kalman-Halevi, M., & Roth, G. (2019). Emotion regulation and intimacy quality: The consequences of emotional integration, emotional distancing, and suppression. *Journal of Social and Personal Relationships*, 36, 3343–3361.
- Sharp, C., & Fonagy, P. (2008). The parent's capacity to treat the child as a psychological agent: Constructs, measures, and implications for developmental psychopathology. *Social Development*, 17, 737–754.
- Slade, A. (2005). Parental reflective functioning: An introduction. *Attachment & Human Development*, 7, 269–281. <https://doi.org/10.1080/14616730500245906>.
- Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, 34(6), 589–604. <https://doi.org/10.1007/s10964-005-8948-y>.
- Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, 30, 74–99.
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston: Pearson Education Inc.
- Vansteenkiste, M., Niemiec, C. P., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: A historical overview, emerging trends, and future directions. In T. C. Urdan & S. A. Karabenick (Eds.), *Advances in motivation and achievement, v. 16A The decade ahead: Theoretical perspectives on motivation and achievement* (pp. 105–165). London: Emerald Group.
- Verhoeven, M., van Baar, A. L., & Dekovic, M. (2019). Parenting toddlers. In M. H. Bornstein (Ed.), *Handbook of parenting (3rd edition). Vol.: Parenting across the lifespan* (pp. 56–80). New York: Routledge.
- Walker, A. K., & MacPhee, D. (2011). How home gets to school: Parental control strategies predict children's school readiness. *Early Childhood Research Quarterly*, 26, 355–364. <https://doi.org/10.1016/j.ecresq.2011.02.001>.
- Walling, B. R., Mills, R. S. L., & Freeman, W. S. (2007). Parenting cognitions associated with the use of psychological control. *Journal of Child and Family Studies*, 16, 642–659. <https://doi.org/10.1007/s10826-006-9113-2>.
- Weinstein, N., & Hodgins, H. S. (2009). The moderating role of autonomy and control on the benefits of written emotion expression. *Personality and Social Psychology Bulletin*, 35, 351–364.
- Weinstein, N., Vansteenkiste, M., & Paulmann, S. (2019). Listen to your mother: Motivating tones of voice predict adolescents' reactions to mothers. *Developmental Psychology*, 55, 2534–2546.
- Whipple, N., Bernier, A., & Mageau, G. A. (2011). Broadening the study of infant security of attachment: Maternal autonomy-support in the context of infant exploration. *Social Development*, 20, 17–32. <https://doi.org/10.1111/j.1467-9507.2010.00574.x>.
- Wuyts, D., Vansteenkiste, M., Mabbe, E., & Soenens, B. (2017). Effects of social pressure and child failure on parents' use of control: An experimental investigation. *Contemporary Educational Psychology*, 51, 378–390.

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