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# From Daily Need Experiences to Autonomy-Supportive and Psychologically Controlling Parenting via Psychological Availability and Stress

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## SYNOPSIS

**Objective.** This study sought to identify processes linking daily parental need experiences to daily parenting, focusing on the intervening role of parental psychological availability and stress. **Design.** In total, 206 mothers (*M*<sub>age</sub> = 40.33 years) and 206 fathers (*M*<sub>age</sub> = 42.36 years) and their elementary school child (*M*<sub>age</sub> = 9.93 years; 46.6% female) participated in a 7-day multi-informant diary study. **Results.** Parents' daily need satisfaction was related to more daily psychological availability and lower daily stress in parent-child interactions, but parental need frustration related to less daily psychological availability and more stress. Psychological availability and stress were related to more daily parent-reported and child-perceived autonomy support and psychological control, respectively. However, parental need-based experiences were related to children's reported parenting only indirectly (i.e., through psychological availability and stress). These associations were obtained at the within-day level but not in models predicting parenting the next day. **Conclusion.** Parental need-based experiences are a critical resource for parenting.

## INTRODUCTION

The quality of parenting differs between parents, and there is increasing evidence that parental behavior also varies across short periods of time and even on a day-to-day basis (Repetti, Reynolds, & Sears, 2015). When it comes to parenting, one day is not the next. This is true for several features of parenting that are important for children's well-being, including autonomy-supportive (Van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017) and psychologically controlling parenting practices (Aunola, Tolvanen, Viljaranta, & Nurmi, 2013). Relatively little is known, however, about the sources of these daily variations. Towards this end, a number of studies grounded in Self-Determination Theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017) have demonstrated the role of parental satisfaction and frustration of the psychological needs for autonomy (i.e., feeling volitional), competence (i.e., feeling effective), and relatedness (i.e., feeling connected) in provided autonomy support and psychological control at the levels of between-parent differences (Van der Kaap-Deeder

et al., 2015) and daily variation in parental behavior (Mabbe, Soenens, Vansteenkiste, Van der Kaap-Deeder, & Mouratidis, 2018). However, the mechanisms of these relations are not clearly understood. Therefore, we aimed to identify processes linking parents' daily need experiences to parents' engagement in autonomy-supportive and psychologically controlling practices. Specifically, we focused on the intervening role of parents' psychological availability and stress as experienced within the parent-child relationship.

### Parental Autonomy Support and Psychological Control

Within SDT, a broad theory on human motivation and socialization, autonomy support is said to be key to children's optimal psychological development (Ryan & Deci, 2017). Autonomy support is characterized by the promotion of children's volitional functioning and self-endorsement (e.g., Grolnick, Ryan, & Deci, 1991; Ryan, Deci, & Vansteenkiste, 2016; Soenens et al., 2007). Because autonomy-supportive parents adopt a basic attitude of curiosity, flexibility, and openness (Vansteenkiste & Soenens, 2015), they can more easily take children's frame of reference and stimulate their initiative, thereby taking into account children's pace of development. Autonomy-supportive parents also provide a meaningful rationale when children's choice over their behavior is constrained. Note that within SDT (Ryan & Lynch, 1989; Van Petegem, Beyers, Vansteenkiste, & Soenens, 2012), autonomy support is not equated with the promotion of independence. Parents can even support volitional functioning (i.e., being autonomy-supportive as defined in Self-Determination Theory) in situations of children's dependence. For instance, when introducing a rule (which limits a child's independence) parents can provide a reasonable rationale for the rule, thereby increasing the odds that the child internalizes the rule and fully endorses it. Parenting practices focused on the child's independent and volitional functioning are distinct from one another, with only parents' promotion of volitional functioning being uniquely related to the child's adjustment (Soenens et al., 2007). Psychological control involves parental pressure to make children think, feel, and act in specific ways (Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010). For instance, psychologically controlling parents rely on intrusive techniques, such as guilt induction (Chen, Soenens, Vansteenkiste, Van Petegem, & Beyers, 2016) and love withdrawal (Assor, Roth, & Deci, 2004), to impose their own viewpoint and to enforce parental limits.

Recent theorizing (Vansteenkiste & Ryan, 2013) and empirical studies (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011) suggest that autonomy support and psychological control represent fairly distinct (rather than completely opposite) constructs. That is, a lack of autonomy support does not necessarily imply the presence of psychological control. To illustrate, a parent who provides only a few choices (i.e., low autonomy support) does not necessarily pressure a child to act in a certain way (i.e., high psychological control). Conversely, an absence of psychological control cannot be equated with the presence of autonomy support. For example, a parent who refrains from using love withdrawal may not necessarily encourage a child to take initiative. This distinction between autonomy support and psychological control is important because there is increasing evidence for differential associations between these parenting variables and developmental outcomes. Specifically, a distinction can be made between a "bright" pathway (with autonomy support relating primarily to adaptive outcomes) and a "dark"

pathway (with psychological control relating primarily to maladaptive outcomes) of socialization and development (Costa, Cuzzocrea, Gugliandolo, & Larcan, 2016; Vansteenkiste & Ryan, 2013).

Multiple studies, most conducted with elementary school children and adolescents, have now demonstrated the beneficial effects of parental autonomy support (e.g., Ferguson, Kasser, & Jahng, 2011) and the detrimental effects of psychological control (e.g., Pettit, Laird, Dodge, Bates, & Criss, 2001) on children's well-being and adjustment. Among elementary school-aged children, parental autonomy support relates to beneficial outcomes, including school performance (Grolnick et al., 1991), interest in mathematics (Aunola et al., 2013), and autonomous motivation for engaging in physical activity (Vierling, Standage, & Treasure, 2007). In contrast, parental psychological control has been linked to maladaptive developmental outcomes such as ill-being (i.e., negative affect; Barber, 1996; Van der Kaap-Deeder et al., 2017) and internalizing and externalizing problems (Barber & Xia, 2013; Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016).

Research on socialization increasingly recognizes that parenting is a dynamic process characterized by situational and short-term variability (Dix, 1991; Holden & Miller, 1999; Repetti et al., 2015). Indeed, about 50% of the variance in autonomy support and psychological control reflects daily fluctuations in parenting practices (e.g., Mabbe et al., 2018). Such daily variations in parenting relate to children's psychological functioning on a day-to-day basis. For instance, Aunola et al. (2013) showed that daily variations in parental psychological control relate to daily fluctuations in elementary school children's negative affect (based on parent-reports), and Van der Kaap-Deeder et al. (2017) showed that daily maternal autonomy support and psychological control relate to children's daily well-being and ill-being, respectively (based on child-reports).

### **Parents' Psychological Need Satisfaction and Need Frustration**

Considering the effects of the daily parental provision of autonomy support and psychological control on children's daily psychological functioning, research needs to shed light on why parents manage to be more or less attuned to their child's perspective on some days compared to other days. To explain sources of variation in daily parental behavior, it is important to look into parental experiences and processes that fluctuate dynamically on a day-to-day basis. One set of parental experiences meeting this criterion involves parents' experiences relevant to their own basic psychological needs for autonomy, competence, and relatedness. Autonomy denotes the experience of a sense of psychological freedom and volition. Competence refers to feeling effective in daily activities. Relatedness encompasses the experience of connectedness with important others. Need-frustrating experiences refer to feelings of pressure (i.e., autonomy frustration), feelings of failure (i.e., competence frustration), and experienced exclusion and social isolation (i.e., relatedness frustration). According to SDT, these three needs are dynamically and reciprocally intertwined with the satisfaction or frustration of one of the needs often simultaneously involving, respectively, the satisfaction or frustration of the other two needs and vice versa.

Within SDT it is claimed that satisfaction of these three basic psychological needs is crucial to individuals' well-being and the quality of their interpersonal relationships

(Deci & Ryan, 2000), whereas the frustration of these psychological needs relates to ill-being and impaired social functioning (e.g., hostility and defensiveness). Note that, similar to the distinction between autonomy support and psychological control, need satisfaction and need frustration are regarded and have been found to be distinct (rather than perfectly opposite) constructs (Vansteenkiste & Ryan, 2013). To illustrate, experiencing a low level of connection with another person (i.e., low relatedness satisfaction) does not necessarily imply feeling excluded and rejected by this other person (i.e., high relatedness frustration).

A vast number of studies have documented the beneficial effects of need satisfaction (e.g., on well-being and engagement) and the detrimental effects of the frustration of these needs (e.g., in terms of ill-being and psychopathology) (see for an overview Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013). Such findings were documented at both between-person and within-person levels (e.g., Ryan, Bernstein, & Brown, 2010; Verstuyf, Vansteenkiste, Soenens, Boone, & Mouratidis, 2013), using both self-reported and objective markers of (mal)adjustment (e.g., Bartholomew et al., 2011), and across domains (e.g., at school, at home and with friends; Milyavskaya et al., 2009) and diverse cultures (Chen et al., 2015).

Need-based experiences predict individuals' personal functioning and their interpersonal functioning. Whereas need satisfaction relates to a better relationship quality, need frustration compromises relationship functioning (e.g., Costa, Ntoumanis, & Bartholomew, 2015). Therefore, the overall argument developed within SDT is that socializing agents' need-satisfying experiences allow them to adopt a more autonomy-supportive approach, whereas need-frustrating experiences elicit a more pressuring way of interacting. Specifically, experiences of need satisfaction are expected to foster a more open and receptive mode of functioning (Hodgins & Knee, 2002), which is deemed crucial for taking the child's perspective. In contrast, experiences of need frustration may increase parental concerns with their own (rather than their child's) experiences. Such preoccupation with personal concerns can manifest as a tunnel vision where parents bypass the child's perspective and impose their own agenda.

Some evidence exists for this proposed link between the parental needs for autonomy, competence, and relatedness, and provided autonomy support or psychological control. At the between-parent level, parental need satisfaction relates to less controlling parenting (de Haan, Soenens, Dekovic, & Prinzie, 2013) and to more autonomy-supportive parenting (Van der Kaap-Deeder et al., 2015). However, only one study to date has examined these associations at the daily level. Mabbe et al. (2018) showed that daily variations in parental need satisfaction and need frustration relate to daily variations in, respectively, parents' autonomy support and psychological control towards their adolescent. An important limitation of this study was exclusive reliance on parent reports of both need-based experiences and parenting, which may have caused the observed associations to be artificially inflated through shared method variance. To address this issue, in the present study we relied on a multi-informant approach by asking parents to report on their need experiences and both parents and children to rate and report on their perceived daily parenting. The inclusion of child reports is favorable because it is ultimately children's perception and interpretation of parental behavior (rather than parents' point of view) that will relate to their well-being (Sessa, Avenevoli, Steinberg, & Morris, 2001; Soenens, Vansteenkiste, & Van Petegem, 2015).

### Possible Mechanisms of the Relation between Parents' Needs and Parenting

An important next step in research on the sources of daily variation in parental behavior is to gain a deeper understanding of the mechanisms underlying this daily variation. Here, we aimed to build on the limited available research by examining possible mechanisms of the hypothesized relation between daily need-based experiences and daily parenting. Specifically, we considered two possible candidates as intervening variables: parents' daily psychological availability and stress as experienced in the parent-child relationship. Compared to need-based experiences, we considered these variables to be more *proximal* predictors of provided autonomy support and psychological control, thus potentially explaining why parents who experience need satisfaction (or need frustration) are more likely to be autonomy supportive (or controlling) towards their children.

Psychological availability refers to "the ability and motivation to direct psychological resources toward the child" (Danner-Vlaardingerbroek, Kluwer, Van Steenbergen, & Van der Lippe, 2013b, p. 742). Psychologically available parents are physically present and emotionally and cognitively available to their child. To be psychologically available to one's child requires energy from parents. Parents' psychological needs may represent an important resource for such energy. Previous studies have indeed shown the vitalizing and the energy-depleting effects of, respectively, a high level of need satisfaction and a high level of need frustration (Campbell et al., 2018; see for an overview Ryan & Deci, 2008). We expected that such increased energy resulting from need satisfaction would relate to a higher level of parental psychological availability. In contrast, because of its energy-depleting effect parental need frustration was expected to relate negatively to psychological availability. In turn, parental psychological availability is expected to relate positively to parents' provided autonomy support and negatively to parents' use of psychological control.

Indirect evidence for this hypothesis comes from a study by Danner-Vlaardingerbroek et al. (2013b) who showed that work-related positive affect and energy related to higher levels of paternal and maternal psychological availability which, in turn, related to more positive parent-child interactions. In contrast, work-related negative affect, exhaustion, and rumination related to less psychological availability and, in turn, to more negative parent-child interactions (Danner-Vlaardingerbroek et al., 2013b). Research with respect to mindful parenting is also relevant because, much like psychological availability, mindfulness involves being attentive to and aware of experiences in the current moment (Duncan, Coatsworth, & Greenberg, 2009). A growing number of studies indicates the positive effects of mindful parenting for both parents' and children's well-being as well as the parent-child relationship (Bogels, Hellemans, van Deursen, Romer, & van der Meulen, 2014).

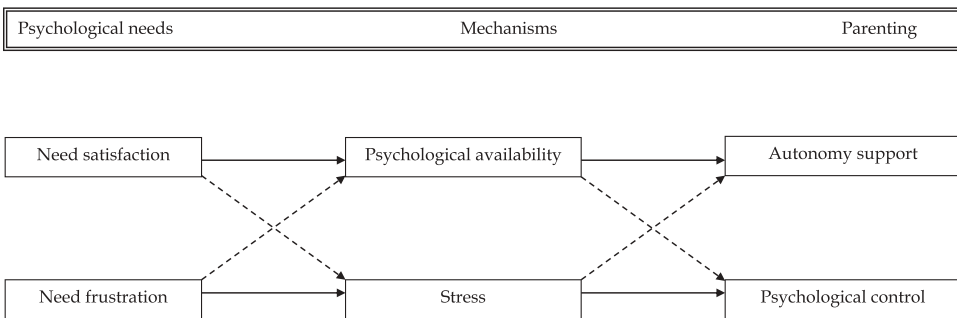
Another likely mechanism in the relation between daily need-based experiences and daily parenting, apart from psychological availability, is parental stress. Stress can be defined as "a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and as endangering his or her well-being" (Folkman, 1984, p. 840). We propose that higher levels of need frustration and lower levels of need satisfaction can invoke feelings of parental stress, which hinders parents' capacity to be autonomy-supportive and which engenders an increased likelihood of engaging in psychologically controlling practices. Whereas need satisfaction reduces individuals' levels of stress, need frustration relates to increases in stress (e.g., Campbell et al., 2017; Reeve & Tseng, 2011; Weinstein & Ryan, 2011). Accordingly, it is expected that parents who experience low need satisfaction or high need frustration (i.e., parents who feel

pressured, like a failure, and excluded by others in their daily activities) experience more symptoms of stress such as tension and over-arousal. Due to these symptoms of stress parents are likely to become more preoccupied with their own problems, resulting in a more self-centered parental approach and a tendency to impose their own standards and expectations in a pressuring fashion.

Abundant research, much of which was conducted among parents of preschool children (Guajardo, Snyder, & Petersen, 2009; Prinzie, Onghena, & Hellinckx, 2007) but some of which also involved parents of adolescents (Conger, Patterson, & Ge, 1995), has demonstrated effects of parental stress on dysfunctional parenting practices (e.g., over-reactivity and power-assertive methods). However, research on the role of stress in autonomy-supportive and psychologically controlling parenting is scarcer (Grolnick, Weiss, McKenzie, & Wrightman, 1996; Gurland & Grolnick, 2005). Additionally, although parental stress is involved in parents' engagement in more controlling practices, this association has not been systematically addressed in diary studies. Aunola, Viljaranta, and Tolvanen (2016) provided indirect evidence for this association between parental stress and controlling parenting at a day-to-day basis as they reported that daily fluctuations in parents' general negative emotions were positively related to parents' daily displays of psychological control.

**The Present Study**

The overall aim of this study was to investigate the postulated mechanisms behind day-to-day relations between parents' need satisfaction and frustration on the one hand and autonomy-supportive or psychologically controlling parenting on the other hand. The hypothesized integrated model is shown in Figure 1. This model was tested among parents of elementary school children. In accordance with the assumption of bright and dark socialization pathways (Vansteenkiste & Ryan, 2013), we hypothesized that, whereas need satisfaction would be especially related to increases in autonomy support via increased psychological availability, need frustration would mostly relate to psychological control through enhanced stress. We also considered possible cross-paths from need satisfaction to stress, and need frustration to psychological availability, but hypothesized these cross-paths to be less pronounced.



**FIGURE 1**

The hypothesized model based on self-determination theory.

Note. The straight lines represent positive relations, while the dotted lines represent negative relations.

In an explorative fashion, we also investigated the possible moderating role of the dyad's gender. Within research on family dynamics, there is an increasing interest in the role of family members' gender (e.g., Biblarz & Stacey, 2010). Although previous research has indicated that mothers and fathers differ in their mean level of autonomy support and psychological control (e.g., Ratelle, Duchesne, & Guay, 2017), there has been less research on the moderating role of parents' gender in mechanisms relating to parenting, such as parents' need-based experiences, psychological availability and stress. Similarly, research on (the mechanisms of) parenting has not often focused on the possible moderating role of the child's gender. To shed light on the role of the dyad's gender, we, therefore, explored the possible moderating roles of parent and child gender in our main models.

## METHOD

### Participants and Procedures

Participants were 206 Belgian mothers (*M*<sub>age</sub> = 40.33 years, *SD* = 4.37, range 27–52), fathers (*M*<sub>age</sub> = 42.36 years, *SD* = 5.30, range 29–67), and their elementary school child (46.6% female, *M*<sub>age</sub> = 9.93 years, *SD* = 0.94, range 8–12). Regarding educational level, 18.5% of the mothers and 28.5% of the fathers completed secondary school, whereas 81.6% of the mothers and 71.4% of the fathers followed higher education. In most families there were two (48.5%) or three (33.0%) children. Additionally, parents were either married (79.9%) or living together (without being married) (20.1%).

Families were recruited as part of an undergraduate course in developmental psychology. In exchange for course credits, students were asked to invite two families (who were not close relatives of the student) who had at least one child in elementary school between the age of 8 and 12. If a family had more children between the ages of 8 and 12, students were asked to select the oldest child within the age category. Students were trained by the first author to approach potentially interested families (of which the mother, father, and child were willing to participate) and to collect the data in a 1-hour information session. We opted for students as main recruiters because we wanted to collect a large sample of families in which both parents and a child were willing and motivated to keep a diary. To recruit these families and to keep them motivated required a personal approach. During a 1-hour home visit, parents and children filled out questionnaires (which were not used in the current study, but which were part of a larger study on parent-child interactions), and students explained how to fill out the diary booklet. Parents were asked to answer items assessing their own psychological functioning each day (i.e., need satisfaction, need frustration, parental psychological availability, and parental stress) and their parenting behaviors (i.e., autonomy support and psychological control), children filled out questionnaires assessing daily parent-provided autonomy support and psychological control. Mothers, fathers, and children were informed that there were no right or wrong answers, that their answers would be treated in a confidential way, and that they could leave an item unanswered if they were unsure. The diary booklet itself also contained detailed instructions. Participants were instructed to fill out the diary questionnaires each day in the evening for 7 consecutive days, noting the date and time of each assessment (if the child was unsure about this particular information, he/she



could ask help from the parent), and they were also instructed to check for missing answers each day. Additionally, participants were sent a daily reminder to fill out the questionnaires via text message or email (only if approved by the parents) so as to avoid missing cases. Participation was voluntary, and families did not obtain any reward. Mothers and fathers gave written consent on behalf of their child and themselves. Children also gave written consent for their participation. Data were treated confidentially. The research was conducted according to the ethical rules presented in the General Ethical Protocol of the Faculty of Psychology and Educational Sciences of Ghent University.

## Measures

All items were answered on a Likert scale ranging from 1 (*Not at all true*) to 5 (*Completely true*), unless indicated otherwise. Reliabilities were calculated per day, and the range of reliabilities across days is reported for each of the study variables.

**Psychological Need Satisfaction and Need Frustration.** Mothers' and fathers' daily experienced need satisfaction and need frustration were each assessed with 6 items (2 items per need) from the Basic Psychological Need Satisfaction and Need Frustration scale (BPNSNF; Chen et al., 2015). This instrument has been found to be reliable across studies and cultures (e.g., Chen et al., 2015; Cordeiro, Paixão, Lens, Lacante, & Luyckx, 2016). These studies have also shown that scales for need satisfaction and need frustration are related to, yet distinct from, measures of self-worth (Sheldon, Elliot, Kim, & Kasser, 2001), well-being (e.g., Baard, Deci, & Ryan, 2004), and ill-being (Campbell, Boone, Vansteenkiste, & Soenens, 2018). To avoid overburdening parents, we chose to administer a 12-item version of the BPNSNF scale. Additionally, items were slightly adapted to be suitable for diary assessment. This abbreviated version of the BPNSNF has been used successfully in diary research before (Mabbe et al., 2018). Example items are: "Today, I felt a sense of choice and freedom in the things I undertook." (autonomy satisfaction), "Today, I felt forced to do many things I wouldn't choose to do." (autonomy frustration), "Today, I felt confident that I could do things well." (competence satisfaction), "Today, I felt insecure about my abilities." (competence frustration), "Today, I felt connected with people who care for me, and for whom I care." (relatedness satisfaction), and "Today, I felt excluded from the group I want to belong to." (relatedness frustration). These scales were reliable across parents and days (mothers' need satisfaction:  $\alpha$  range = .77 - .85; fathers' need satisfaction:  $\alpha$  range = .72 - .86; mothers' need frustration:  $\alpha$  range = .77 - .81; fathers' need frustration:  $\alpha$  range = .75 - .85).

**Parental Psychological Availability.** The extent to which parents felt they were psychologically available for their child was assessed daily with three items taken from the 8-item parent-version of the Daily Psychological Availability Scale (Danner-Vlaardingerbroek, Kluwer, Van Steenbergen, & Van der Lippe, 2013a, b). This measure has been used with culturally diverse samples (e.g., Matias et al., 2017) and has good reliability. The validity of this scale was also demonstrated through theoretically anticipated associations with work-related positive mood and vigor and with positive

parent-child interactions (Danner-Vlaardingerbroek et al., 2013a, 2013b). In selecting the three items, we did not include items that were phrased negatively (3 items), and we kept the items that tapped into psychological availability directly. Items were preceded by the stem "When I spent time with my son/daughter today, ...". Items were: "My thoughts were completely focused on my child", "I was entirely open to what my child had to tell me", and "I was fully available for the activities with my child". Responses were indicated on a Likert scale ranging from 1 (*Not at all experienced*) to 5 (*Very strongly experienced*). This scale was reliable (mothers:  $\alpha$  range = .84 - .90; fathers:  $\alpha$  range = .84 - .91).

**Parental Stress.** Stress as experienced by the parents when with their child was assessed using 3 items of the stress subscale from the short-form version of the Depression Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 2004). The DASS has been widely used across diverse cultures and has high internal consistency (Norton, 2007). The items were slightly adapted to be appropriate for diary assessment and applicable to the parent-child situation. Items were preceded by the stem "When I spent time with my son/daughter today, ...". Items were: "I was very stressed out", "I found it difficult to relax", and "I noticed that I was very restless". Responses were indicated on a Likert scale ranging from 0 (*Not at all*) to 3 (*Definitely*). This scale was reliable (mothers:  $\alpha$  range = .84 - .91; fathers:  $\alpha$  range = .84 - .94).

**Autonomy Support and Psychological Control.** Children reported on the perceived degree of autonomy support and psychological control as provided by the mother and the father. We used the same items as used previously in a diary study on parenting among 8- to 12-year-old children (Van der Kaap-Deeder et al., 2017). More specifically, four items of the Autonomy Support Scale of the Perceptions of Parents Scale (POPS; Grolnick et al., 1991) and four items from the Psychological Control Scale - Youth Self-Report (PCS - YSR; Barber, 1996) were employed. The POPS autonomy support scale is the most widely used measure of autonomy-supportive parenting, and a meta-analysis confirmed that this concept was related in theoretically predicted ways to children's academic adjustment and well-being (Vasquez, Patall, Fong, Corrigan, & Pine, 2016). Similarly, the PCS-YSR is the most widely used measure of psychologically controlling parenting, and meta-analyses have demonstrated robust associations between such parenting and both internalizing and externalizing problems in children and adolescents (e.g., Pinquart, 2017). These items were slightly adapted to assess daily (rather than general) autonomy support (e.g., "Today, whenever possible, my mother/father allowed me to choose what to do.") and psychological control ("Today, my mother/father was less friendly with me if I did not see things her/his way."). Both scales had an adequate reliability (maternal autonomy support:  $\alpha$  range = .68 - .75; paternal autonomy support:  $\alpha$  range = .68 - .80; maternal psychological control:  $\alpha$  range = .62 - .74; paternal psychological control:  $\alpha$  range = .68 - .78). Mothers and fathers also reported their own autonomy support and psychological control using the same items in a parent-version. Whereas the autonomy support scale was reliable (mothers:  $\alpha$  range = .76 - .84; fathers:  $\alpha$  range = .68 - .84), the psychological control scale was less reliable (mothers:  $\alpha$  range = .53 - .69; fathers:  $\alpha$  range = .57 - .70).

## Plan of Analyses

As the data were hierarchically structured, with 7 measurement times (i.e., Level 1) nested within 206 mothers, 206 fathers, and 206 children (i.e., Level 2), which were nested within 206 families (i.e., Level 3), substantial dependencies within families and within persons were expected. To test our proposed models, we performed a multilevel analysis using Mplus 7. There were 2.10% missing values in the dataset. These missing data were missing completely at random, as the normed  $\chi^2$  (522.72/425) was 1.23 (i.e., smaller than the recommended cut-off of 2; Ullman, 2001). Because missing data were missing at random, the use of the full information maximum likelihood procedure was appropriate to estimate missing data (Schafer & Graham, 2002). Model estimation was based on robust maximum likelihood, which corrects for non-normality-induced bias (Finney & DiStefano, 2006). Several indices were employed to evaluate the model fit, namely the  $\chi^2$  test, the comparative fit index (CFI), the standardized root-mean-square residual (SRMR), and the root-mean-square error of approximation (RMSEA). An acceptable fit was indicated by  $\chi^2/df$  ratio of 2 or below, CFI values of .95 or above, SRMR values of .08 or below, and RMSEA values of .06 or below (Hu & Bentler, 1999; Kline, 2005). To test the significance of indirect effects, we used bootstrapping (using 1000 draws), a nonparametric resampling procedure that is highly recommended (Preacher & Hayes, 2008).

We tested four three-level models. In the first two models, we examined the role of need satisfaction and need frustration in the prediction of parental psychological availability and stress (Model 1) and in the prediction of autonomy support and psychological control, according to both parents (Model 2a) and their child (Model 2b). In a third model, we examined parental psychological availability and stress as predictors of autonomy support and psychological control, according to both parents (Model 3a) and their child (Model 3b). In a final model, we modeled parental psychological availability and stress as explanatory mechanisms in relations between need-related experiences and autonomy support and psychological control, again both according to the parents (Model 4a) and their child (Model 4b). Hypotheses were tested in a conservative fashion by controlling for prior day levels of the outcome. These analyses were conducted on a truncated dataset since the first measurement point (i.e., Day 1) has no previous day.

## RESULTS

### Descriptive Statistics and Preliminary Analyses

Descriptive statistics and bivariate correlations among the measured variables at the within-person level can be found in Table 1. The means reveal that parents, on average, experienced relatively high levels of need satisfaction and psychological availability, whereas they reported rather low levels of need frustration and parental stress. Parents perceived themselves and were perceived by their children to be moderately to high on autonomy support and rather low on psychological control. Correlational analyses showed that, whereas daily parental need

**TABLE 1**  
Descriptives of and Correlations between the Study Variables (Mother below and Father above Diagonal)

	1	2	3	4	5	6	7	8
Parent reports								
1. Need satisfaction	-	-.61**	.29**	-.21**	.15**	-.15**	.10**	-.03
2. Need frustration	-.67**	-	-.26**	.23**	-.12**	.13**	-.08*	.07
3. Parental psychological availability	.34**	-.36**	-	-.26**	.42**	-.13**	.11**	-.04
4. Parental stress	-.41**	.37**	-.29**	-	-.21**	.33**	-.06	.14**
5. Autonomy support	.24**	-.23**	.32**	-.19**	-	-.16**	.21**	-.07
6. Psychological control	-.23**	.20**	-.19**	.37**	-.20**	-	-.08*	.18**
Child reports								
7. Autonomy support	.10**	-.08*	.09*	-.07	.17**	-.06	-	-.21**
8. Psychological control	-.12**	.11**	-.09**	.17**	-.15**	.19**	-.26**	-
Mean mother	4.08	1.60	3.74	.25	3.57	1.54	3.62	1.53
SD mother	.56	.60	.83	.52	.70	.54	.88	.65
Mean father	4.07	1.59	3.60	.20	3.55	1.59	3.52	1.52
SD father	.60	.57	.91	.49	.73	.55	.98	.67

Note. \* $p < .05$ ; \*\* $p < .01$ .

satisfaction related positively to daily psychological availability and autonomy support and negatively to daily stress and psychological control (except for child-perceived paternal psychological control), daily parental need frustration showed an opposite pattern of relations. Additionally, daily psychological availability related positively to daily autonomy support and negatively to daily psychological control (but not in the case of child-perceived paternal psychological control), whereas daily parental stress showed opposite relations (although the relation between maternal stress and child-perceived autonomy support was non-significant). Finally, it is important to note that the associations of daily need satisfaction and frustration with the intervening and dependent variables were largely similar across the three needs, which justifies the approach of averaging across the three needs.

To determine whether there were significant associations between the background variables and the study variables, we conducted MANCOVAs, separately for maternal and paternal ratings. Child gender and parental educational level and marital status were entered as fixed factors, and child and parents age and number of children in the family were entered as covariates in the prediction of all the study variables. Results showed that for the maternal ratings the multivariate effects of the number of children, Wilks's  $\lambda = .97$ ;  $F(8,1100) = 4.49$ ;  $p < .001$ ;  $\eta^2 = .03$ , age of the child, Wilks's  $\lambda = .98$ ;  $F(8,1100) = 3.09$ ;  $p < .001$ ;  $\eta^2 = .02$ , gender of the child, Wilks's  $\lambda = .98$ ;  $F(8,1100) = 3.43$ ;  $p < .001$ ;  $\eta^2 = .02$ , and education level Wilks's  $\lambda = .93$ ;  $F(32,4058) = 2.35$ ;  $p < .001$ ;  $\eta^2 = .02$ , were significant. For the paternal ratings, the multivariate effects of the number of children, Wilks's  $\lambda = .94$ ;  $F(8,1049) = 7.97$ ;  $p < .001$ ;  $\eta^2 = .06$ , age of the child, Wilks's  $\lambda = .95$ ;  $F(8,1049) = 7.44$ ;  $p < .001$ ;  $\eta^2 = .05$ , age of the parent, Wilks's  $\lambda = .96$ ;  $F(8,1049) = 5.01$ ;  $p < .001$ ;  $\eta^2 = .04$ , gender of the child, Wilks's  $\lambda = .97$ ;  $F(8,1049) = 3.49$ ;  $p < .001$ ;  $\eta^2 = .03$ , marital status, Wilks's  $\lambda = .91$ ;  $F(8,1049) = 13.44$ ;

$p < .001$ ;  $\eta^2 = .09$ , and education level, Wilks's  $\lambda = .84$ ;  $F(32,3870) = 5.93$ ;  $p < .001$ ;  $\eta^2 = .04$ , were significant.<sup>1</sup> In the main analyses we controlled for all background variables.

The intraclass correlations (ICC) for each study variable are displayed in Table 2. There were some parallels and some discrepancies with respect to the division of the proportion of variance at the three levels (i.e., within-person, between-person, and between-family level) across the assessed constructs. With respect to all of the parent-reported constructs, the greatest amount of variance was situated at the within-person level (varying between 49% and 66%). The smallest amount of variance (ranging between 7% and 22%) in these parent-reported constructs (except for stress) was due to between-family differences. However, with respect to child-reported parenting, the greatest amount of variance was situated at the between-family level (63% and 61%), with the amount of variance at the within-person level being the second largest (33% and 37%). As there were substantial variations between days, persons, and families with respect to all the study variables, a multilevel approach, which takes this hierarchical structure into account, was used in all subsequent analyses.

TABLE 2

Percentage of Variance in the Study Variables that Is Due to Within-Person, Between-Person, or Between-Family Variance

	Within-person Variance	Between-person Variance	Between-family Variance
	Intraclass Correlation	Intraclass Correlation	Intraclass Correlation
Need-related experiences			
Need satisfaction	.50	.32	.17
Need frustration	.49	.29	.22
Mechanisms			
Parental psychological availability	.66	.28	.07
Parental stress	.54	.11	.35
Parent-reported parenting			
Autonomy support	.55	.25	.20
Psychological control	.50	.28	.22
Child-reported parenting			
Autonomy support	.33	.05	.63
Psychological control	.37	.02	.61

<sup>1</sup> More specifically, having more children related to less psychological availability and less parent-reported autonomy support and less child-reported maternal autonomy support. For only fathers did having more children relate to less need frustration and stress and more need satisfaction. For mothers, age of the child related to less need satisfaction and more child-perceived psychological control, whereas for fathers age of the child related to more need satisfaction and parent-reported autonomy support but also more stress and less psychological availability. Further, mothers experienced more need satisfaction with boys, whereas fathers experienced more stress with girls and reported a higher level of autonomy support with boys. Parents' education related to most variables, with a lower education relating to a lower level of positive outcomes (e.g., less autonomy support) and to a higher level of negative outcomes (e.g., more psychological control). For fathers, their own age related to more autonomy support and less psychological control (both according to their report and the child report) and to less stress. Finally, for fathers being married (vs. not being married) related to less need satisfaction, child-perceived autonomy support, and parent-reported psychological control and to more need frustration, stress, and child-reported psychological control.

## Primary Analyses

Fit indices of all structural models can be found in [Table 3](#).

**Relations of Need Satisfaction and Need Frustration.** To investigate whether parental need satisfaction and frustration related to changes in the intervening (i.e., parental psychological availability and stress) and outcome (i.e., autonomy support and psychological control) variables on a day-to-day basis, we analyzed two models where we controlled for the outcome variables as experienced the day before. In Model 1<sup>2</sup>, we modeled paths from need satisfaction and need frustration (which were allowed to correlate) to parental psychological availability and stress (which were also allowed to correlate). Additionally, prior day levels of psychological availability and stress were modeled as predictors of current levels of these variables. The effects of prior day levels of both psychological availability and stress were significant ( $\beta = .19, p < .001$  and  $\beta = .11, p < .05$ , respectively). Furthermore, need satisfaction related positively to changes in psychological availability ( $\beta = .17, p < .001$ ) and negatively to changes in stress ( $\beta = -.19, p < .001$ ), whereas need frustration

**TABLE 3**  
Fit Indices of All Tested Models

Model	$\chi^2/df$	Comparative Fit Index	Standardized Root Mean Square Residual	Root Mean Square Error of Approximation
1 Need-based experiences ≤ Psychological availability and stress	2.10	.99	.03	.02
2a Need-based experiences ≤ Parent- reported parenting	1.67	.99	.03	.02
2b Need-based experiences ≤ Child- reported parenting	.57	1.00	.02	.00
3a Psychological availability and stress ≤ Parent-reported parenting	4.32	.94	.04	.04
3b Psychological availability and stress ≤ Child-reported parenting	1.47	.98	.01	.01
4a Need-based experiences ≤ Psychological availability and stress ≤ Parent- reported parenting	2.25	.99	.04	.02
4b Need-based experiences ≤ Psychological availability and stress ≤ Child- reported parenting	1.08	1.00	.03	.01

<sup>2</sup>We also tested a model wherein all the paths in Model 1 were reversed. It is possible that the degree to which a parent experiences need satisfaction and need frustration follows from experiences with the child. Specifically, if parents are more psychological available for their child, they may be better capable of getting their psychological needs met. Contrariwise, if parents are stressed themselves, they could possibly experience greater need frustration. In general, all paths in this reversed model were in the expected direction and significant and the fit of the model was adequate ( $\chi^2/df = 4.15$ ; CFI = .98; SRMR = .05; RMSEA = .04). Based on these findings, daily need-related experiences and parents' daily psychological availability and stress seem to be related reciprocally. Future experimental research is, however, needed to sort out the direction of effects.

related negatively to changes in psychological availability ( $\beta = -.20, p < .001$ ) and positively to changes in stress ( $\beta = .18, p < .001$ ).

In Model 2 we replaced psychological availability and stress with autonomy support and psychological control, as perceived by parents (Model 2a) or children (Model 2b), as outcomes of need-related experiences.<sup>3</sup> Additionally, we controlled for prior day levels of autonomy support and psychological control in the prediction of current levels of these variables, with prior day levels of autonomy support (parent-report:  $\beta = .31$ ; child-report:  $\beta = .39$ ) and psychological control (parent-report:  $\beta = .19$ ; child-report:  $\beta = .36$ ) both being significant (all  $ps < .001$ ). Furthermore, need satisfaction related positively to changes in autonomy support as reported by the parents ( $\beta = .12, p < .001$ ) as well as by the child ( $\beta = .06, p = .05$ ). Need frustration related negatively to parent-reported autonomy support ( $\beta = -.08, p = .01$ ), but was unrelated to child-reported autonomy support ( $\beta = -.04, p = .20$ ). Similarly, whereas need satisfaction related negatively to changes in parent-reported psychological control ( $\beta = -.14, p < .001$ ), there was no relation with child-reported psychological control ( $\beta = -.03, p = .31$ ). Need frustration was positively related to parent-reported psychological control ( $\beta = .07, p = .04$ ), but this relation was marginally significant for child-reported psychological control ( $\beta = .05, p = .09$ ).

**Role of Psychological Availability and Stress.** Next, we investigated whether daily parental psychological availability and stress would intervene in the relation between need-based experiences and changes in daily parenting. First, we modeled parental psychological availability and stress (which were allowed to correlate) as predictors of changes in autonomy support and psychological control (which were also allowed to correlate), as reported by parents (Model 3a) and the child (Model 3b). As in the previous model, we controlled for prior day levels of autonomy support and psychological control in the prediction of current levels of these variables. Again, effects of prior day levels of autonomy support (parent-report:  $\beta = .27$ ; child-report:  $\beta = .38$ ) and psychological control (parent-report:  $\beta = .16$ ; child-report:  $\beta = .37$ ) were significant (all  $ps < .001$ ). Psychological availability displayed a positive relation with changes in autonomy support (parent-report:  $\beta = .33, p < .001$ ; child-report:  $\beta = .08, p = .01$ ) but was negatively related to changes in parent-reported psychological control ( $\beta = -.06, p = .03$ ) and was unrelated to changes in child-reported psychological control ( $\beta = -.01, p = .62$ ). In contrast, stress was positively related to changes in psychological control (parent-report:  $\beta = .33, p < .001$ ; child-report:  $\beta = .16, p < .001$ ), but being negatively related to changes in parent-reported autonomy support ( $\beta = -.10, p < .001$ ) and unrelated to changes in child-reported autonomy support ( $\beta = -.05, p = .10$ ).

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<sup>3</sup>In response to a suggestion by an anonymous reviewer, we analyzed whether the relations between psychological availability and parenting could be quadratic (rather than linear). By adding psychological availability-squared (i.e., the quadratic term) as a predictor of the parenting variables to the Models 3a (parent-reported parenting) and 3b (child-reported parenting) we found that psychological availability-squared related significantly only to parent-reported psychological control ( $\beta = -.09; p = .001$ ), but not to the other parenting variables ( $\beta$  ranging between  $-.06$  and  $.01, ps > .05$ ). Specifically, results showed that with both low and high levels of psychological availability parents reported a lower level of psychological control. Thus, perhaps parents who score low on psychological availability are too absent to be able to pressure the child and would be more inclined to act in a permissive way. Future research is needed to further explore this relation.

Finally, we examined whether parental psychological availability and stress would intervene in the relation between need-related experiences and changes in parent-reported (Model 4a) or child-reported (Model 4b) parenting. In this full model, we controlled for prior day levels of both psychological availability and stress (i.e., intervening variables) as well as of autonomy support and psychological control (i.e., outcome variables). In doing so, we modeled the effects of the independent variables on changes (relative to the previous day) in the intervening and dependent variables. As for previous models, we found that prior day levels of psychological availability ( $\beta = .19, p < .001$ ), stress ( $\beta = .11, p < .05$ ), parent-reported autonomy support ( $\beta = .27, p < .001$ ) and psychological control ( $\beta = .15, p < .01$ ), and child-reported autonomy support ( $\beta = .38, p < .001$ ) and psychological control ( $\beta = .37, p < .001$ ) predicted current levels of psychological availability, stress, parent-reported autonomy support and psychological control, and child-reported autonomy support and psychological control, respectively. These models are graphically displayed in Figure 2. With respect to the parent model, all indirect effects were significant (*bs* ranging between  $-.09$  and  $.08$ , *SEs* ranging between  $.01$  and  $.02$ , *ps* ranging between  $< .001$  and  $.00$ ), except for the path from need satisfaction to psychological control via psychological availability ( $b = -.01, SE = .01, p = .10$ ) and the path from need frustration to psychological control via psychological availability ( $b = .01, SE = .01, p = .11$ ). For the child model, four out of the eight tested indirect effects were significant. Specifically, we found that need satisfaction related to changes in autonomy support via changes in psychological availability ( $b = .02, SE = .01, p = .02$ ), whereas need frustration related to changes in psychological control via changes in stress ( $b = .03, SE = .01, p = .01$ ). Additionally, need satisfaction related to changes in psychological control via changes in stress ( $b = -.03, SE = .01, p = .01$ ), whereas need frustration related also to changes in autonomy support via changes in psychological availability ( $b = -.02, SE = .01, p = .01$ ). All other indirect paths were non-significant (*bs* ranging between  $-.01$  and  $.01$ , *SEs* ranging between  $.00$  and  $.01$ , *ps* ranging between  $.09$  and  $.60$ ).<sup>4</sup>

### Supplementary Analyses

In a first set of supplementary analyses we performed lagged analyses to examine whether one predictor variable (e.g., need satisfaction) as assessed on a given day

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<sup>4</sup> We also explored the role of the child's behavior, as parents also reported daily on the child's externalizing problems (i.e., aggressive and rule-breaking behaviors; 7 items), withdrawn behavior (3 items), and prosocial behavior (3 items). These items were selected from the Child Behavior Checklist (Achenbach & Rescorla, 2001) on the basis of their suitability for a diary format. We analyzed four additional models to examine the role of these three child behaviors in the prediction of parental psychological availability and stress (2 models) or in the prediction of autonomy supportive and psychologically controlling parenting (2 models). Two main findings emerged from these analyses. First, all significant relations that were found in the final models (i.e., Model 4a and 4b) were also found to be significant in these additional models wherein we controlled for child behavior. Second, in about half of the investigated paths (i.e., 10 out of 24) did child behavior relate significantly to the intervening or outcome variables with withdrawn behavior being the strongest predictor. That is, withdrawn behavior related positively to parental stress ( $\beta = .18, p < .001$ ) and psychological control (parent report:  $\beta = .26, p < .001$ ; child report:  $\beta = .09, p < .05$ ) and related negatively to child-reported autonomy support ( $\beta = -.09, p < .01$ ). Surprisingly, however, externalizing problems related positively to psychological availability ( $\beta = .12, p < .001$ ) and parent-reported autonomy support ( $\beta = .11, p < .001$ ), while prosocial behavior related positively to stress ( $\beta = .07, p < .05$ ). Importantly, these findings showed that the main associations in our hypothesized model were not cancelled out when taking into account the child's behavior.



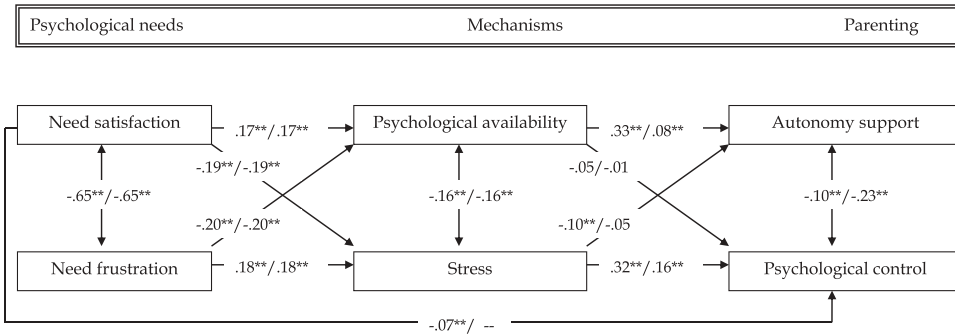


FIGURE 2

Structural model depicting the relation between parents’ need-related experiences and autonomy support and psychological control via parental psychological availability and stress.

Note. Standardized coefficients appearing before and after the slash refer to, respectively, the parents- and the child-model. For reasons of clarity, the effects of the prior day levels of the intervening and outcome variables were not displayed in this figure but are reported in the text.\*\**p* < .01.

(i.e., day *t*) would predict an outcome variable (e.g., psychological availability) the next day (i.e., day *t* + 1) controlling for levels of this outcome variable as assessed at day *t* (e.g., psychological availability at day *t*). In a first set of lagged analyses, parental psychological availability and stress on day *t* + 1 were regressed on both parents’ need satisfaction and need frustration and on psychological availability and stress on day *t*. In a second set of (reversed) lagged analyses, need satisfaction and need frustration on day *t* + 1 were regressed on both psychological availability and stress as well as need satisfaction and need frustration on day *t*. In a third set of lagged analyses, autonomy support and psychological control on day *t* + 1 were regressed on both psychological availability and stress and autonomy support and psychological control on day *t*. In a fourth set of (reversed) lagged analyses, psychological availability and stress on day *t* + 1 were regressed on both autonomy support and psychological control and psychological availability and stress on day *t*. The two latter analyses were done separately for the parenting variables as reported by the parents and as reported by the child.

No significant lagged effects emerged for parents’ need-related experiences on their psychological availability and stress ( $\beta$  ranging between  $-.01$  and  $.03$ ;  $p > .05$ ). No significant lagged effects emerged for parental psychological availability and stress on parents’ need-related experiences ( $\beta$ s ranging between  $-.05$  and  $.07$ ;  $p > .05$ ) or on parenting (according both to the parents and the child) ( $\beta$ s ranging between  $-.02$  and  $.05$ ;  $p > .05$ ). Finally, in general no significant lagged effects emerged for parenting on psychological availability and stress ( $\beta$ s ranging between  $-.05$  and  $.03$ ;  $p > .05$ ), with one exception: Autonomy support reported by the parents on one day is associated with less parental stress the next day ( $\beta = -.07$ ;  $p < .05$ ).

In a second set of supplementary analyses, we performed a multigroup comparison to examine whether the observed associations of the final models (i.e., Model 4a and 4b) would be (dis)similar for mother-daughter (24.0%), mother-son (27.3%), father-daughter (22.7%), and father-son (26.0%) dyads. In doing so, we compared an unconstrained model, in which all path coefficients were allowed to vary across the four types of dyads with a constrained model, in which all path coefficients were set equal

across the four types of dyads. Both models were compared using the Satorra–Bentler scaled chi-square test (Satorra & Bentler, 2010) which should be non-significant to favor the constrained over the unconstrained model. The constrained model fitted the data equally well as the unconstrained model for the parent-model ( $\Delta\chi^2(66) = 67.90$ ;  $p > .05$ ) and for the child-model ( $\Delta\chi^2(63) = 57.37$ ;  $p > .05$ ), suggesting that the observed associations are similar across the four types of dyads.

## DISCUSSION

A family environment in which children are encouraged by parents to experience true ownership of their thoughts, feelings, and behaviors (i.e., autonomy support) and are not pressured to think, feel, and act in certain ways (e.g., via psychological control) is fundamental for children's optimal psychological development (Grolnick et al., 1991; Soenens, Deci, & Vansteenkiste, 2017). Rather than being static constructs, these parenting behaviors have been found to vary substantially across days (e.g., Aunola et al., 2013), with this variation being related to daily fluctuations in parental need-based experiences (Mabbe et al., 2018). However, the mechanisms behind these daily relations are not well understood. Therefore, we addressed the potential intervening role of parental psychological availability and stress in these relations.

### **Mechanisms Underlying the Relation between Need-Based Experiences and Parenting**

Across both parent and child reports, we found that parental psychological availability intervened in the relation between parental need satisfaction or need frustration and autonomy support and that parental stress intervened in the relation between need satisfaction or need frustration and psychological control. These were mediated effects for the parent-reported parenting variables (i.e., there was initially a significant relation between parents' need-based experiences and parenting), but indirect effects for the child-reported parenting variables (i.e., there was initially only a marginally significant relation between parents' need-based experiences and parenting). Therefore, the most convincing evidence for the mediating role of parental psychological availability and stress was obtained with parent reports of parenting. Additionally, these relations were found to be similar across mother-daughter, mother-son, father-daughter, and father-son dyads. Need satisfaction and need frustration related to both psychological availability and stress, whereas the relations of psychological availability and stress to parenting were more differentiated. Specifically, daily psychological availability only related to daily autonomy support, whereas daily stress was mostly related to daily psychological control (although stress also related to parent-reported autonomy support). These findings indicate that parents who feel volitional, effective, and socially connected during the day are more emotionally and cognitively available for their child and feel less stressed when interacting with their child, which in turn allows them to provide choices to their child, to take their child's perspective into account, and to use inviting language (i.e., autonomy support). In contrast, the same parents who feel more pressured, inadequate, and isolated during the day have less energy available to stay psychologically

available for their child and experience a higher level of stress in relation to their child, which increases the likelihood that they impose their own agenda on their child.

The evidence for an intervening role of psychological availability and stress was less straightforward when using child reports of parenting. Because some initial direct associations between parents' need-based experiences and child reported parenting were not significant, psychological availability and stress played only an indirect (rather than mediating role) in these associations. Our findings are in line with previous research finding a stronger relation between parents' functioning and parent-reported parenting compared to child-reported parenting (e.g., Perez, Coo, & Irarrazaval, 2018). Because the effects were weaker for child-reported parenting, future research is needed to replicate our findings across reporters. Future research would also examine the role of moderating variables, thereby identifying subgroups of families in which there is a stronger direct association between parental need-based experiences and parenting to begin. Possibly, parents' need-based experiences matter more for the quality of parenting when parents face more demanding challenges. For instance, research with parents of children with a developmental disorder, such as Autism Spectrum Disorder, shows that these parents' need-based experiences are related substantively to the quality of parenting (Dieleman et al., 2019). Research comparing directly parents of typically developing children with parents of children with a developmental disorder could address the question whether parental need-based experiences have stronger effects when parents face specific childrearing challenges. In this respect, it would also be interesting to examine the possible moderating role of children's birth order, with the effects of parents' need-based experiences on parenting perhaps being dependent on the child being the firstborn, secondborn and so on. Alternatively, future research may tap into parents' need-based experiences in relation to their child. To the extent that parents feel effective and unpressured in handling their child or feel well-connected, they may more likely adopt an autonomy-supportive approach. These child-related need-based experiences may be more strongly related to child perceptions of parenting compared to parents' general need-based experiences that were studied herein.

Overall, our findings did not provide strong evidence for differentiated bright (need satisfaction – psychological availability – autonomy support) or dark (need frustration – stress – psychological control) pathways, as both need satisfaction and need frustration related to both intervening variables. This is in contrast with research that found that only need frustration related to stress (Campbell et al., 2017) and parent-reported psychological control (Mabbe et al., 2018), whereas need satisfaction related uniquely to parent-reported autonomy support (Mabbe et al., 2018). Possibly, cross-over paths are more likely to emerge in the prediction of intervening variables (such as stress and psychological availability), but evidence for bright and dark pathways may emerge more readily for more distal variables, such as parenting. Although a direct relation between parents' need satisfaction and parent- and child-reported autonomy support emerged, we only found a direct relation between parents' need frustration and parent-reported psychological control. It seems that parental need frustration and psychological control as perceived by the child are only indirectly related, with parents' stress serving as an intervening variable. This finding may indicate that parental need frustration transfers to child-perceived parental psychological control only insofar as parents experience stress as a consequence of psychological need frustration. Future research is needed to replicate this finding and could focus on possible moderating factors that determine for which parents need frustration becomes stress.

Although not a primary goal of this study, we found differences between parent- and child-reported parenting in the variance situated at the three levels of analysis (i.e., family level, parent level, and daily level). Most of the variance in parent-reported parenting was situated at the day-level, and most of the variance in child-reported parenting was situated at the family-level. This means that children perceive their mothers and fathers to be more similar in their parenting than parents do, with parents experiencing more fluctuations in their parenting behavior from day-to-day. This finding is not entirely surprising because previous studies showed that children have the tendency to attribute characteristics of one parent to the other parent (Eichelsheim, Deković, Buist, & Cook, 2009). Possibly, the lack of discrimination between the two parents is more pronounced among younger children, with older children being more capable of noting differences between their parents. This finding could also have a methodological origin. Specifically, children were asked to first rate their mother's degree of provided autonomy support and psychological control and were then asked to rate their father's degree of provided autonomy support and psychological control. This fixed design could have increased similarity in responses across parents. Parents only reported on their own parenting.

The finding that parents report more day-to-day fluctuations in parenting than children was unexpected. For now, we can only speculate about possible reasons for this finding. Compared to parents, children might rely more on general perceptions of their parents' parenting style instead of what their parents did on a given day. Age may also play a role here, with children increasingly being capable of perceiving differences between days more accurately, thereby reporting more daily variation in parental behavior as they grow older. Future research may first need to replicate this pattern of findings and shed light on this issue.

In a set of supplementary analyses, we examined whether our within-day effects would also extend across days. With one exception, results showed that these effects did not transfer to the next day. Thus, parents' need-related experiences on a given day may relate to their psychological availability and stress within the day, but it does not seem to have lasting effects on further changes in psychological availability and stress the next day. The same applied to the other examined lagged effects. Given that all measures focused on experiences of a given day, it is not surprising that relations between these measures were only found within a specific day. To illustrate, a parent who experiences a lot of stress when interacting with the child on Monday is likely to display more controlling parenting on Monday, but this effect of stress would not necessarily influence the parents' controlling behavior on Tuesday. Such lagged effects possibly operate within shorter time intervals. That is, parents' stress level may not predict their controlling parenting the next day but likely predicts their behavior within the same day (e.g., the next hour). Therefore, future research could utilize Ecological Momentary Assessments methods to assess the interplay between parents' experiences and their parenting behaviors across multiple moments within a given day. Lagged effects may also be more likely to appear in long-term longitudinal research. Indeed, cyclical and reciprocal patterns of associations, either in the form of a positive spiral between need-satisfying parental experiences and high-quality parenting or in the form of a negative vicious cycle of need-frustrating parental experiences and low-quality parenting, may emerge across longer periods of time rather than on a daily basis.

### Limitations and Directions for Future Research

This study had several limitations. First, we included only one child per family, thereby excluding other possible children. As parents' behavior can differ between siblings (e.g., Jenkins & Rasbash, 2003), the inclusion of all family members in future research is recommended. Also, our sample was rather restricted in terms of socio-demographic characteristics as all children were aged between 8 and 12, and the majority of parents were married and had completed higher education. Additionally, participants were recruited via undergraduate students who were enrolled in a class. Although this recruitment method has been successfully used in many previous studies (e.g., Brenning, Soenens, Van Petegem, & Kins, 2017; De Clercq et al., 2014; Vergauwe, Wille, Hofmans, Kaiser, & De Fruyt, 2018), this approach might have caused the sample's sociodemographic characteristics to be similar to the socio-demographic characteristics of the students themselves. Thus, the generalizability of the current findings is restricted to populations with similar characteristics as the current sample (Bornstein, Jager, & Putnick, 2013) and research within more diverse and heterogeneous samples is needed. Additionally, the obtained results regarding parent-reported psychological control must be interpreted with caution as the reliabilities of this scale were low. As this poor reliability might be the result of our use of a short version (i.e., four items) of the Psychological Control Scale-Youth Self-Report, we recommend including the full 8-item version in research concerning the daily dynamics of parenting. Future studies examining the role of parental psychological availability could also include both positively and negatively phrased items as to minimize the risk of acquiescence bias or individuals' tendency to agree with statements regardless of the content (Kam, 2016).

Second, although we employed a multi-informant approach, we only made use of questionnaires which have well-known disadvantages (e.g., lack of detail; Kelley, Clark, Brown, & Sitzia, 2003). Future research could, therefore, control for social desirability or employ other more objective techniques, such as observations, to assess parenting behaviors. Also, as we cannot be entirely confident that the parents and children filled out the questionnaires at the requested time (i.e., in the evening instead of, for example, the next morning); future studies could employ electronic diaries where each family member would be given a unique login code to enable family members to answer the daily questions more confidentially. Future studies could also benefit from assessing parents' need-based experiences prior to their experiences of stress and psychological availability and daily parenting. For instance, parents could complete need-based assessments throughout or at the end of their working day. Apart from the methodological advantage of assessing the independent variable in time prior to the intervening variable, another advantage of this approach is that need-based experiences would be less affected by interaction with the child. In the present research, it remains unclear what the actual source of parents' need-based experiences is (e.g., work-, partner- or child-related) was. Similarly, such Ecological Momentary Assessment procedures seem suited to measure parental stress in greater depth and to disentangle effects of parental stress originating from different sources as parents would then respond to items about stress multiple times during the day and in different contexts (both outside the family and during parent-child interactions). Similarly, experimental designs could shed further light on the proposed causal link between the study variables. Such an experimental approach seems especially

worthwhile because we found in a reversed model that experiences of psychological availability and stress also related to changes in parents' need-related experiences. Thus, our data did not provide a clear picture of the direction of effects, and future research is needed to sort out the direction of causality between parents' need-based experiences and their psychological availability and stress. Future studies could, for example, experimentally induce feelings of either need satisfaction or need frustration among parents (e.g., Weinstein, Khabbaz, & Legate, 2016), examine parents' self-reported psychological availability and stress, and observe the interaction between parents and their child (as to code the degree of provided autonomy support and psychological control).

Third, other social figures, apart from parents, have been shown to play important roles in children's well-being (e.g., friends; Ratelle, Simard, & Guay, 2013). For example, previous studies have demonstrated a relation between the need-based experiences and provided autonomy support and psychological control among coaches (Stebbins, Taylor, Spray, & Ntoumanis, 2012). Future studies should focus on the antecedent role of need-based experiences, psychological availability, and stress in the degree of provided autonomy support and psychological control among other key socialization figures in the child's life.

Finally, as we only found a relation between parental psychological availability and autonomy support (and not psychological control); it would be interesting for future studies to include an indicator of the negative equivalent of psychological availability to examine its relation with psychological control. As previous research has found the "acting with awareness" dimension of mindfulness (conceptually related to psychological availability) to be negatively related with dissociation and absent-mindedness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), these indicators could be integrated in future research. Future studies could also include indicators of parents' general mood to determine the unique effects of need-related experiences in the context of parenting.

## IMPLICATIONS FOR PRACTICE AND THEORY

The findings of this study point to the importance of parents' psychological availability and stress in the daily relation between parental need-based experiences and provided autonomy support and psychological control towards their elementary school-aged child and the relevance of investigating daily processes of parenting and its sources.

The present findings may help to inform prevention and intervention efforts concerning parenting by showing that parents' need experiences matter. Parents can, therefore, be encouraged to seek out and invest more in need-satisfying activities (e.g., by doing more things they enjoy such as hobbies). Additionally, parents can be trained to cope more efficiently with need-frustrating experiences, for example by being more mindful (Campbell et al., 2015; Duncan et al., 2009) as to increase their awareness of these negative feelings and the effect these feelings can have on their social interactions.

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