

**The role of individual differences in effects of
autonomy-supportive and controlling socialization
during middle childhood and adolescence:
A longitudinal, diary-based, and experimental approach**

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WHAT COUNTS IS NOT JUST THAT
WE BELIEVE WE LOVE THEM UNCONDITIONALLY,
BUT THAT THEY FEEL LOVED IN THAT WAY.

ALFIE KOHN

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TABLE OF CONTENTS

DANKWOORD

CHAPTER 1	The Role of Individual Differences in Effects of Autonomy-Supportive and Controlling Socialization During Middle Childhood and Adolescence: A General Introduction	1
CHAPTER 2	Is Psychologically Controlling Parenting Related to Problem Behavior in All Children? An Examination of the Moderating Role of Personality	75
CHAPTER 3	The Role of Child Personality in Effects of Psychologically Controlling Parenting: An Examination at the Level of Daily Fluctuations	115
CHAPTER 4	Psychologically Controlling Parenting and its Longitudinal Associations with Internalizing and Externalizing Problems: The Role of Adolescent Personality.	153
CHAPTER 5	Is Autonomy-Supportive Parenting Beneficial Only to Adolescents with an Autonomous Personality? Two Meanings of Goodness-of-Fit	199
CHAPTER 6	The Impact of Feedback Valence and Communication Style on Intrinsic Motivation in Middle Childhood: Experimental Evidence and Generalization across Individual Differences	253
CHAPTER 7	Day-to-Day Variation in Autonomy-supportive and Psychologically Controlling Parenting: The Role of Parents' Daily Experiences of Need Satisfaction and Need Frustration	321

CHAPTER 8	General Discussion	369
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NEDERLANDSTALIGE SAMENVATTING		437
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ENGLISH SUMMARY		459
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APPENDIX		487
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CHAPTER 1

THE ROLE OF INDIVIDUAL DIFFERENCES IN EFFECTS OF AUTONOMY-
SUPPORTIVE AND CONTROLLING SOCIALIZATION DURING MIDDLE
CHILDHOOD AND ADOLESCENCE:
A GENERAL INTRODUCTION

TABLE OF CONTENTS

1. A SELF-DETERMINATION THEORY PERSPECTIVE ON PARENTING

- 1.1. THREE BASIC PSYCHOLOGICAL NEEDS
- 1.2. AUTONOMY-SUPPORTIVE AND CONTROLLING PARENTING
- 1.3. CORRELATES OF AUTONOMY-SUPPORTIVE AND PSYCHOLOGICALLY CONTROLLING PARENTING
- 1.4. EXPLAINING MECHANISMS

2. THE ROLE OF INDIVIDUAL DIFFERENCES IN THE EFFECTS OF SOCIALIZATION

- 2.1. IMPORTANCE OF STUDYING INDIVIDUAL DIFFERENCES
- 2.2. CHILD TEMPERAMENT AND PERSONALITY
- 2.3. MODELS ON THE MODERATING ROLE OF PERSONALITY
- 2.4. RESEARCH ON THE INTERACTION BETWEEN PARENTING AND PERSONALITY

3. THE ROLE OF INDIVIDUAL DIFFERENCES FROM A SELF-DETERMINATION THEORY PERSPECTIVE

- 3.1. ARE INDIVIDUAL DIFFERENCES CONSIDERED AT ALL?
- 3.2. DIFFERENTIAL SENSITIVITY TO AUTONOMY-RELEVANT PARENTING IS A MATTER OF GRADATION
- 3.3. HOW ARE SOCIALIZATION CONTEXTS INTERPRETED?
- 3.4. HOW DO THE BENEFITS AND COSTS OF PARENTING MANIFEST?

4. DAILY VARIATION IN PARENTING

- 4.1. PARENTING FROM A DYNAMIC PERSPECTIVE
- 4.2. SOURCES OF DAILY VARIATIONS IN PARENTING

5. KEY GOALS AND OVERVIEW OF THIS DISSERTATION

- 5.1. GOAL 1: THE MODERATING ROLE OF INDIVIDUAL DIFFERENCES
- 5.2. GOAL 2: THE ANTECEDENT ROLE OF PARENTAL NEED-BASED EXPERIENCES
- 5.3. OVERVIEW OF THE EMPIRICAL CHAPTERS

6. REFERENCES

In the past 30 years, the developmental literature has witnessed an exponential increase in research on parenting (Holden, 2010). Although the opinions about what constitutes ‘optimal parenting’ vary widely, developmental scholars typically agree that parents play a critical role in shaping a child’s social, psychological, and academic functioning. Although the number of parenting dimensions and practices being studied are extensive (Skinner, Johnson, & Snyder, 2005), there is increasing consensus among researchers that three dimensions represent core dimensions of parenting (Barber, 1997; Barber, Stolz, & Olsen, 2005; Smetana, 2017; Soenens, Vansteenkiste, & Beyers, in press): connection (i.e., warmth, affection, responsiveness), regulation (i.e., rule-setting and supervision), and support for autonomy (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Maccoby, 1992).

In the present dissertation, the focus will be on contexts that support and thwart children’s and adolescents’ autonomy. Autonomy has, until recently, received the least systematic attention (Soenens, Vansteenkiste, Van Petegem, Beyers, & Ryan, 2018). Part of the reason for this may be that the support of autonomy has mainly been conceptualized in terms of the absence of a (psychologically) controlling style, a style in which parents pressure their children to think, act and feel their way (Schaefer, 1965). To obtain a more complete conceptualization of autonomy-supportive parenting, it is important to rely on a theory in which autonomy is central. Self-Determination Theory (Deci & Ryan, 1985a, 2000; Ryan & Deci, 2017) is such a theory and the application of this theory in research on parenting has led to a more systematic interest in parental autonomy support (Soenens et al., in press).

Increasingly, theory and research suggest that the degree to which parents support children’s autonomy has major ramifications for their development (Grolnick, 2003; Ryan, Deci, & Vansteenkiste, 2016; Soenens et

al., 2018). Children and adolescents who experience parents as more autonomy-supportive fare, on average, better in terms of both personal well-being and social adjustment. Conversely, children and adolescents who feel that their parents act in an autonomy-suppressing (i.e., controlling) way are more likely to report ill-being or display behavioral problems. Such findings have been obtained in different age groups (Bernier, Carlson, & Whipple, 2010) and across different cultures (Wang, Pomerantz, & Chen, 2007).

The consistency of these findings raises the question whether all children are equally sensitive to the effects of autonomy-supportive and psychologically controlling parenting. Accordingly, the main objective of this dissertation is to investigate whether and how child and adolescent personality plays a role in the effects of autonomy-supportive and controlling contexts on well-being and problem behavior. In doing so, effects of autonomy-supportive and controlling contexts will be studied both at the level of stable, interindividual differences and at the level of intra-individual change across short (i.e., daily) and longer (i.e., annual) periods of time. We take this multi-level approach to provide a comprehensive picture of the potential moderating role of child and adolescent personality in effects of parenting. Given this focus on effects of parenting at two different levels of analysis (i.e., the between- and with-person level), an ancillary objective of this dissertation is to examine whether autonomy-supportive and controlling parental styles of interaction, in themselves, are best represented purely in terms of individual differences between parents. Therefore, we examine the extent to which autonomy-supportive and psychologically controlling parenting is a stable feature of parents' socialization style, thereby reflecting inter-parental differences, or whether such parenting varies from day to day, thereby equally reflecting intra-parental differences. To address the role of autonomy-supportive and psychologically controlling socialization in

children's and adolescents' adjustment and the role of individual differences herein, a variety of research designs (i.e., cross-sectional, diary-based, longitudinal and experimental) will be used.

The general introduction presented in this opening chapter provides the reader with the theoretical background of the empirical studies. In a first section, the Self-Determination Theory perspective on parenting is explained. In a second section, theoretical models on the role of individual differences in the effects of parenting and socialization more broadly are discussed. In a third section, the role of individual differences in the effects of parenting/socialization is considered through the lens of Self-Determination Theory. A fourth section deals with daily variations in parenting behavior and antecedents of these daily fluctuations. A final section gives an overview of the key goals and the conducted empirical studies of this dissertation.

1. A SELF-DETERMINATION THEORY PERSPECTIVE ON PARENTING

Self-determination theory (SDT; Deci & Ryan, 1985a, 2000; Ryan & Deci, 2017) is a broad theory on human motivation, development, health, personality, and socialization. The theory has been developed by Deci and Ryan and has been elaborated and refined by their multiple collaborators over the years (see Vansteenkiste, Niemiec, & Soenens, 2010 for an overview of its historical development). The theory has been applied in various life domains, including education (e.g., Deci, Vallerand, Pelletier, & Ryan, 1991; Guay, Lessard, & Dubois, 2016; Ryan & Deci, 2016), work (e.g., Gagné & Deci, 2005; Pelletier & Aitken, 2014), sports (e.g., Vallerand & Losier, 1999), and health care (e.g., Ng et al., 2012). SDT has also become increasingly influential in the domain of parenting (Joussemet, Landry, & Koestner, 2008; Soenens, Deci, & Vansteenkiste, 2017; Soenens & Vansteenkiste, 2010; Vansteenkiste & Soenens, 2015). A particularly unique

feature of this theory in the domain of parenting is its focus on the importance of parental support for autonomy for children's development.

1.1. THREE BASIC PSYCHOLOGICAL NEEDS

At the heart of the SDT is the assumption that people have three basic psychological needs that represent essential nutriments for well-being (Ryan & Deci, 2000). These needs are defined as *"innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being"* (Deci & Ryan, 2000, p. 229). The need for autonomy refers to the experience of volition and psychological freedom. When satisfied, people feel that they can be themselves and that there is room to act upon self-endorsed interests, values, and preferences. When frustrated, people feel pressured, internally conflicted, and alienated from their most fundamental interests and values. The need for competence refers to the experience of mastery over one's environment and the capability to attain one's goals. When frustrated, one feels inadequate and like a failure. The need for relatedness refers to the experience of reciprocal care and love of important others. When frustrated, feelings of loneliness and isolation appear (Vansteenkiste & Ryan, 2013). Satisfaction of these psychological needs is assumed to be a necessary condition for effective functioning and psychological well-being. Those needs can thus be seen as key nutriments for psychological growth (Deci & Ryan, 2008). Conversely, frustration of these needs forestalls psychological well-being and growth and is associated with an increased risk for maladjustment and even psychopathology (Ryan et al., 2016).

Importantly, an absence of need satisfaction (i.e., the "bright" side of the needs) is not equal to the presence of need frustration (i.e., the "dark" side of the needs). To illustrate, a person who experiences low connection with others (i.e., low relatedness satisfaction) may not

necessarily feel actively ignored or excluded by others (i.e., relatedness frustration). Similarly, feeling explicitly obliged to do things against one's will (reflecting feelings of autonomy frustration) is distinct from experiencing little room for choice and initiative (resulting in low autonomy satisfaction), with the former experience representing a stronger and more direct threat to the need for autonomy than the latter experience. In other words, need frustration involves an active undermining of the needs, that is, it entails a direct threat towards one's psychological needs. Similarly, the absence of need frustration does not necessarily entail the presence of need satisfaction. That is, even when individuals experience little frustration of their psychological needs, they do not necessarily experience active support and satisfaction of their needs, because their needs may be simply unmet. Therefore, need satisfaction and need frustration represent relatively distinct, yet related constructs, with their relation being asymmetrical in nature (Vansteenkiste & Ryan, 2013): while low need satisfaction does not necessarily entail need frustration, the very frustration of one's needs implies low need satisfaction. The present dissertation focuses on the need for autonomy, which has been most intensively studied in the context of SDT and which, at the same time, is the most controversial of the proposed set of needs.

1.2. AUTONOMY-SUPPORTIVE AND PSYCHOLOGICALLY CONTROLLING PARENTING

Given the centrality of the need for autonomy in children's and adolescents' psychosocial adjustment, SDT highlights the role of parents in the satisfaction or frustration of this need, thereby distinguishing between autonomy-supportive and controlling parenting (Grolnick, 2003; Joussemet et al., 2008; Soenens et al., 2010, 2018). With respect to autonomy-supportive parenting, a distinction can be made between the basic attitude underlying autonomy-supportive parenting and more specific building blocks

or components of an autonomy-supportive style (Vansteenkiste & Soenens, 2015). In essence, when parents act in an autonomy-supportive way, they take the frame of reference of their child as their starting point, thereby displaying a curiosity for and deep interest in their child's point of view (Grolnick, 2003; Mageau, Sherman, Grusec, Koestner, & Bureau, 2017; Soenens et al., 2017). Autonomy-supportive parents also unconditionally accept the child as s/he is (Roth, Kanat-Maymon, & Assor, 2016). It is critical that parents adopt this general attitude when making use of a number of more specific autonomy-supportive practices (Reeve, 2009; Vansteenkiste & Soenens, 2015). First, autonomy-supportive parents try to nurture children's inner motivational sources, which involves stimulating the child's curiosity and building in intrinsically motivating features to promote task interest. Second, the autonomy of a child can also be strengthened through dialogue with the child, thereby allowing input from the child, encouraging initiative, and giving choices. A third aspect is the provision of a meaningful and personally relevant rationale when choices are constrained. A fourth building block refers to following the rhythm of the child such that children engage in and switch to other activities at their own pace instead of being pushed ahead. A fifth aspect is welcoming and acknowledging negative emotions, oppositional behaviors and diverging opinions. Finally, a sixth aspect is using inviting language. In this dissertation, autonomy-supportive parenting will be investigated in Chapters 5 and 7.

Autonomy-supportive parenting can be contrasted with controlling parenting. In the literature, controlling parenting has been conceptualized in different ways, ranging from domineering forms of parenting (e.g., harsh punishment) to more constructive attempts of parents to regulate their children's behavior (e.g., rules and supervision, behavioral control) (Grolnick & Pomerantz, 2009). Within SDT, it is preferred to only use the term controlling parenting in reference to parenting that is intrusive,

manipulative, and domineering in nature. More constructive types of parental regulation are referred to in SDT as structure (Grolnick & Pomerantz, 2009). Further, within the concept of controlling parenting, a distinction has been made between internally controlling and externally controlling parenting (Soenens & Vansteenkiste, 2010). Examples of internally controlling practices are guilt-induction, shame-induction, and love withdrawal. These practices appeal to the activation of internally pressuring forces such as guilt, shame, loyalty, and separation-anxiety to force children to act, think, or feel in prescribed ways. These practices pressure children 'from within' to meet parental expectations. Parents can also pressure their child from the outside by using externally controlling practices. Taking away privileges, threats, corporal punishment and verbal or physical coercion are all examples of externally controlling parenting. Psychologically controlling parenting (Barber, 1996), which will be studied in almost all empirical chapters in this dissertation (except for Chapter 5), "*refers to control attempts that intrude into the psychological and emotional development of the child (e.g., thinking processes, self-expression, emotions, and attachment to parents)*" (p. 3296). Although psychological control is more akin to the notion of internal control (Soenens & Vansteenkiste, 2010), it is somewhat broader. Psychologically controlling parents pressure their children to comply with parental requests without explanation, use controlling language in communicating with their children and also make use of insidious tactics such as love withdrawal (Kanat-Maymon, Roth, Assor, & Raizer, 2016), guilt (Rote & Smetana, 2017) and shame induction (Yu, Cheah, Hart, Sun, & Olsen, 2015) to pressure the child to do what they want. Psychologically controlling parenting also refers to humiliation and personal attacks towards the child and it involves interrupting the child when s/he is speaking.

Parallel to the reasoning that an absence of need satisfaction does not equal the presence of need frustration (Bartholomew et al., 2011), an

absence of autonomy-supportive parenting does not equal the presence of controlling parenting. To illustrate, a lack of offered choices does not imply that parents actively deny the child's perspective. The other way around, the absence of psychological control does not necessarily entail the presence of active parental efforts to support a child's autonomy (Barber, Bean, & Erickson, 2002; Silk, Morris, Kanaya, & Steinberg, 2003). Consistent with this reasoning, research has shown that correlations between autonomy-supportive and controlling parenting are typically around $-.50$, suggesting that both concepts are (negatively) related, yet distinct (Costa, Cuzzocrea, Gugliandole, & Larcán, 2016; Soenens, Vansteenkiste, & Sierens, 2009). The relation between autonomy support and psychological control is also asymmetrical with low autonomy support not necessarily involving psychological control but with psychological control implying low autonomy support. In that way, SDT makes the distinction between the bright (i.e., need-supportive parenting) and the dark (need-thwarting parenting) side of parenting in particular and socialization more broadly (e.g., Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015).

1.3. CORRELATES OF AUTONOMY-SUPPORTIVE AND PSYCHOLOGICALLY CONTROLLING PARENTING

Research increasingly shows that autonomy-supportive parenting is associated with positive developmental outcomes, whereas controlling parenting is related to relatively more detrimental developmental outcomes. Strikingly, these effects are found among children of different ages (Joussemet et al., 2008), in different socialization contexts such as the home context and school (e.g., Soenens & Vansteenkiste, 2005; Vansteenkiste, Zhou, Lens, & Soenens, 2005), and in different cultures (e.g., Lekes, Gingras, Philippe, Koestner, & Fang, 2010; Vansteenkiste, Zhou et al., 2005).

Autonomy-supportive parenting has initially been studied among adolescents in Western countries making use of cross-sectional study designs. These studies showed that perceived autonomy-supportive parenting is associated with several positive developmental outcomes, including well-being and adaptive emotion regulation (Roth, Assor, Niemiec, Ryan, & Deci, 2009), higher self-determination in the domain of school and job-seeking (Soenens & Vansteenkiste, 2005) as well as adjustment (Soenens et al., 2007) and internalization and prosocial tendencies (Roth, 2008). Later research expanded these studies in various ways. In the first place, longitudinal studies showed that autonomy-supportive parenting also predicts changes in adjustment over time (e.g., Aunola, Viljaranta, Lehtinen, & Nurmi, 2013; Brenning, Soenens, Van Petegem, & Vansteenkiste, 2015; Duineveld, Parker, Ciarrochi, Ryan, & Salmela-Aro, 2017; Van der Giessen, Branje, & Meeus, 2014). Studies were also conducted in younger children (primary school, kindergarten age, and even infancy) (e.g., preschool children: Bernier et al., 2010; toddlers: Laurin & Joussemet, 2017). Autonomy-supportive parenting has been related to a better quality of study motivation in elementary school children (Grolnick, Ryan, & Deci, 1991) and rule internalization (Laurin & Joussemet, 2017) and better cognitive self-regulation (Bernier et al., 2010) in toddlers. Also, the effects of autonomy-supportive parenting were demonstrated across different cultures, including collectivist-oriented ones (e.g., Chirkov & Ryan, 2001; Vansteenkiste, Zhou et al., 2005). A recent meta-analysis of 36 studies (Vasquez, Patall, Fong, Corrigan, & Pine, 2016) showed that parental autonomy support was related significantly to greater academic achievement and adaptive psychosocial functioning (i.e., autonomous motivation, psychological health, competence, and engagement).

Methodologically, some studies also made use of a multi-informant approach in which not only children and adolescents but also parents

themselves reported about their own autonomy-supportive practices (e.g., Kins, Beyers, Soenens, & Vansteenkiste, 2009; Van Petegem et al., 2017). Some studies even involved observations (e.g., Doctoroff, & Arnold, 2017; Mauras, Grolnick, & Friendly, 2012) and experimental paradigms (e.g., Grolnick, Gurland, DeCoursey, & Jacob, 2002). An observational study of Grolnick, Frodi, and Bridges (1984) showed that maternal autonomy support during a play session with their 1-year-old child was related to task-oriented persistence and competence during solo play. A recent study by Bindmann, Pomerantz and Roisman (2015) also included an observational measure of maternal autonomy-supportive parenting, thereby showing that maternal autonomy support over the first three years of life predicted enhanced executive functions during the year before kindergarten, which, in turn, related to enhanced academic achievement in elementary and high school. An observational study with young adolescents and their mothers showed that maternal autonomy support was positively associated with daughters' engagement and desire for additional conversations (Mauras et al., 2012).

In contrast to the positive developmental outcomes associated with autonomy-supportive parenting, abundant cross-sectional research has demonstrated associations between psychologically controlling parenting and detrimental developmental outcomes (Barber & Harmon, 2002; Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). Cross-sectional studies showed that perceived psychologically controlling parenting relates to a broad variety of adverse developmental outcomes in adolescence, including internalizing distress, as indicated by both general (e.g., Costa, Soenens, Gugliandolo, Cuzzocrea, & Larcan, 2015) and specific manifestations of internalizing distress such as depressive symptoms (Cui, Morris, Criss, Houlberg, & Silk, 2014; Daryanani, Hamilton, Abramson, & Alloy, 2016; Gargurevich & Soenens, 2016; Soenens, Park, Vansteenkiste, & Mouratidis, 2012) and anxiety (Ingoglia, Inguglia, Liga, & Coco, 2017). Furthermore,

psychologically controlling parenting is also associated with general measures of externalizing problems (Daryanani et al., 2016) and specific manifestations of externalizing problem behavior such as relational aggression (Kokkinos & Voulgaridou, 2017) and aggressive behavior (Cui et al., 2014). A meta-analysis also showed a significant association with relational aggression (Kawabata, Alink, Tseng, van Ijzendoorn, & Crick, 2011).

In addition to this cross-sectional body of work, longitudinal studies showed that psychologically controlling parenting predicts changes in maladjustment over time (e.g., Galambos, Barker, & Almeida, 2003; Pettit, Laird, Dodge, Bates, & Criss, 2001; Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008). Second, studies were also conducted in younger children (primary school, kindergarten age, and even infancy). For instance, using puppet interviews to measure parenting, psychologically controlling parenting has been related to internalizing and externalizing problems in children aged between five and eight years (Stone et al., 2013). Because the developmental consequences of psychologically controlling parenting have been studied very intensively, several meta-analyses have been conducted to provide a summarizing view of the effects associated with this parenting style. A meta-analysis of McLeod, Wood, and Weisz (2007) showed that psychologically controlling parenting was one of the strongest and most consistent parenting predictors of anxiety. Recent meta-analyses by Pinquart (2016; 2017) confirm that associations of psychologically controlling parenting with both internalizing and externalizing problems are significant and bidirectional in nature.

Third, studies have also been strengthened at the methodological level, for instance, by adopting a multi-informant approach in which parents themselves reported about their own psychologically controlling practices (e.g., Missotten, Luyckx, Van Leeuwen, Klimstra, & Branje, 2016; Soenens, Elliot et al., 2005; Soenens, Luyckx, Vansteenkiste, Luyten et al., 2008;

Soenens, Vansteenkiste, Duriez, & Goossens, 2006; Van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017). Some studies even included observational measures (e.g., Barber, 1996) and made use of experimental paradigms (e.g., Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005; Wuyts, Vansteenkiste, Mabbe, & Soenens, 2017). Finally, while most of the research to date has focused on either autonomy-supportive or psychologically controlling parenting, a few recent studies addressed effects of both dimensions simultaneously (e.g., Costa et al., 2016; Costa et al., 2015). These studies showed that autonomy-supportive parenting was especially related to adjustment whereas psychologically controlling parenting was especially related to maladjustment. Such findings confirm the hypothesized distinction between a bright and dark pathway of autonomy-relevant parenting.

1.4. EXPLAINING MECHANISMS

Self-determination theorists argue that the association between autonomy-supportive parenting and adjustment can be explained via need satisfaction, thus reflecting a “bright” pathway, whereas the association between psychologically controlling parenting and maladjustment can be explained by the frustration of these needs, thus reflecting a “dark” pathway (Vansteenkiste & Ryan, 2013). It is assumed within SDT that an autonomy-supportive parenting style will nurture the children’s basic psychological needs and the need for autonomy in particular (Grolnick, Ryan, & Deci, 1991; Soenens et al., 2007). Because autonomy-supportive parents value the perspective of the child, based on unconditional love, children of autonomy-supportive parents will feel free to give their own opinion and act upon their own interests (i.e., autonomy satisfaction). They will also feel recognized and supported by their parents (i.e., relatedness satisfaction) and more capable of attaining their goals (i.e., competence satisfaction). The satisfaction of

these needs, in turn, will facilitate psychological growth and subsequent positive developmental outcomes. A controlling parenting style in contrast would undermine the satisfaction of the needs, so that growth tendencies are not only blocked but derailed and negative developmental outcomes are more likely the result (Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010). Because controlling parents disregard the perspective of the child, children will feel pressured to follow their parents agenda (i.e., autonomy frustration), which will also have a negative impact on the connection between parent and child (i.e., relatedness frustration) and by feelings of not living up to the parents' expectations (i.e., competence frustration).

Thus, while autonomy support can be considered being part of a broader *need-supportive* parenting style, controlling parenting can be considered being part of a broader *need-thwarting* parenting style. Research supports these theoretical claims. Grolnick et al. (1991) for example found evidence for perceived competence and autonomy as explaining mechanisms between perceptions of the parental context (autonomy support and involvement) and academic achievement. Soenens et al. (2007) showed that autonomy need satisfaction played an intervening role in associations between parental autonomy support and adolescents' well-being. Gagné (2003) showed that need satisfaction played a role in the association between autonomy support and prosocial behavior. Conversely, psychologically controlling parenting has been found to be related not only to low need satisfaction (Ahmad, Vansteenkiste, & Soenens, 2013; Costa et al., 2015), but also to need frustration (Van der Kaap-Deeder et al., 2017), with experiences of low need satisfaction and high need frustration in turn being associated with problem behavior and negative affect. Costa et al. (2016) investigated the differential associations of autonomy-supportive and psychologically parenting with need satisfaction and frustration respectively,

thereby providing evidence for two relatively unique and differential pathways: autonomy support being related to adjustment via need satisfaction and with controlling parenting being related to ill-being via need frustration.

In sum, according to SDT, perceived autonomy-supportive socialization is in general related to beneficial developmental outcomes across age, gender, and cultural orientation because of its association with children's satisfaction of basic and universal needs. In contrast, perceived controlling socialization is in general related to adverse outcomes because it thwarts these same universal needs. In this dissertation, the mediating role of the needs will be further investigated in Chapters 2 and 6.

2. THE ROLE OF INDIVIDUAL DIFFERENCES IN THE EFFECTS OF SOCIALIZATION

2.1. IMPORTANCE OF STUDYING INDIVIDUAL DIFFERENCES

The claim that effects of autonomy-supportive and controlling socialization are mediated through universally important psychological needs experiences may seem very strong. This claim raises the question whether all children are equally sensitive to effects of autonomy-supportive and controlling contexts, and parenting in particular. Would effects of these parenting dimensions depend on interindividual differences between children? Within SDT, very little research has investigated the interaction between these two dimensions of socialization and individual differences between children. In this dissertation, we consider the role of both individual differences in causality orientations (Chapter 5), personality (Chapter 2, 3, 4 and 6) and developmental history of parenting (Chapter 6). An interesting and important question is whether the effects of autonomy-supportive and controlling parenting (and more broader: socialization) and their dynamics in terms of need satisfaction and frustration would also hold across individual differences in children's causality orientations, personality, and their

developmental history of parenting. Examining the moderating role of individual differences yields a new and challenging way to test SDT's claims about the universal importance of need satisfaction and socialization that supports the needs. Such research may also have practical implications because it helps identifying which children are less sensitive to the benefits associated with autonomy-supportive parenting and more sensitive to the costs associated with controlling parenting. Prevention and intervention programs focusing on parenting may then attend more strongly to such individual characteristics that confer vulnerability to need-thwarting parenting.

While relatively little attention has been devoted to the role of individual differences in effects of parenting within the SDT literature, there is a rich tradition of examining such individual differences in the broader socialization literature. This literature has focused mostly on the role of children's temperament and personality in effects of parenting. We will now first discuss this broader literature and then return to the SDT perspective on individual differences afterwards, thereby trying to reconcile both literatures and providing a nuanced account of the role of individual differences in autonomy-relevant parenting.

2.2. CHILD TEMPERAMENT AND PERSONALITY

Both dimensions of temperament and personality have been used as markers of individual differences between children. Historically, temperament and personality are distinguished as individual differences among children and adults, respectively. Temperament refers to *"the constitutionally based individual differences in emotional, motor and attentional reactivity and self-regulation"* (Rothbart & Bates, 1998, p. 109), whereas the construct of personality refers to *"individual differences in the tendency to behave, think, and feel in certain consistent ways"* (Caspi, 1998,

p. 312). Temperament is often considered as the biologically-based foundation for later personality development (Buss & Plomin, 1984; De Pauw & Mervielde, 2010). Several taxonomies of temperament are available in the literature. While Thomas and Chess (1977) refer to nine temperament dimensions, Buss and Plomin (1975, 1984) distinguish between four dimensions of temperament: emotionality, activity, sociability and shyness. Rothbart (1981, 2012) makes a distinction between three higher-order components: surgency (activity level, impulsivity, high intensity pleasure, shyness), negative affect (anger/frustration, discomfort, fear, sadness, and soothability), and effortful control (attentional focusing, inhibitory control, low intensity pleasure, and perceptual sensitivity).

There is a growing tendency, however, to also describe individual differences in children in terms of personality differences, since several temperamental dimensions are systematically related to the Big Five dimensions (De Fruyt, De Clercq, & De Bolle, 2017; De Pauw, 2017; De Pauw, Mervielde & Van Leeuwen, 2009; Mervielde, De Clercq, De Fruyt, & Van Leeuwen, 2005; Shiner & Caspi, 2003; Shiner & De Young, 2013). The Hierarchical Personality Inventory for Children (HiPIC, Mervielde & De Fruyt, 1999; Mervielde, De Fruyt, & De Clercq, 2009), for example has been used in both preschool children (De Pauw et al., 2009) and adolescents (Van den Akker, Dekovic, Asscher, & Prinzie, 2014) to measure the five broadband dimensions of personality and 18 facets. This measure is also used in almost all studies in this dissertation.

In the literature, two approaches have been taken with respect to investigating personality, that is, a variable-centered approach and a person-centered approach. With a variable-centered approach, one focuses on differences among individuals on a single variable. In several chapters in this dissertation, the framework of the Big Five personality traits theory will be used to investigate the role of individual differences in children, since the

Five-Factor Model or the Big Five is generally considered one of the most comprehensive and well-validated models of individual differences in personality (Caspi & Shiner, 2006). The Big Five traits are the following: Extraversion, Agreeableness (sometimes also referred to as Benevolence when it comes to child personality; Mervielde, De Fruyt, & De Clercq, 2009; De Pauw, 2017), Conscientiousness, Emotional Stability and Openness to Experience (sometimes also referred to as Imagination when it comes to child personality; Mervielde, De Fruyt, & De Clercq, 2009; De Pauw, 2017). Extraverted children are described as sociable, expressive, lively and energetic. Agreeable children are described as warm, considerate, empathic, generous, gentle, protective of others, and kind. Conscientiousness refers to individual differences in self-control. Children scoring high on Conscientiousness are responsible, attentive, persistent, orderly, and they think before they act. Emotional Stability refers to overall positive emotional adjustment. Openness to Experience refers to children who are eager and quick to learn, knowledgeable, perceptive, imaginative, curious, and original. Research has already demonstrated that personality differences in terms of the Big Five traits relate to psychopathology (e.g., Shiner, 2006; Tacket & Krueger, 2005). While low scores on Conscientiousness and Agreeableness put children at risk of externalizing behaviors (Lynam et al., 2005; Ozer & Benet-Martinez, 2006), Extraversion and Emotional Stability protect against internalizing difficulties (Muris, Meesters, & Blijlevens, 2007; Van Leeuwen, Mervielde, Braet, & Bosmans, 2004). A recent metasynthesis (Strickhouser, Zell, & Krizan, 2017) has also shown that personality predicts overall health and well-being.

From a clinical perspective, a variable-centered approach may not be the most useful approach, because within one person, these traits are combined in a certain configuration (De Clercq, Rettew, Althoff, & De Bolle, 2012). Therefore, another way to investigate the role of personality is to use

a person-centered approach (Asendorpf, Borkenau, Ostendorf, & van Aken, 2001; Asendorpf & van Aken, 1999; De Fruyt, Mervielde, & Van Leeuwen, 2002; Robins, John, Caspi, Moffitt, & Stoethamer-Loeber, 1996). This person-centered approach gives a more accurate description of how the traits exist together within one person (De Clercq et al., 2012). In this tradition, three personality types are distinguished: (1) a *resilient* type, characteristic of individuals scoring on average on the socially adjusted characteristics Agreeableness, Extraversion, Openness to Experience and Conscientiousness and high on Emotional Stability, (2) an *overcontrolled* type, characteristic of individuals primarily scoring low on Emotional Stability and Extraversion, (3) and an *undercontrolled* type, characteristic of individuals primarily scoring low on Conscientiousness and Agreeableness. Resilient persons are described as being capable to adapt to change, self-confident, independent, verbally fluent, and able to concentrate on tasks. Overcontrolled persons are described as having limited interpersonal skills, shy, and inward looking. Undercontrolled persons are described as impulsive, willful, disagreeable and showing little concern for others (Caspi & Shiner, 2006). While the overcontrollers have been shown to be particularly prone to internalizing problems, undercontrollers are particularly prone to externalizing problems (Robins et al., 1996). These personality prototypes have been identified not only among adults but also in childhood (Asendorpf & van Aken, 1999) and adolescence (Van Leeuwen, De Fruyt, & Mervielde, 2004). In this dissertation, the person-centered approach is used, together with the variable-centered approach, in Chapter 4. In the other chapters investigating the role of personality, a variable-centered approach is used.

2.3. MODELS ON THE MODERATING ROLE OF PERSONALITY

Initial research on individual differences in effects of parenting has focused on interactions between parenting and temperament (see Kiff,

Lengua, & Zalewski, 2011 for an overview). Several models have been developed with different predictions about the links between parenting, temperament and developmental outcomes. With the increasing recognition that personality can also be used to describe individual differences in children (De Pauw, 2017), research also increasingly focuses on interactions between parenting and specific personality traits in children's and adolescents' development (e.g., Becht, Prinzie, Dekovic, van den Akker, & Shiner, 2016; Missotten et al., 2016).

Although much research on parenting, child temperament/personality and developmental outcomes/adjustment has focused on main effects of parenting and child temperament/personality (Gallagher, 2002; Kiff et al., 2001), socialization is increasingly viewed as a complex process in which child temperament and parenting behaviors influence each other reciprocally and also alter each other's effects on child development. Kiff et al. (2011) provide an overview of existing theories on transactions and interactions between child temperament and the environment. Transactional (or bidirectional) models assume that child temperament and parenting mutually shape each other over time. Children with a difficult temperament (i.e., children scoring high on irritability and hostility and who are prone to cry, and hard to soothe), for example, may elicit more dysfunctional parenting, with such parenting engendering more behavior problems that, in turn, make parents rely even more on negative parenting (Laukkanen, Ojansuu, Tolvanen, Alatupa, & Aunola, 2014).

A second way to examine whether and how temperament affects the development of children is by considering child temperament and personality as a moderator of socialization. In interaction models of parenting and individual differences, the effect of a parenting dimension or practice is said to depend on the temperament or personality of the child. In this respect, Gallagher (2002, p. 640) pointed out the importance of better

understanding *“the characteristics and circumstances of parenting that promote positive child adjustment for children of different temperaments”*. Hence, the question can be raised whether the same parenting dimension or practice will yield similar or dissimilar developmental outcomes for children with different temperamental or personality-based characteristics. This question about moderation has a long history. Thomas and Chess (1968) were among the first to acknowledge that children contribute to their own development. They recognized that both normal and problematic development results from complex interactions between the child and the environment. In 1956, they initiated the New York Longitudinal Study, in which they investigated the role of temperamental characteristics to normal and problematic development. In doing so, they developed the goodness-of-fit model (Thomas et al., 1968), which *“implies that the adequacy of an organism’s functioning is dependent upon the degree to which the properties of its environment are in accord with the organism’s own characteristics and style of behaving”* (Thomas et al., 1968, p. 137). Thus, according to a goodness-of-fit model, adaptation and development take place when there is a *match* or *congruence* between children's own characteristics and the demands of the environment. These demands may include expectations, attitudes, or values from important others (Talwar, Nitz, & Lerner, 1990). As described by Thomas and Chess (1968), *“goodness of fit is never an abstraction, but is always goodness of fit for certain end results”*. The ‘end result’ of goodness-of-fit has to be *“change and expanded competence rather than stability”*.

This general notion of goodness-of-fit has been specified and made amenable to concrete, testable hypotheses in recent person by environment interaction models. Diathesis-stress models (Monroe & Simons, 1991; Zuckerman, 1999), also called dual-risk models (Sameroff, 1983), focus on individuals’ vulnerabilities that result in negative developmental outcomes,

especially in at risk environments. Specifically, children with difficult temperamental characteristics or with vulnerable personality traits or configurations would be more susceptible to the detrimental effects of dysfunctional parenting. These diathesis-stress models can be linked to the vulnerability hypothesis (Caspi & Shiner, 2006), which refers to the predisposition to develop disorders, especially in response to encountered stressors.

More recent models highlight the basic idea of children's differential responsiveness to parenting (Kiff et al., 2011; Pluess, 2015), as expressed for instance in Belsky's (1997) differential susceptibility hypothesis. This hypothesis proposes that *"highly reactive children flourish in response to positive parenting and flounder in response to negative parenting"* (Kiff et al., 2011, p. 255). The central idea is that certain characteristics render children more susceptible to the environment (including parenting), for better and for worse.

2.4. RESEARCH ON THE INTERACTION BETWEEN PARENTING AND PERSONALITY

In their review Kiff et al. (2011) concluded that most research findings on interactions are consistent with the diathesis-stress model. Specifically, several studies (e.g., Gilliom & Shaw, 2004; Paterson & Sanson, 1999) showed that children with a difficult temperament display more adjustment problems when confronted with maladaptive parenting. Specifically, children high on characteristics like frustration and impulsivity and low on effortful control have an increased risk for developing externalizing behavior problems in the face of a negative parenting context (Kiff et al., 2011).

Other studies (e.g., Schwebel, Brezaussek, Ramey, & Ramey, 2004) found evidence for the differential susceptibility hypothesis in the context of negative affect. Children high on negative affectivity exhibited more

difficulty in the context of a negative environment, but also benefited more from parenting that was more positive and supportive. Stright, Gallagher, and Kelley (2008) found that children high on negative affectivity showed the lowest levels of school readiness when their mothers were low in emotional support, but they showed the highest levels of school readiness when their mothers were high in emotional support. A recent meta-analysis by Slagt, Dubas, Dekovic and van Aken (2016) found that children with a more difficult temperament were more vulnerable to negative parenting, but also benefited more from positive parenting, supporting the differential susceptibility hypothesis. However, Slagt and colleagues (2016) expressed two issues of major concern with contemporary studies investigating the differential susceptibility hypothesis. First, many studies, also those included in their meta-analysis, investigated either negative or positive parenting behaviors, without studying both types of parenting simultaneously. Children who were more susceptible to negative parenting and children who were more susceptible to positive parenting were not the same children, as they belonged to different samples. Second, most studies available used a between-persons design. To more adequately test the differential susceptibility hypothesis, however, a within-person design is needed in which a child is, at best, exposed to an experimentally induced negative and positive environment. Although it is not ethical to assign individuals to chronically adverse contexts, it is possible to expose children to more mild and fleeting micromanipulations of the context (e.g., positive versus negative feedback; exposure to happy and angry faces). In one recent study in this line of inquiry (Slagt, Dubas, van Aken, & Ellis, & Dekovic, 2017), the same children were exposed through a within-person design to both adaptive and adverse contexts, operationalized through the provision of positive and negative feedback, respectively. Results showed that there was a subset of vulnerable children who were sensitive to the adverse contexts

(supporting the diathesis-stress hypothesis) but not a subset of susceptible children who were sensitive to both adaptive and adverse contexts. Overall, it remains unclear whether the interplay between parenting and personality/temperament is best described in terms of diathesis-stress or differential susceptibility, and more research is clearly needed.

Most of the studies investigating interactions between the Big Five traits and parenting have outcome variables that reflect psychopathology (e.g., internalizing and externalizing problems) and most of them focus on interactions with a negative parenting style (De Clercq, Van Leeuwen, De Fruyt, Van Hiel, & Mervielde, 2008; de Haan, Prinzie, & Dekovic, 2010; Dubas, Gerris, Janssens, & Vermulst, 2002; Manders, Scholte, Janssens, & De Bruyn, 2006; Meunier, Roskam, Stievenart, van de Moortele, Browne, & Kumar, 2011; O'Connor & Dvorak, 2001; Prinzie et al., 2003; Van Leeuwen et al., 2004; Van Leeuwen, Mervielde, De Clercq, & De Fruyt, 2007). A number of interactions have been documented with some consistency. Most of these interactions are between a negative parenting style (e.g., overreactivity, coercive parental discipline and negative control) and Agreeableness and Conscientiousness, where those personality traits serve as protective factors against the negative parenting behavior. Typically, the interactions obtained are ordinal and not cross-over, which means that the personality trait only has an effect on the strength of the relationship between parenting and outcomes, but not on the direction. A recent study by Chaparro and Grusec (2016) also included a positive outcome. Maternal inconsistent discipline predicted decreases in empathy two years later, but only for adolescents scoring high on Emotional Stability. In this case, adolescents scoring high on a positive personality feature were more likely to be adversely affected by the negative parenting behavior. Recently, studies also started to look at the potential moderating role of personality facets. Shyness (a facet of Extraversion), irritability (a facet of Agreeableness)

and compliance (a facet of Agreeableness) for example moderated the association between overreactive parenting and developmental trajectories of anxious and depressive problems, with shyness, irritability and compliance exacerbating the associations (Prinzle, Van Harten, Deković, Van den Akker, & Shiner, 2014).

In this dissertation, we aim to look at the potential moderating role of child and adolescent personality in the effects of autonomy-supportive and psychologically controlling parenting. Up till now, no studies have examined the moderating role of personality in effects of autonomy-supportive parenting. With respect to controlling parenting, previous studies have mainly focused on externally controlling forms of parenting (e.g., overreactivity) and not on more internally controlling or psychologically controlling forms of parenting. Recently, a few studies did begin to look for potential temperament-based moderators in the effects of psychologically controlling parenting. Cui et al. (2014), for example, reported that the association between parental psychological control and adolescent depressive symptoms was stronger among adolescents with poor sadness regulation, while the association between psychological control and aggressive behavior was stronger among adolescents with poor anger regulation. Zarra-Nezhad et al. (2014) found that maternal psychological control was associated with internalizing problems, especially among the children scoring high on social withdrawal. In contrast, Zarra-Nezhad, Aunola, Kiuru, Mollola, & Moazami-Goodarzi (2015) found maternal psychological control to relate to negative emotions among children, irrespective of their temperament. Paternal psychological control on the other hand was especially associated with negative emotions among children with a difficult temperament. Next, Blossom, Fite, Frazer, Cooley, and Evans (2016) found that psychologically controlling parenting was associated with increased relational and decreased physical aggression

among emotionally well-regulated children, while an opposite pattern was observed for emotionally dysregulated children. In sum, research has begun to examine the role of individual differences, and of temperamental differences in particular, in effects of psychologically controlling parenting. However, up till now, the moderating role of children's and adolescents' personality has not been investigated yet.

3. THE ROLE OF INDIVIDUAL DIFFERENCES FROM A SELF-DETERMINATION THEORY PERSPECTIVE

3.1. ARE INDIVIDUAL DIFFERENCES CONSIDERED AT ALL?

Against the background of models and findings suggesting that individual characteristics can moderate the effect of parenting and socialization (as discussed in the preceding paragraph), an important, yet understudied question is whether individual differences in children may moderate the effects of autonomy-supportive and controlling socialization, as conceptualized in SDT. At first sight, it may seem as if SDT stands in diametrical opposition to the models describing parenting by personality interactions. While these models underscore the important role of personality in qualifying the effects of parenting, SDT seems to ignore the role of individual differences because it assumes that the basic psychological needs are universal mechanisms explaining the growth-promoting and detrimental effects of autonomy-supportive and controlling parenting, respectively. Yet, closer inspection suggests that such oppositional views do not necessarily hold, for two important reasons.

First, SDT does recognize the existence of individual differences and even contains a mini-theory devoted specifically to personality-based differences in motivational orientations, that is, Causality Orientations Theory (Deci & Ryan, 1985b; Ryan & Deci, 2017; Vansteenkiste et al., 2010). Causality orientations are defined as ways of interpreting and regulating

events (e.g., a reward, a deadline, a provision of choice). Three different causality orientations are discerned (Deci & Ryan, 1985b). First, people with an autonomous causality orientation have the tendency to interpret existing situations as informational and to regulate behavior on the basis of self-endorsed motives, thereby behaving in accord with their interests and values. They have *“the capacity to experience events as sources of information for initiating and regulating their own chosen behavior and to maintain a higher level of self-determination and intrinsic motivation regardless of the objective properties of the event”* (Deci & Ryan, 1985b, p. 109). Second, people with a controlled causality orientation have the tendency to interpret events as evaluative and to regulate their behavior on the basis of pressuring motives. Third, people with an impersonal causality orientation believe they have no control over the outcomes of their behavior and, accordingly, experience dispositionally high levels of helplessness. The causality orientations are considered relatively stable dispositions reflecting individual differences in motivational orientations. They are assumed to play a particularly important role when contexts are ambiguous and leave room for interpreting the environment in different ways (Deci & Ryan, 1985b). In this dissertation, the role of the causality orientations will be investigated in Chapter 5.

Second, over the past few years, a moderate universalistic viewpoint has been developed within SDT, which assigns a more pronounced role to individual differences in effects of the context on motivation and developmental outcomes. In principle, the moderating role of individual differences in effects of parenting and socialization more broadly can be considered either from a more universal perspective or from a more relativistic viewpoint. When both viewpoints are interpreted in a strict and extreme way, they indeed entail strongly opposing views on the question whether individual differences moderate the effects of autonomy-supportive

and controlling socialization (Soenens et al., 2015). On the basis of an extreme relativistic position, one would predict that the effects of autonomy-supportive and controlling parenting are fully dependent upon individual differences in children. Interpreted in this way, it is hard to define what optimal parenting involves as the effects of parenting always need to be contextualized, that is considered in conjunction with the child's personality, among various moderating factors. Within such an extreme relativistic point of view, it is hard, if not impossible, to maintain that autonomy-supportive parenting is universally adaptive and that controlling parenting is universally maladaptive, since their effects would be strongly qualified by individual differences. Ultimately, this extreme version of the relativistic perspective could lead to the prediction that some children benefit from a controlling approach and that some children suffer from autonomy-supportive socialization. In contrast, based on an extreme universal position, one would argue that there are some key ingredients of optimal parenting that invariantly produce the same adaptive effects for all children. Conversely, the neglect of these key ingredients should come with similar costs for all children. Thus, such an extreme universalistic viewpoint leaves little, if any, room for moderation by personality differences. To illustrate, because autonomy-supportive parenting appeals to the fundamental and universal need for autonomy, it would invariantly result in adaptive developmental outcomes, irrespective of individual differences in children.

Fortunately, few scholars, if any, advocate one of these two extreme positions. Also within SDT, a moderate viewpoint on universalism is advocated (Soenens et al., 2015), such that the role of individual differences may surface in three different ways. First, individual differences in children can affect the strength of the association between socialization and outcomes (i.e., gradation). Second, individual differences in children can

have an impact on how children interpret parenting behaviors and socialization more broadly (i.e., interpretation). Finally, individual differences in children can also have an influence of how the benefits and costs of socialization manifest (i.e., manifestation). These three aspects are explained in greater detail in the sections below.

3.2. DIFFERENTIAL SENSITIVITY TO AUTONOMY-RELEVANT PARENTING IS A MATTER OF GRADATION

According to the biological sensitivity to context model (Boyce & Ellis, 2005), children exposed to much stress will develop heightened reactivity, increasing their capacity to detect and respond to threats and danger. On the other hand, children growing up in supportive contexts will also develop heightened reactivity, enabling them to profit more from social resources and support. This model refers to the idea that past experiences influence how sensitive children become towards future experiences. Similarly, SDT recognizes that children differ in their sensitivity to potentially need-supportive and need-thwarting environments. Past developmental experiences and personality may influence how sensitive children become towards future experiences. According to this *(de)sensitization* hypothesis, children with a developmental history of mainly need-supportive experiences and with a personality eliciting need-supportive experiences may be more sensitive to new need-supportive situations (Moller, Deci, & Elliot, 2010; Van Petegem et al., 2017), resulting in a more pronounced effect of new need-supportive situations. These children would also be armed better against new need-thwarting events. In contrast, children with a developmental history of more need-thwarting experiences or with a personality eliciting more need-thwarting experiences may become more sensitive to new need-thwarting situations. They also may gradually become desensitized to the potential benefits of contextual need support, which

means that they may become less sensitive to the positive effects of a new need-supportive situation.

Importantly, this sensitization/desensitization effect is assumed to be a matter of gradation (Soenens et al., 2015). While children may differ in the extent to which they are sensitive to the benefits of an autonomy-supportive context, it is unlikely that some children would suffer from such a context. Similarly, while children may differ in their vulnerability to controlling socialization, it is unlikely that some children would benefit from a controlling style and flourish under controlling conditions. Thus, it is important to pay attention to the precise way in which individual differences moderate the effects of socialization, thereby distinguishing between several types of interactions. With ordinal interactions, the strength but not the direction of the relationship is influenced by the moderator. With cross-over interactions, not only the strength but also the direction of the relationship is influenced by the moderator. As described in a review on parenting and child temperament (Kiff et al., 2011), a lot of interactions found in the domain of psychology are ordinal and not cross-over. This was also confirmed in the studies described earlier on the interactions between parenting and Big Five personality traits. This means that a certain parenting behavior will have either positive or negative developmental outcomes, but the strength (and not the direction) of the relationship will be influenced by child characteristics. To give an example, in the study of Prinzie and colleagues (2003), more coercion was related to more externalizing problems, but this relationship was stronger for children low in Conscientiousness. However, the direction of the relationship was not reversed, which means that coercion is harmful for all children and not beneficial for some. The only thing that differs is that for some children, coercion is more harmful than for others.

When ordinal interactions would be found between autonomy-supportive parenting or controlling parenting and individual differences in the prediction of developmental outcomes, this would mean that the strength of the associations between parenting and developmental outcomes is a matter of degree. This would not necessarily be in contrast with SDT, since autonomy-supportive and controlling parenting would yield positive and negative developmental outcomes, respectively. These relationships would only be more pronounced for children with certain personality characteristics or with a certain developmental history. When cross-over interactions would occur however, it would be in sharp contrast with the claims of SDT, since this would mean that autonomy support could also have detrimental effects and that controlling socialization could also be beneficial. This would raise the question whether satisfaction of the need for autonomy really is a universal requirement for adaptive development. For these reasons, in the current research project we will systematically pay close attention to the nature of the interactions obtained.

3.3. HOW ARE SOCIALIZATION CONTEXTS INTERPRETED?

A second important nuance to the SDT perspective on socialization is that it is important to distinguish between socialization figures' actual behavior and children's appraisals of these behaviors in terms of subjectively experienced need-support or need-thwarting (Soenens et al., 2015). When interpreting an event, knowledge from previous experiences will come into memory and will influence the interpretation and understanding of the new situation (Dodge, 1986). Within *social cognition theory*, it is stated that people interpret environments in different ways, depending on personality characteristics and developmental history. Dodge (1986) described a model of social information-processing which involves five steps between a social cue and a behavioral response. This model was revised by Crick and Dodge

(1994), which contains now six steps, with one of the steps referring to interpretation of the situational cues. Similarly, in the personality literature, it is recognized that personality shapes how people experience, interpret, and respond to the world around them (Caspi, 1998; Caspi, Roberts, & Shiner, 2005). Also within SDT, the importance of individuals' interpretation of contextual events is highlighted through the notion of functional significance.

Functional significance. Deci and Ryan (1985b) stated that *“whether an event is supportive of autonomy or controlling depends on which aspect of the event or context is salient to the perceiver”* (Knee & Zuckerman, 1996, p. 76). So, although the assumption is held that autonomy support and control come on average with, respectively, positive and negative developmental outcomes, the possibility is recognized that similar situations can be perceived differentially depending on personal characteristics. This idea is best captured through the notion of *functional significance* (Deci & Ryan, 1985b). The functional significance of an event refers to the psychological meaning attributed to that event. Deci and Ryan (1987, p. 1033) describe the concept as follows: *“Functional significance refers to the motivationally relevant psychological meaning that events or contexts are afforded or imbued with. This means that a person’s perception of an event is an active construction influenced by all the kinds of factors herein discussed. And it is the person’s own perception (i.e., construction) of the event to which he or she responds. The external event is an affordance for their constructive interpretations.”*

Although different meanings can be attributed to any external event (e.g., offer of rewards or the provision of choice), some of these meanings may characterize some external events more than others. For instance, rewards, threats, deadlines, evaluation and surveillance are said to have on average a functional significance of control, such that these events are more

likely to be perceived as pressuring. The provision of choice and positive feedback, in contrast, have an informational functional significance such that they are experienced as supportive of the needs for competence and autonomy. Although readers may have the impression that any external event or context can be perceived as informational, controlling or amotivating, this is not the case. Indeed, there are constraints in the interpretation of events, as illustrated by the following quote: *“It is, of course, possible, on the basis of definitions, to predict whether events or contexts will have an autonomy-supportive or controlling functional significance. This can be useful for purposes of prescriptive formulations. Conceptually, however, this is merely a matter of referring to the average functional significance that an event or context is likely to be given, as contextual factors cannot be disembedded from the psychological meaning given them by the individual”* (Deci & Ryan, 1987, p.1033). Based on the idea of functional significance, controlling socialization (e.g., punishment, threats,...) will, on average, be interpreted as having a controlling functional significance whereas autonomy-supportive socialization (e.g., choices, rationales,...) will, on average, be interpreted as having an informational functional significance. Around that average however, there is room for some deviation depending on individual differences in children.

Distinguishing Parents’ Actual Behavior from its Subjective Interpretation. To investigate how children perceive a certain socialization context, a distinction has to be made between what parents or other socialization figures actually do and children’s subjective appraisal, experience, and interpretation of the behavior. This nuance is also directly linked to a recent trend in the parenting literature to look at children’s active role in evaluating parental behavior (Soenens et al., in press). Helwig, To, Wang, Liu, and Yang (2014) for example investigated how children interpret different parental strategies, including psychologically controlling parenting.

This study showed age-related and cultural differences in how these parenting behaviors are evaluated, with children from collectivist cultures for instance displaying a somewhat more benign interpretation of potentially controlling practices than children from more individualistic cultures. Camras, Sun, Fraumeni, and Li (2017) also found that the effects of coercive authority assertion, critical comparison and shaming depended on how children interpreted their parents' behavior. The negative effects of coercive authority assertion were less pronounced for children who interpreted their parents' behavior as motivated by concern for the child. A study in the teaching context also investigated whether the affective meaning of controlling teaching differs depending on culture (Zhou, Lam, & Chan, 2012). Results showed that Chinese children perceived the same controlling behaviors of teachers as less controlling than American children (see also Chen, Soenens, Vansteenkiste, & Beyers, 2016).

Although there seems to be room to interpret socialization contexts in different ways, the subjective experienced autonomy or control will subsequently be associated with well-being and problems respectively. As soon as children and adolescents have the perception that their autonomy is supported or undermined, there would be relatively less room for personality to change the effects of the environment (through processes of interpretation and appraisal). In this dissertation, the distinction between what socialization figures actually do and children's subjective appraisal is studied in two different ways. First, apart from self-reports of parenting, we also use parental reports of parenting in a number of chapters (i.e., Chapter 2, 3, 4 and 5). Using a multi-informant approach was deemed important because, on the basis of SDT, it can be predicted that there is relatively less room for moderation when considering child reports of parenting compared to parent reports of parenting. As soon as children subjectively perceive parents as supporting autonomy, they are likely to benefit because they are

then likely to experience psychological need satisfaction. Conversely, as soon as children subjectively perceive parents as controlling, they are likely to experience need frustration and, subsequently to report more ill-being. Second, an experimental induction is used in Chapter 6 in which effects of a standardized manipulation of autonomy support versus control and positive versus negative feedback were examined. This experimental induction of autonomy support allowed us to disentangle effects of the actual context from how the context was perceived. We expected that there would be more room for moderation (by personality and developmental history) in direct effects of the experimental manipulation on motivation than in associations between subjectively experienced need satisfaction following from this manipulation and motivation. However, even in the case there may be less room for moderation, SDT still recognizes that there is room for moderation because individual differences may affect the developmental manifestation of experiences of autonomy and control. This brings us to the third and final nuance to the SDT perspective on individual differences in parenting.

3.3. HOW DO THE BENEFITS AND COSTS OF PARENTING MANIFEST?

A third important nuance is that the child's personality may shape the manifestation of the effects of socialization. To give an example, it is possible that on average, controlling parenting has detrimental effects for every child, but that the effects can manifest differently for children depending on their personality. If we would find that controlling parenting relates to different detrimental outcomes depending on the child's personality this would again not disconfirm SDT. The notion that controlling parenting thwarts basic psychological needs which, in turn, results in compensatory, derivative and suboptimal responses would then still hold. It

would just be qualified, in the sense that the way how children compensate for need frustration is colored by their personality.

In the current dissertation, we look into different manifestations of socialization by distinguishing between adaptive and maladaptive developmental outcomes. With respect to maladaptive outcomes, a distinction is made between internalizing (anxiety, depressive symptoms and somatization) and externalizing (aggressive and rule-breaking behavior) problems. Internalizing problems have been shown to increase during the transition to adolescence (e.g., Garber, Martin, & Keiley, 2002; Rohde, Lewinsohn, Klein, Seeley, & Gau, 2013; Twenge & Nolen-Hoeksema, 2002). Externalizing problems on the other hand are seen as the most common and persistent form of maladjustment in childhood and adolescence (Dishion & Patterson, 2006). Since most samples in this dissertation are children in the pre-, early-, and middle-adolescence developmental periods, these outcomes seemed most important to consider when investigating the question whether the child's personality qualifies effects of controlling parenting. One possibility, for instance, is that controlling parenting would relate more strongly to internalizing problems in children with an overcontrolled personality profile whereas it would relate relatively more strongly to externalizing problems in children with an undercontrolled personality profile.

In sum, although autonomy-supportive and psychologically controlling socialization appeal to universal psychological needs, we hypothesize that there is room for individual differences to play a role in (a) the gradation of the effects and thus the extent to which children are sensitive for these effects, (b) the perception of the context, in which personality and developmental history of parenting would play a greater role in effects of actual and parent-reported socialization compared to effects of child-perceived parenting, and (c) the manifestation of developmental

outcomes associated with autonomy-supportive and controlling socialization. Additionally, it is important to investigate these associations at both the between-person level (comparing children) and the level of within-child changes (at the short and long term). From a within person perspective, the frame of reference is the family itself, the place where real changes can take place (Keijsers, 2016). Disentangling the between- and within-person perspective is also important since some studies find opposing results at the within- and between-level of analysis (e.g., Keijsers, 2016).

4. DAILY VARIATION IN PARENTING

In this dissertation, apart from looking at how individual differences play a role in the effects of autonomy-supportive and controlling contexts on well-being and problem behavior, we also aim to examine the extent to which an autonomy-supportive and controlling socialization is stable and, in particular, show inter-individual differences between parents or vary from day-to-day. To the extent that there is daily variation in parenting, we also aim at looking at possible source of these fluctuations.

4.1. PARENTING FROM A DYNAMIC PERSPECTIVE

Although abundant research already demonstrated the adaptive role of autonomy-supportive parenting and the maladaptive role of psychologically controlling parenting, there is a lack of research on these associations in daily interactions. This is unfortunate because family system theory (Cox & Paley, 1997) emphasizes that parent-child interactions are highly dynamic and strongly fluctuate on a situational and daily basis. One way of investigating daily interactions is to apply a diary methodology. Recently, parenting research started to embrace this methodology and a handful studies already demonstrated that autonomy-relevant parenting is indeed variable from day-to-day.

This variability in parenting on a day-to-day basis has also been linked to daily fluctuations in child outcomes. Daily maternal and paternal psychologically controlling parenting has been related to daily negative emotions in the child (Aunola, Tolvanen, Viljaranta, & Nurmi, 2013). Mothers' daily use of psychological control was related to daily binge eating (Mushquash & Sherry, 2013). Another study showed that daily psychological control was associated with children's daily distress (Aunola, Ruusunen, Viljaranta, & Nurmi, 2015). Adolescents experiencing more positive interactions with parents reported fewer depressive and physical health symptoms on a daily basis (Lippold, Davis, Lawson, & McHale, 2016). Adolescents whose parents exhibited more knowledge inconsistency reported more physical health symptoms on a daily basis (Lippold, McHale, Davis, & Kossek, 2015). Daily maternal, teacher and sibling autonomy support and psychological control related to changes in daily well-being and ill-being (Van der Kaap-Deeder et al., 2017). The fact that parenting is variable on a day-to-day basis and is related to fluctuations in children's adjustment leads to the question: what can account for this variability in parenting?

4.2. SOURCES OF DAILY VARIATIONS IN PARENTING

Belsky (1984) formulated a model of several determinants of parenting. In this model, parenting is thought to be influenced by (a) psychological resources of parents, (b) child characteristics, and (c) contextual factors. A lot of research has been devoted to investigate the role of these determinants on general parenting styles. Looking for sources of daily variations in parenting implies that one is looking at less stable determinants of parenting.

Mothers' and fathers' daily negative emotions were positively related to parents' daily use of psychological control, even after controlling

for children's misconduct on the same day (Aunola, Viljaranta, & Tolvanen, 2016). Daily levels of depressive symptoms were related to daily levels of psychological control (Aunola et al., 2015). The role of parents' own needs as sources of autonomy-supportive and controlling parenting has thus far not been investigated. Examining the role of parents' own psychological needs in daily parenting was the goal of Chapter 7.

5. KEY GOALS AND OVERVIEW OF THIS DISSERTATION

Against the background of the literature review presented in the previous sections, this section will address the main aims of this dissertation, which revolve around two overarching goals, that is, (1) examining the moderating role of individual differences in the effects of autonomy-supportive and psychologically controlling socialization, and (2) examining the antecedent role of parental needs experiences in daily autonomy-supportive and psychologically controlling parenting. These goals and corresponding research questions are outlined below. Figure 1 presents a graphical overview of the global proposed theoretical model underlying the conducted studies.

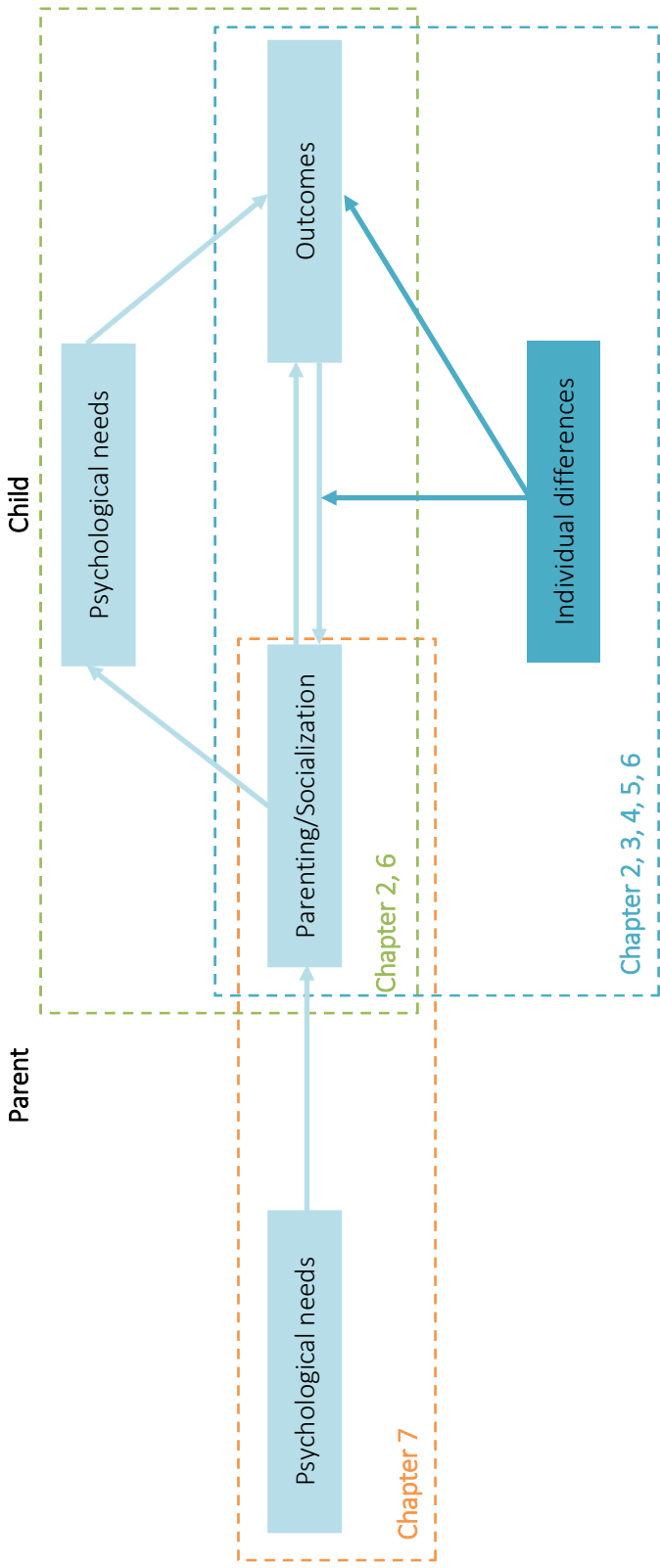


Figure 1. Theoretical model.

5.1. GOAL 1: THE MODERATING ROLE OF INDIVIDUAL DIFFERENCES

The main aim of this dissertation is to examine the nuanced ways (i.e., in terms of gradation, interpretation and manifestation) in which individual differences may affect the outcomes of autonomy-relevant socialization. These individual differences are conceptualized in terms of three different moderators, that is, Big Five personality traits (Chapters 2, 3, 4 and 6), causality orientations (Chapter 5) and developmental history of parenting (Chapter 6).

Research Question 1: Are some children and adolescents more susceptible to effects of psychologically controlling parenting depending on their personality traits? In Chapters 2, 3 and 4, the moderating role of personality is investigated in the associations between psychologically controlling parenting and internalizing and externalizing problems. According to SDT, all children would suffer from psychologically controlling parenting to some extent, since these parenting practices thwart the universal needs for autonomy, competence and relatedness (e.g., Costa et al., 2016). We therefore hypothesize that associations between psychologically controlling parenting and maladjustment will be generally positive. This does not suggest, however, that there is no room for moderation by individual differences at all. We hypothesize that if interactions are found in the associations between psychologically controlling parenting on the one hand and internalizing and externalizing parenting on the other hand, it will be a matter of gradation, meaning that the associations will be stronger for children with a more maladaptive personality profile compared to those with a more adaptive personality profile. Personality may also play a role in terms of manifestation. As both types of maladaptive outcomes (i.e., internalizing and externalizing problems) are taken into account in these chapters, it is also possible to investigate whether the detrimental effects of

psychologically controlling parenting manifest differentially depending on personality. We hypothesize that for children with more undercontrolled traits, psychologically controlling parenting will be associated mainly with externalizing problems, whereas for those with more overcontrolled traits, psychologically controlling parenting will be associated mainly with internalizing problems (van Aken & Dubas, 2004; Van Leeuwen et al., 2004).

In Chapters 2, 3 and 4, the role of child and adolescent personality will be investigated within a cross-sectional, diary-based and longitudinal design, respectively. While the cross-sectional design focuses on between person differences, the diary-based and longitudinal designs make it possible to disentangle the between- and within-person perspectives. From a between-person perspective, examining the moderating role of personality means that one is looking at the question for whom the associations between parenting and outcomes are stronger, weaker or non-existent. From a within-person perspective, examining the moderating role of personality means that one is looking at the question which children are more or less susceptible to changes in parenting compared to their own mean of perceived parenting.

Research Question 2: Do associations between perceived maternal autonomy-supportive parenting and adolescents' well-being depend on adolescents' dispositional motivational orientations? In Chapter 5, the moderating role of the causality orientations is investigated in the association between autonomy-supportive parenting and well-being. In this chapter, we want to investigate whether adolescents with an autonomous causality orientation are more sensitive to the beneficial effects of autonomy-supportive parenting. If there would be interactions between the causality orientations and autonomy-supportive parenting in the prediction of well-being, we hypothesize that it will again be a matter of gradation.

More specifically, it could be hypothesized that there will be a stronger association between autonomy-supportive parenting and well-being for those adolescents with an autonomous causality orientation, compared to those with a controlled causality orientation.

After having investigated the moderating role of the causality orientations, in this chapter, we also introduce and test another conceptualization of the goodness-of-fit principle introduced by Thomas and Chess (1968). Specifically, we distinguish between goodness-of-fit (a) as an objective match between parental practices and child and adolescents' personalities and (b) a more subjective experience at the side of the child involving the feeling that parents understand and take into account their personalities. With the latter conceptualization, it can be predicted that autonomy-supportive parenting actively contributes to a subjective sense of goodness-of-fit because an inherent part of autonomy-supportive socialization is that parents take into account their children's characteristics. Thus, in addition to testing the moderating role of causality orientations, Chapter 5 also aims to test a mediation sequence where autonomy-supportive parenting is related to well-being through subjective experiences of goodness-of-fit.

Research Question 3: Are the effects of experimentally induced autonomy-supportive and controlling positive and negative feedback the same regardless differences in personality traits and parenting history? To better distinguish between actual socialization behavior and children's subjective interpretation, in Chapter 6, an experimental design is used in which positive or negative feedback is delivered in either an autonomy-supportive or controlling style. We hypothesized that negative feedback delivered in a controlling way would yield the most negative effects. Personality could play a role in the way how children interpreted the

experimental manipulations. It can be hypothesized that for some children, controlling normative feedback is perceived as more need frustrating compared to other children. It can also be hypothesized that some children will benefit more from autonomy-supportive feedback compared to other children. We hypothesize that children scoring higher on adaptive personality traits may interpret the same environment more favorably, which translates in more feelings of need satisfaction. These children are hypothesized to report greater psychological need satisfaction and display more intrinsic motivation following the exposure to positive and autonomy-supportive feedback. Consistent with a sensitization perspective, we hypothesized that children experiencing a need-supportive (i.e., autonomy-supportive) style in one context (at home) will be more sensitive to the potential benefits of need support in a different context (i.e., positive and autonomy-supportive feedback provided in a school context). Children with a history of need-thwarting (i.e., controlling) parenting may be more sensitive for new need-thwarting experiences, resulting in more detrimental effects. Also in the experimental study in Chapter 6, we hypothesize that if there are interactions with personality and developmental history in parenting, it will be a matter of gradation.

5.2. GOAL 2: THE ANTECEDENT ROLE OF PARENTAL NEED-BASED EXPERIENCES

Studies recently started to investigate the day-to-day fluctuations in parenting practices. In this dissertation, we aimed at investigating whether autonomy-supportive and controlling parenting are also susceptible to daily fluctuations. To gain insight in the dynamics of these fluctuations, we aimed at examining parental need satisfaction and frustration as possible sources of the fluctuations in these parenting constructs.

Research Question 4: Do autonomy-supportive and controlling parenting fluctuate on a day-to-day basis? In Chapters 3 and 7, in a diary study, we investigated whether autonomy-supportive and psychologically controlling parenting showed considerable variation at both the between- and within-person level. We hypothesized that both autonomy-supportive and psychologically controlling parenting will show considerable variations from day to day. While a parent may be more autonomy-supportive on one day, the same parent may be less autonomy-supportive or even controlling the next day.

Research Question 5: Do fluctuations in parental need satisfaction and frustration account for the daily fluctuations in autonomy-supportive and controlling parenting? Additionally in Chapter 7, we investigated whether the parents' own experiences of need satisfaction and frustration on a given day, may explain their use of autonomy-supportive or controlling practices the same day. We hypothesized that parents whose needs were met on a given day would have the resources, energy, and mental flexibility to be autonomy-supportive on that day. On the contrary, parents' whose needs were frustrated on a given day would feel depleted and would more easily resort to controlling strategies in the interaction with their children on the same day.

5.4. OVERVIEW OF THE EMPIRICAL CHAPTERS

An overview of the empirical chapters is presented in Table 1. The second chapter in this dissertation deals with the moderating role of personality in the effects of psychologically controlling parenting on problem behavior in adolescents. In this chapter, data from two cross-sectional samples with a multi-informant approach are used. The third chapter in this dissertation examines the moderating role of personality at the intra-

individual level, using a diary approach. The fourth chapter further builds on this by examining the moderating role of personality in longitudinal effects of psychologically controlling parenting. For this purpose, a longitudinal study with three annual measurement waves was conducted. A fifth chapter deals with the moderating role of the causality orientations in the effects of autonomy-supportive parenting on the well-being of adolescents. In order to address this research question at both the inter- and intra-individual level, the same longitudinal data set from Chapter 3 is used. In order to examine the moderating role of personality in actual autonomy-supportive and controlling contexts (rather than in subjective experienced and self-reported parental style as in Chapters 2-5), in Chapter 6, the moderating role of child personality is investigated in the effects of experimentally induced autonomy-supportive versus controlling positive and negative normative feedback. Chapter 7 is a diary study, in which parents of adolescents filled out a diary for seven days. These parents were from the same sample as the one used in Chapters 4 and 5. These data are used to investigate the extent to which parental behavior varies from day to day and to investigate where this daily variation comes from.

Table 1
Overview of the Empirical Studies

Chapter	Sample	N	Design	M age (range)	Gender (% male)	Parenting			Personality			Outcomes		
						Child	Mother	Father	Child	Mother	Father	Child	Mother	Father
2	1	423	Cross-sectional	12.43 (10-16)	47%	PC	PC	QBF	QBF	QBF	INT/EXT	INT/EXT	INT/EXT	Father
	2	292		15.74 (12-19)	44%	PC		QBF					INT/EXT	
3	3	206	Diary	9.93 (8-12)	53%	PC	PC	PC	HiPIC	HiPIC	HiPIC	HiPIC	INT/EXT	INT/EXT
4	4	198	Longitudinal	14.89 (13-17)	49%	PC	PC	HiPIC	HiPIC	HiPIC	HiPIC	HiPIC	INT/EXT	INT/EXT
5	4	198	Longitudinal	14.89 (13-17)	49%	AS	AS	GCOS					Fit	
6	5	112	Experimental	10.71 (9-13)	48%	AS/PC	AS/PC	HiPIC					Well-being	
7	4	198	Diary	14.89 (13-17)	49%	AS/PC	AS/PC	-	-	-	-	-	Motivation	

Note. QBF = Quick Big Five, GCOS = General Causality Orientations Scale, HiPIC = Hierarchical Personality Inventory for Children, PC = Psychologically controlling parenting, AS = Autonomy supportive parenting, EXT = Externalizing problems, INT = Internalizing problems.

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DO PERSONALITY TRAITS MODERATE RELATIONS BETWEEN PSYCHOLOGICALLY CONTROLLING PARENTING AND PROBLEM BEHAVIOR IN ADOLESCENTS?¹

This research examined whether and how adolescents' personality traits moderate associations between psychologically controlling parenting and problem behaviors. On the basis of Self-Determination Theory, we also examined the mediating role of psychological need frustration in the effects of psychologically controlling parenting. A cross-sectional study in two samples ($N = 423$ and 292 ; M age = 12.43 and 15.74 years) was conducted. While in Sample 1 both mothers and adolescents provided reports of parenting and problem behavior, Sample 2 relied on adolescent-reported parenting and mother-reported problem behavior. Psychologically controlling parenting was related to internalizing and externalizing problems in both samples. Little systematic evidence was obtained for the moderating role of personality, with the exception of a moderating effect of Agreeableness. In both samples psychological control was unrelated to externalizing problems among adolescents high on Agreeableness. Analyses of Sample 2 showed that associations between psychological control and problem behavior were mediated by psychological need frustration. Adolescent personality plays a modest role as a moderator of associations

¹ Mabbe, E., Soenens, B., Vansteenkiste, M., & Van Leeuwen, K. (2016). Do personality traits moderate relations between psychologically controlling parenting and problem behavior in adolescents? *Journal of Personality, 84*, 381-392. doi: 10.1111/jopy.12166

between psychologically controlling parenting and problem behavior. Frustration of adolescents' basic and universal psychological needs can account for the undermining effects of psychologically controlling parenting. Directions for future research are discussed.

INTRODUCTION

Psychologically controlling parenting (i.e., parenting characteristic of parents who use intrusive and sometimes subtle tactics such as guilt induction and love withdrawal; Barber, 1996) is predictive of maladjustment in children (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). One intriguing yet largely unaddressed question is whether psychological control is related to maladjustment in all children or whether these associations occur only in children with particular personality characteristics. While previous research has addressed the moderating role of personality in effects of harsh and more explicit forms of parental control, the moderating role of personality in effects of psychologically controlling parenting has not been addressed yet. In addition, we examined the role of the frustration of basic and universal psychological needs as a mediator explaining effects of psychologically controlling parenting, as articulated within Self-Determination Theory (Deci & Ryan, 2000). These research questions were examined in two samples of early and middle adolescents.

PSYCHOLOGICALLY CONTROLLING PARENTING

Psychologically controlling parenting involves the use of intrusive and often insidious parental tactics to pressure the child and to manipulate the parent-child bond, including guilt-induction, love withdrawal, and shaming (Barber, 1996). Barber (1996) argued that psychological control primarily yields an emotional cost for the child, as manifested in internalizing problems. Psychological control might elicit at least some compliance with parental requests because children do not want to disappoint their parents (Assor, Roth, & Deci, 2004). Therefore, children of psychologically controlling parents may not necessarily display externalizing problems. Initial work by Barber, Olsen, and Shagle (1994) showed that psychological control was related uniquely to internalizing but not to externalizing problems. This

original pattern of findings was replicated, with studies showing a systematic and unique association with internalizing problems and a relatively more inconsistent association with externalizing problems (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010).

The association between psychological control and problem behaviors has been found to be quite robust, with effects being documented across different age groups (e.g., Aunola & Nurmi, 2005) and across diverse cultures (e.g., Ahmad, Vansteenkiste, & Soenens, 2013). Although age and culture do not appear to systematically moderate effects of psychologically controlling parenting, the moderating role of personality and the mechanisms that can account for these robust effects have been examined less.

A SELF-DETERMINATION THEORY PERSPECTIVE ON PSYCHOLOGICALLY CONTROLLING PARENTING

To account for the effects of psychologically controlling parenting across age and culture, it has been argued on the basis of Self-Determination Theory (SDT; Deci & Ryan, 2000) that this parenting style thwarts universal psychological needs in children (Soenens & Vansteenkiste, 2010). These needs are defined as *“innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being”* (Deci & Ryan, 2000, p. 229). The need for autonomy refers to experiences of volition and psychological freedom. When frustrated, the need for autonomy manifests in feelings of pressure and coercion. The need for competence refers to the experience of mastery over the environment. When frustrated, it manifests in feelings of inadequacy. The need for relatedness refers to the experience of reciprocal care and love in the relation to significant others, including parents. When frustrated, this need manifests in feelings of loneliness and isolation. Testifying to the universal importance of these needs, research

conducted in different age groups (e.g., Veronneau, Koestner, & Abela, 2005) and across different cultures (e.g., Chen et al., 2014) has confirmed that need satisfaction is related to well-being and that need frustration is related to maladjustment (e.g., Bartholomew, Ntoumanis, Ryan, & Thogersen-Ntoumani, 2011; Vansteenkiste & Ryan, 2013).

Consistent with the presumed explanatory role of these needs, a few recent studies in different cultures showed that psychologically controlling parenting is related to child maladjustment through its association with low need satisfaction (or even need frustration; Ahmad et al., 2013; Costa, Soenens, Gugliandolo, Cuzzocrea, & Larcán, 2015). While findings from these studies further confirm that psychologically controlling parenting is universally detrimental, the role of children's personality in effects of this parenting dimension has not yet been addressed. An examination of the potentially moderating role of personality is critical because if effects of psychologically controlling parenting would strongly depend on personality, the claim that psychological control appeals to universal psychological needs would be disconfirmed.

PARENTING X PERSONALITY INTERACTIONS

The notion that child characteristics moderate the effects of parenting in predicting developmental outcomes is rooted in several conceptual models (Kiff, Lengua, & Zalewski, 2011). To illustrate, the goodness-of-fit model (Thomas, Chess, & Birch, 1968) suggests that adaptation and development are fostered when parental characteristics match or are congruent with individuals' characteristics. Against the background of the general notion of goodness of fit, more specific models have been developed. Diathesis-stress models (Monroe & Simons, 1991), for instance, maintain that children with a susceptible personality may be more vulnerable to the effects of adverse parenting. More recently, the

differential susceptibility hypothesis highlights the more general idea of children's differential responsiveness to parenting (Belsky, 1997). Children with a susceptible personality would not only suffer more from adverse parenting but would also benefit more from an absence of negative parenting or from positive parenting.

Most research on the moderating role of personality in effects of parenting has relied on the Five-Factor Model of personality (i.e., Emotional Stability, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness; Caspi & Shiner, 2006) and has included measures of harsh and explicit forms of controlling parenting (e.g., coercive discipline; Prinzie, et al., 2003; Van Leeuwen, Mervielde, Braet, & Bosmans, 2004). To the best of our knowledge, to date no studies have examined interactions with psychologically controlling parenting. Although the number of significant interactions found in earlier research was rather limited in light of the number of interactions tested, some interactions emerged consistently. Specifically, Agreeableness and Conscientiousness have been found to buffer effects of harsh parental control on externalizing problems (De Clercq, Van Leeuwen, De Fruyt, Van Hiel, & Mervielde, 2008; de Haan, Prinzie, & Dekovic, 2010; Prinzie, et al., 2003; Van Leeuwen, Mervielde, De Clercq, & De Fruyt, 2007; Van Leeuwen, et al., 2004) and internalizing problems (Van Leeuwen, et al., 2007) in a broad age range (7-15 years).

TOWARDS A NUANCED PERSPECTIVE ON THE MODERATING ROLE OF PERSONALITY

Although at first sight the hypotheses derived from SDT (according to which psychologically controlling parenting is universally maladaptive) may seem inconsistent with the literature on parenting x personality interactions (according to which psychologically controlling parenting would be detrimental only for adolescents with certain personality features), two important nuances need to be made. First, consideration needs to be given

to the *nature* of the interaction. Most previously documented interactions are ordinal in nature, meaning that the strength but not the direction of the relationship between controlling parenting and problem behavior is influenced by the moderator. While personality affects the degree to which children suffer from controlling parenting, it is not the case that some children benefit from controlling parenting. The SDT perspective would be disconfirmed only when psychological control would be beneficial for some adolescents or when it would be systematically unrelated to any type of problem behavior in some adolescents.

A second nuance concerns the idea that personality may primarily shape the *manifestation* of the costs associated with psychological control. Although SDT predicts that psychological control is universally harmful, it is less clear about the way how maladjustment is expressed. This manifestation may depend on personality differences, with psychological control yielding primarily externalizing and internalizing problems among, respectively, adolescents scoring high on undercontrolled traits (e.g., low Conscientiousness) and adolescents scoring high on overcontrolled traits (e.g., high Neuroticism/low Emotional Stability). Consistent with this reasoning, Zarra-Nezhad et al. (2014) recently showed in a sample of elementary school children that psychologically controlling parenting was related positively to internalizing and negatively to externalizing problems only among children high on social withdrawal.

THE PRESENT RESEARCH

The present study examined, first, the role of Big Five personality traits in the relation between psychologically controlling parenting and children's problem behaviors and, second, the explanatory role of psychological need frustration in this association. These two issues were pursued in a sample of early adolescents (Sample 1) and a sample of middle

adolescents (Sample 2) and their mothers. Both samples make use of different informants, with Sample 1 involving both mother and adolescent reports of both parenting and problem behavior and with Sample 2 relying on adolescent reports of psychological control and mother reports of problem behavior. Because interaction effects can be quite sample-specific and unstable, it was deemed important to replicate the moderating effects of personality across two independent samples so as to have more confidence in the interaction findings obtained.

We focused on mothers because they continue to represent key socialization figures in early to middle adolescents' lives (Maccoby & Martin, 1983). Further, we sampled adolescents because adolescence is known to be characterized by increasing independence and individuation from parents, who may interfere with this development through a controlling approach. Both research on the main effects of psychologically controlling parenting (Soenens & Vansteenkiste, 2010) and research on the main effects of the Big Five personality traits (e.g. Meeus, Van de Schoot, Klimstra, & Branje, 2011) has shown that associations with problems behaviors are typically similar throughout adolescence. Yet, as individual differences in personality become more stable and crystallized throughout adolescence (e.g. Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2009), it could be argued that personality plays a stronger moderating role with increasing age. In contrast, on the basis of SDT, we expected that psychologically controlling parenting would yield fairly similar developmental correlates across both samples and across individuals with different scores on the Big Five dimensions. If any interactions would emerge, we expected them to be ordinal in nature and/or to specify the manifestation of maladjustment associated with psychological control (in terms of internalizing or externalizing problems). Also on the basis of SDT, we hypothesized that need frustration would mediate associations between psychologically controlling parenting and

problem behaviors and that this mediation model would be largely invariant across individual differences in personality.

In examining this set of hypotheses, we addressed the role of gender. Although mean-level gender differences have been reported with regard to both psychologically controlling parenting (e.g., with boys receiving somewhat more psychological control than girls; Barber, Bean, & Erickson, 2002) and problem behaviors (e.g., with boys scoring higher on externalizing problems and girls scoring higher on internalizing problems; Leadbeater, Kuperminc, Blatt, & Hertzog, 1999), associations between psychologically controlling parenting and problem behaviors are typically invariant across gender (Soenens & Vansteenkiste, 2010).

METHOD

PARTICIPANTS AND PROCEDURE

Sample 1 consisted of 423 Belgian, Dutch-speaking adolescents (M age = 12.43 years, SD = 1.13, range = 10-16; 53% female) and their mothers (M age = 41.14 years, SD = 3.93, range = 31-55). The adolescents were recruited via elementary and secondary schools by three research assistants. Their mothers received a letter describing the goal of the study and requesting them to fill out a form if they did not allow their son/daughter to participate in the study (passive informed consent). The mothers were also invited to participate in the study themselves. If they agreed, they completed an enclosed questionnaire, which they returned in a sealed and coded envelope. Adolescents who agreed to participate in the study completed a questionnaire in class during a free hour, under the supervision of a research student. The overall response rate was 83%. Regarding educational level, 40.4% of the mothers completed secondary school, 46.7% had a bachelor's degree, and 11.8% attained a master's degree.

As for the adolescents, 47.5% were in the last grades of primary school (5th or 6th grade) and 52.5% were in the first grades of secondary school (7th or 8th grade). Concerning family status, 89.4% were part of two-parent families.

Sample 2, a unique sample with no overlap with Sample 1, consisted of 292 adolescents (M age = 15.74 years, SD = 1.21, range = 12-19; 56% female) and their mothers, recruited by undergraduate psychology students during home visits. Of all participating adolescents, seven indicated that they did not have the Belgian nationality. Still, these participants spoke Dutch and lived in Belgium. Mothers provided active informed consent. Participants were ensured that all information would be treated confidentially. Participation was voluntary, and anonymity was guaranteed. Their mothers had a mean age of 45.56 years (SD = 4.20), with a range between 29 and 59 years. Regarding educational level, 0.4% of the mothers completed elementary school, 40.8% completed secondary school, 42.2% had a bachelor's degree, and 16.7% attained a master's degree. Concerning family status, 81.9% came from two-parent families.

MEASURES

Psychologically Controlling Parenting (Sample 1 & 2). Adolescents (Sample 1 and 2) and mothers (Sample 1) were administered the well-validated and frequently used Psychological Control Scale - Youth Self-Report (PCS-YSR; Barber, 1996). The scale includes eight items (e.g., "My mother is / I am always trying to change how I / my child feel(s) or think(s) about things") that were scored on a 5-point Likert scale, ranging from 1 (*completely not true*) to 5 (*completely true*). Cronbach's alphas for mother- and adolescent-reported psychological control were, respectively .58 and .74 in Sample 1 and .76 for adolescent report in Sample 2. In Sample 1, we decided not to create a composite score for psychologically controlling

parenting (aggregating across informants) because the correlation between maternal and adolescent reports was relatively low (i.e., $r = .19$, $p = .00$). Moreover, we aimed to examine the moderating role of personality for maternal and adolescent reports of psychologically controlling separately. To create latent factors for adolescent-reported and mother-reported psychologically controlling parenting we created for each construct three parcels that consisted of randomly assigned items (Little, Cunningham, Shahar, & Widaman, 2002).

Internalizing and Externalizing Problems (Sample 1 & 2). In both samples, mothers were administered the Child Behavior Checklist (CBCL; Achenbach, 1991). Adolescents in Sample 1 were additionally administered the Youth Self-Report (YSR; Achenbach, 1991). Items were scored on a 3-point Likert scale, ranging from 0 (*never*) to 2 (*often*). The broadband scale Internalizing Problems ($\alpha = .90$ and $.85$ for adolescent and mother report, respectively, in Sample 1 and $.86$ for mother report in Sample 2) consists of three syndrome scales: Anxious/Depressed (e.g. "...cries a lot"), Withdrawn/Depressed (e.g. "...enjoys little"), and Somatic Complaints (e.g. "...has headaches"). The broadband scale Externalizing Problems ($\alpha = .85$ and $.88$ for adolescent and mother report, respectively, in Sample 1 and $.90$ for mother report in Sample 2) consists of two syndrome scales: Rule Breaking (e.g. "...drinks alcohol") and Aggressive Behavior (e.g. "...destroys other's things"). Similar to previous research (e.g., Achenbach, McConaughy, & Howell, 1987), the correlation between mother and adolescent reports of internalizing and externalizing problems in Sample 1 was $.43$ and $.40$, respectively. To create latent factors for internalizing and externalizing problems in Sample 1, both constructs were represented by their respective subscales. Because mother and adolescent reports of internalizing and externalizing problems were moderately correlated, we combined maternal and adolescent ratings to obtain a composite multi-informant score for each

subscale of internalizing and externalizing problems. To do so, mother and adolescent reports on all subscales were first standardized and then averaged across the adolescent and mother reports. In Sample 2, internalizing and externalizing problems were both represented by their respective subscales.

Personality (Sample 1 & 2). Adolescents in Samples 1 and 2 completed the Quick Big Five (QBF; Vermulst & Gerris, 2005). Research has shown that the QBF is a valid measure of adolescents' Big Five personality traits because it correlates with measures of adjustment and problem behavior much like other measures of Big Five personality (Dubas, Gerris, Janssens, & Vermulst, 2002). Previous research has also shown strong correlations between self-rated QBF scores and parental ratings of personality using the Hierarchical Personality Inventory for Children (HiPIC) (Van Leeuwen, De Fruyt, & Mervielde, 2004).

The QBF includes 30 adjectives, six items for each of the Big Five personality traits. Examples of items are "careful" (Conscientiousness), "talkative" (Extraversion), "helpful" (Agreeableness), "nervous" (Emotional Stability, reverse scored) and "innovative" (Openness to Experience). Internal consistencies across samples varied between .61 and .90, with an average of .79. Each item was rated on a 7-point Likert scale, ranging from 1 (*completely incorrect*) to 7 (*completely correct*). To create latent factors of each Big Five personality trait, they were each represented by three parcels that consisted of randomly assigned items.

Need Frustration (Sample 2 only). Adolescents in Sample 2 reported on experiences of need frustration specifically in the mother-child relationship ($\alpha = .85$). Recently, Chen et al. (2014) developed and validated the Basic Psychological Need Satisfaction and Need Frustration Scale (BPNSNF) to tap into both need satisfaction and need frustration in general. We slightly adapted the items to the parent-child relation and only retained

the items tapping into need frustration, as need frustration has been found to account for the effects of controlling socialization in other life domains (e.g., Vansteenkiste & Ryan, 2013). Frustration of each of the three needs was measured with three items, each of them beginning with “When I’m with my mother”: autonomy need frustration (e.g. “...I feel forced to do many things I wouldn’t choose to do”), competence frustration (e.g. “...I feel insecure about my abilities”), and relatedness frustration (e.g. “...I feel often rejected”). Items were scored on a 5-point Likert scale, ranging from 1 (*completely not true*) to 5 (*completely true*). A latent factor was created with the three subscales as indicators.

RESULTS

PRELIMINARY ANALYSES

Means, standard deviations, and correlations between the study variables are presented in Table 1 (Sample 1) and Table 2 (Sample 2). To determine whether participants’ scores on the study variables varied by gender, age, family status, and maternal educational level, a MANOVA was conducted. There was an overall multivariate effect for gender, Sample 1: Wilks’s $\lambda = .84$, $F(297) = 6.20$, $p = .00$; Sample 2: Wilks’s $\lambda = .78$, $F(253) = 4.07$, $p = .00$, and age, Sample 1: Wilks’s $\lambda = .92$, $F(297) = 2.87$, $p = .003$; Sample 2: Wilks’s $\lambda = .84$, $F(253) = 2.65$, $p = .00$. There were no multivariate effects for family status, Sample 1: Wilks’s $\lambda = .95$, $F(297) = 1.91$, $p = .06$; Sample 2: Wilks’s $\lambda = .91$, $F(253) = 1.33$, $p = .09$, and maternal educational level, Sample 1: Wilks’s $\lambda = .98$, $F(297) = 0.62$, $p = .78$; Sample 2: Wilks’s $\lambda = .94$, $F(253) = 0.88$, $p = .53$. Follow-up univariate analyses revealed that girls rated themselves higher on Conscientiousness (Sample 1: $M = 4.46$, $SD = 1.24$; Sample 2: $M = 3.85$, $SD = 1.30$) than boys (Sample 1: $M = 4.13$, $SD = 1.19$; Sample 2: $M = 3.51$, $SD = 1.18$), whereas they scored lower on Emotional Stability (Sample 1: $M = 3.95$, $SD = 1.21$) than boys (Sample 1: $M =$

4.26, $SD = 1.07$). Further, in Sample 1, girls reported less externalizing problems ($M = .25$, $SD = 0.19$) than boys ($M = .30$, $SD = 0.21$), but reported more internalizing problems ($M = .45$, $SD = 0.31$) than boys ($M = .36$, $SD = 0.26$). In Sample 2, girls reported less psychologically controlling parenting ($M = 2.23$, $SD = 0.67$) and less autonomy frustration ($M = 2.43$, $SD = 0.70$) than boys ($M = 2.41$, $SD = 0.58$; $M = 2.75$, $SD = 0.80$). Finally, older adolescents reported being more conscientious and more open-minded in Sample 1. In Sample 2, older adolescents reported less Extraversion and were rated as scoring higher on internalizing problems by their mothers. Gender and age were included as control variables in the main analyses.

Table 1
Descriptive Statistics and Correlations between Variables (Sample 1 - N = 423)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Psychological control (A)															
2. Psychological control (M)	.19**														
3. Extraversion	-.17**	-.03													
4. Conscientiousness	-.15**	-.08	.01												
5. Agreeableness	-.17**	-.04	.27**	.35**											
6. Emotional stability	-.25**	-.09	.37**	-.03	-.03										
7. Openness to experience	.01	-.07	.08	.19**	.40**	-.07									
8. Internalizing (A)	.35**	.10	-.41**	-.09	-.20**	-.54**	-.01								
9. Externalizing (A)	.40**	.09	-.16*	-.30**	-.30**	-.26**	-.06	.56**							
10. Internalizing (M)	.19**	.32**	-.17**	-.08	-.15**	-.29**	-.09	.43**	.33**						
11. Externalizing (M)	.19**	.24**	-.03	-.21**	-.15**	-.18**	.02	.21**	.40**	.58**					
12. Gender	.02	.00	-.02	.13**	.11*	-.13**	.00	.16**	-.12*	.11*	-.12*				
13. Family status	.04	-.02	.03	-.04	.05	-.12*	-.05	.11*	.09	.16**	.13*	.11*			
14. Adolescent age	.07	.11*	.01	-.15**	-.06	-.09	-.15**	-.05	.09	.03	.02	.08	.04		
15. Maternal educational level	.01	.03	-.04	.05	-.02	-.03	.10	-.00	-.04	-.06	-.05	.00	-.18**	-.15**	
M	1.90	1.68	4.93	4.32	5.56	4.08	4.72	.41	.27	.22	.17	1.55	1.71	12.43	3.83
SD	0.65	0.44	1.04	1.23	0.82	1.16	0.94	0.29	0.20	0.19	0.17	0.50	1.84	1.13	1.17

Note. (A): adolescent-reported, (M): mother-reported.

* $p < .05$. ** $p < .01$.

Table 2
Descriptive Statistics and Correlations between Variables (Sample 2 - N = 292)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Psychological control (A)													
2. Need frustration (A)	.61**												
3. Internalizing problems (M)	.17**	.22**											
4. Externalizing problems (M)	.43**	.36**	.44**										
5. Extraversion (A)	-.00	-.20**	-.29**	.12*									
6. Conscientiousness (A)	-.13*	-.14*	-.04	-.22**	-.10								
7. Agreeableness (A)	-.20**	-.29**	-.15**	-.15*	.22**	.25**							
8. Emotional stability (A)	-.08	-.13*	-.13*	-.07	.18**	-.15**	-.09						
9. Openness to experience (A)	.01	-.09	-.02	.03	.12*	.07	.27**	-.12*					
10. Gender	.14*	.14*	.03	.07	-.08	-.13*	-.12*	.26**	.04				
11. Family status	.02	.04	.04	.16**	-.03	-.15*	-.14*	-.06	-.00	-.10			
12. Adolescent age	.02	-.06	.12*	.06	-.20**	-.08	-.04	.06	.06	.01	.01		
13. Maternal educational level	-.09	.05	.00	-.03	-.00	-.03	.01	-.04	.05	.03	-.03	-.03	
M	2.30	2.15	.26	.21	4.94	3.72	5.34	4.11	4.60	.42	1.20	15.74	3.95
SD	0.64	0.60	0.20	0.22	1.11	1.27	0.65	1.05	0.91	0.49	0.45	1.21	1.24

Note. (A): adolescent-reported, (M): mother-reported.

*p < .05, **p < .01.

PRIMARY ANALYSES

Basic Measurement and Structural models. Structural equation modeling with MPlus (Muthén & Muthén, 1998-2012) was performed to examine the hypotheses. To evaluate model fit, the comparative fit index (CFI), the root mean squared error of approximation (RMSEA) and the standardized root mean square residual (SRMR) were selected. According to Hu and Bentler (1999), combined cut-off values close to .95 for CFI and close to .06 for RMSEA and .09 for the SRMR indicate good fit. We controlled for gender and age by allowing paths from both variables to all study variables. Prior to estimating the structural models, in both samples we evaluated the measurement models (including all constructs). In Sample 1, the measurement models including adolescent-reported, $\chi^2(202) = 500.80$; RMSEA = .06; CFI = .91; SRMR = .06; TLI = .89; factor loadings ranging between .61 and .94 (all $ps < .001$), and mother-reported, $\chi^2(202) = 491.75$; RMSEA = .06; CFI = .91; SRMR = .06; TLI = .89; factor loadings ranged between .60 and .96 (all $ps < .001$), parenting showed adequate fit. In Sample 2, the measurement model also showed adequate fit, $\chi^2(263) = 581.46$; RMSEA = .06; CFI = .90; SRMR = .06; TLI = .87. Factor loadings ranged between .48 and .89 (all $ps < .001$).

Next, we estimated structural models including associations between psychological control and both internalizing and externalizing problems, with the latter two variables being allowed to correlate. The models showed adequate fit, Sample 1: $\chi^2(29) = 78.78$; RMSEA = .07; CFI = .95; SRMR = .04; TLI = .93 for adolescent-reported parenting; $\chi^2(29) = 84.91$; RMSEA = .07; CFI = .94; SRMR = .04; TLI = .91 for mother-reported parenting; Sample 2: $\chi^2(29) = 88.94$; RMSEA = .09; CFI = .90; SRMR = .06; TLI = .85. Psychological control was positively associated with both internalizing ($\beta = .43$, $p = .00$, and $\beta = .31$, $p = .00$, for adolescent and mother reports, respectively, in Sample 1; $\beta = .24$, $p = .01$ in Sample 2) and externalizing ($\beta =$

.43, $p = .00$, and $\beta = .25$, $p = .001$, for adolescent and mother reports, respectively, in Sample 1; $\beta = .47$, $p = .00$ in Sample 2) problems. Multigroup analyses revealed that gender did not moderate associations in the structural models (Sample 1: $\Delta\chi^2 = 4.95$, $df = 2$, $p > .05$ for the model with adolescent-reported psychological control and $\Delta\chi^2 = .08$, $df = 2$, $p > .05$ for the model with mother-reported psychological control; Sample 2: $\Delta\chi^2 = .03$, $df = 2$, $p > .05$).

Next, a full mediation model in Sample 2, in which psychological control was related only indirectly to the outcomes through need frustration, $\chi^2(58) = 154.03$; RMSEA = .08; CFI = .90; SRMR = .07; TLI = .87, showed that psychologically controlling parenting was related to need frustration ($\beta = .80$, $p = .00$), which, in turn, was related to internalizing ($\beta = .31$, $p = .00$) and externalizing problems ($\beta = .43$, $p = .00$). Adding direct paths from psychological control to problem behaviors in addition to the indirect paths did not improve model fit, $\Delta\chi^2(2) = 6.77$, $p > .01$, suggesting that the full mediation model was the best-fitting model. In the full mediation model, psychological control had significant indirect effects (through need frustration) on both internalizing ($\beta = .24$, $p = .001$) and externalizing problems ($\beta = .35$, $p = .00$). Multigroup analysis revealed that gender did not moderate associations in this structural model ($\Delta\chi^2 = 4.89$, $df = 3$, $p > .05$).

Parenting by Personality Interactions. We tested the moderating role of the Big Five traits by entering each of the personality dimensions in separate analyses. Since MPlus provides only limited information about fit for moderation analyses (Muthén & Muthén, 1998-2012), it has been recommended to first test the main effects of the predictors (i.e., psychologically controlling parenting and personality), without considering potential interactions between the parenting and personality variables (Maslowsky, Jager, & Hemken, 2014). Given that these models showed

adequate fit (RMSEA = .06-.08; CFI = .91-.96; SRMR = .04-.06), we proceeded by adding the interaction terms. Results are shown in Table 3.

Table 3
Unstandardized Beta Coefficients and Standard Errors of the Main and Interaction Effects of Controlling Parenting and Personality

	Sample 1				Sample 2			
	Internalizing		Externalizing		Internalizing		Externalizing	
	Adolescent	Mother	Adolescent	Mother	Adolescent	Mother	Adolescent	Mother
Psychologically controlling parenting	.12(0.03)**	.21(0.06)**	.08(0.02)**	.09(0.03)**	.08(0.04)*	.15(0.04)**		
Extraversion	-.12(0.02)**	-.14(0.03)**	-.01(0.01)	-.02(0.01)	-.07(0.02)**	.01(0.01)		
Parenting x Extraversion	-.07(0.05)	-.23(0.09)**	-.03(0.04)	-.10(0.05)	-.03(0.05)	-.04(0.04)		
Psychologically controlling parenting	.15(0.03)**	.19(0.06)**	.07(0.01)**	.09(0.05)*	.09(0.04)*	.16(0.04)**		
Conscientiousness	-.02(0.02)	-.03(0.02)	-.03(0.01)**	-.03(0.01)**	-.00(0.02)	-.03(0.02)		
Parenting x Conscientiousness	.03(0.02)	-.01(0.08)	-.01(0.01)	-.05(0.06)	-.06(0.05)	-.06(0.04)		
Psychologically controlling parenting	.14(0.03)**	.17(0.05)**	.07(0.02)**	.08(0.02)**	.08(0.04)*	.13(0.03)**		
Agreeableness	-.08(0.03)**	-.08(0.02)**	-.03(0.01)**	-.04(0.01)**	-.03(0.03)	-.03(0.02)		
Parenting x Agreeableness	-.01(0.04)	-.10(0.07)	-.06(0.02)**	-.14(0.04)**	-.15(0.09)	-.13(0.06)*		
Psychologically controlling parenting	.10(0.03)**	.30(0.15)*	.06(0.02)**	.10(0.05)*	.09(0.04)*	.12(0.04)**		
Emotional stability	-.14(0.02)**	-.14(0.02)**	-.03(0.01)**	-.04(0.01)**	-.06(0.02)**	-.02(0.01)*		
Parenting x Emotional stability	-.06(0.05)	-.24(0.12)*	-.03(0.02)	-.07(0.04)	-.06(0.05)	-.05(0.03)		
Psychologically controlling parenting	.15(0.03)**	.20(0.06)**	.08(0.02)**	.08(0.02)**	.10(0.04)*	.14(0.04)**		
Openness to experience	-.01(0.02)	.00(0.03)	.00(0.01)	.01(0.01)	.01(0.02)	.01(0.01)		
Parenting x Openness to experience	.04(0.06)	.08(0.14)	.00(0.03)	.01(0.04)	.03(0.05)	.04(0.04)		

p* < .05. *p* < .01.

Emotional stability, Extraversion (Sample 1 and 2), and Agreeableness (Sample 1) yielded an independent negative association with internalizing problems, whereas Conscientiousness, Agreeableness (Sample 1), and Emotional Stability (Sample 1 and 2) were significantly negatively related to externalizing problems. Psychologically controlling parenting consistently emerged as a positive predictor of both internalizing and externalizing problems in both samples, even when controlling for the contribution of the Big Five traits. Out of the 20 interactions tested in Sample 1, two were significant for internalizing problems and two were significant for externalizing problems. Three of the four interactions involved mother-reported parenting and only one involved adolescent-reported parenting. Across the 10 interaction tests in Sample 2, one significant interaction emerged.

To interpret significant interactions, we inspected associations between psychologically controlling parenting and the outcomes at low (one standard deviation below the mean) and high (one standard deviation above the mean) levels of the moderator through simple slope analyses (Aiken & West, 1991). Mother-reported (Sample 1) and adolescent-reported (Sample 1 and 2) psychologically controlling parenting were found to interact with Agreeableness in the prediction of externalizing problems. These three interactions were very similar. Psychologically controlling parenting was related positively to externalizing problems in low agreeable adolescents (Sample 1: $b = .22$, $t = 6.80$, $p = .00$; $b = .13$, $t = 4.11$, $p = .00$; Sample 2: $b = .26$, $t = 3.11$, $p = .002$), yet was unrelated to externalizing problems among adolescents high in Agreeableness (Sample 1: $b = -.06$, $t = -1.87$, $p = .06$; $b = .01$, $t = 0.11$, $p = .92$; Sample 2: $b = -.01$, $t = -0.22$, $p = .83$). Figure 1 (Sample 1) and Figure 2 (Sample 2) illustrate these interactions with the case of adolescent-reported psychological control.

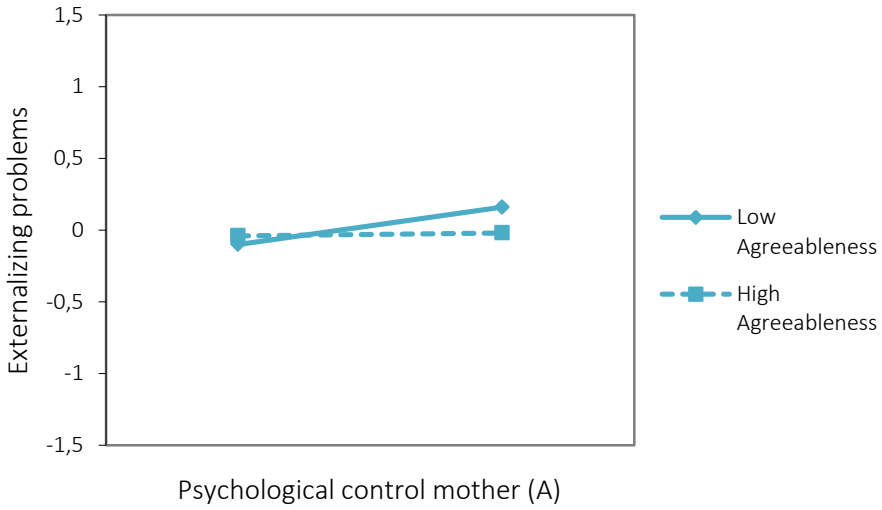


Figure 1. Sample 1: Interaction between adolescent-reported controlling parenting and Agreeableness in the prediction of externalizing problems.

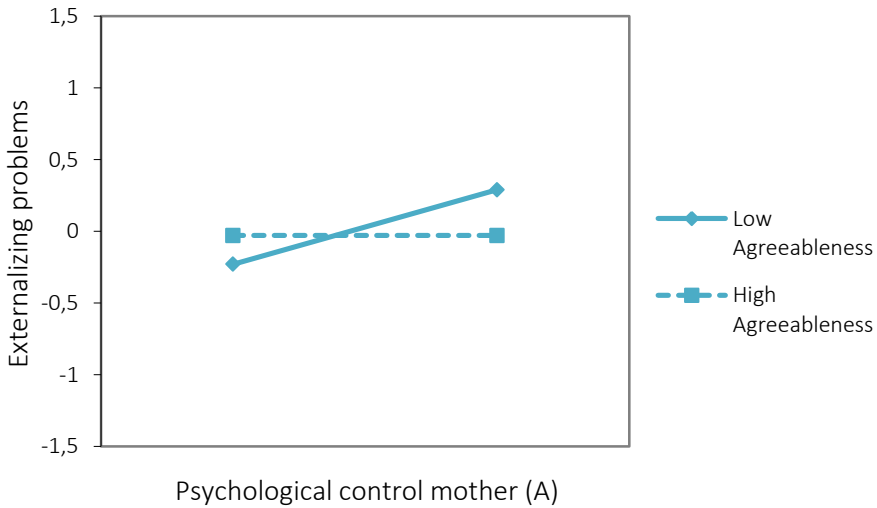


Figure 2. Sample 2: Interaction between adolescent-reported controlling parenting and Agreeableness in the prediction of externalizing problems.

Mother-reported psychologically controlling parenting interacted with both Extraversion and Emotional Stability in the prediction of internalizing problems in Sample 1. Given the similarity of these interactions, only the interaction involving Extraversion is displayed in Figure 3. Mother-reported psychological control related positively to internalizing problems for adolescents low in Extraversion ($b = .45$, $t = 3.33$, $p = .001$) and low in Emotional Stability ($b = .54$, $t = 2.09$, $p = .04$), yet was unrelated to internalizing problems for adolescents high in Extraversion ($b = -.02$, $t = -0.43$, $p = .67$) and high in Emotional Stability ($b = .06$, $t = 1.13$, $p = .26$).

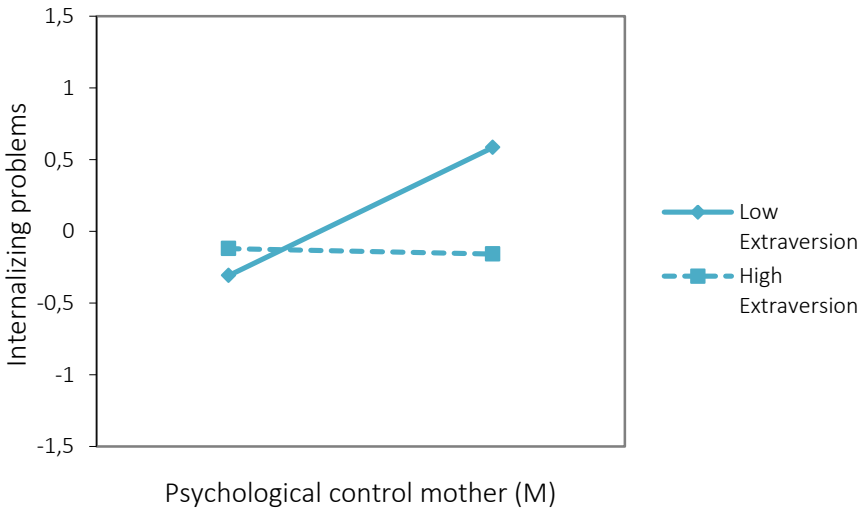


Figure 3. Sample 1: Interaction between mother-reported controlling parenting and Extraversion in the prediction of internalizing problems.

Next, we entered the Big Five dimensions as moderators in the mediation model in Sample 2. None of the five possible interactions between the personality dimensions and psychological control in the prediction of need frustration reached significance. Further, none of the 10 possible interactions between the personality dimensions and need

frustration in the prediction of the two types of problem behaviors reached significance.²

GENERAL DISCUSSION

Dozens of studies showed that psychologically controlling parenting hampers children's development (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). However, the question of whether psychological control is related to maladjustment irrespective of children's personality has received only little attention. This study aimed to examine whether the effects of maternal psychological control are limited to adolescents with particular personality traits or whether, instead, its effects generalize across individual differences between adolescents. Further, we examined whether the frustration of the psychological needs for autonomy, competence, and relatedness served as a mechanism explaining why psychologically controlling parenting has universally undermining effects (Soenens & Vansteenkiste, 2010).

² Analyses were also conducted excluding multivariate outliers. Multivariate outliers were identified with the Mahalanobis distance measure (Kim, 2000; Penny, 1996). Six multivariate outliers in Sample 1 and eight multivariate outliers in Sample 2 were removed. In Sample 1, all main effects of psychologically controlling parenting and the personality variables remained essentially the same. With respect to the interaction effects, the interaction between mother-reported psychological control and Emotional Stability in the prediction of internalizing problems was no longer significant. The other interactions that reached significance in the analyses with the full sample also reached significance in the analyses without the outliers. There was an additional significant interaction between mother-reported psychologically controlling parenting and Extraversion in the prediction of externalizing problems. In Sample 2, all main effects of psychologically controlling parenting and personality variables also remained the same. The one significant interaction that was found in the analyses with the full sample was no longer significant when the outliers were deleted.

DO THE CORRELATES OF PSYCHOLOGICAL CONTROL DEPEND ON THE ADOLESCENTS' PERSONALITY?

Consistent with previous research (e.g., Asendorpf, Borkenau, Ostendorf, & Van Aken, 2001), Agreeableness and Emotional Stability were related negatively to both externalizing and internalizing problems. Conscientiousness was primarily negatively related to externalizing problems, whereas Extraversion showed in particular negative associations with internalizing problems. Also consistent with previous research (e.g., Barber, 1996), psychologically controlling parenting was related to both internalizing and externalizing problems, regardless of whether mothers or children provided rating of psychologically controlling parenting. Moreover, in both samples, psychological control was predictive of problem behaviors above and beyond the variance explained by the Big Five traits, which underscores the robustness of the maladaptive developmental outcomes associated with parental psychological control.

The most innovative part of the study, however, was the examination of the potential moderating role of adolescents' personality. A number of observations can be made regarding both the nature and the number of interactions obtained. Regarding the nature of the interactions obtained, we found that these interactions were ordinal and not crossover in nature. When personality played a moderating role, it changed the strength (but not the direction) of the effect of psychologically controlling parenting. Overall, findings suggest that the association between psychologically controlling parenting and problems is weakened (sometimes to non-significance) for adolescents with certain personality traits. Yet, this does not mean that some individuals benefitted from controlling parenting. Adolescents paid at least some price when being exposed to psychologically controlling parenting, either in the form of internalizing or externalizing problems.

With regard to the number of interactions, across both samples and the 30 interactions that were tested, only five turned out to be significant (i.e., 17%). Given this limited number of significant interactions, the moderating role of personality can be considered as modest. One interaction did replicate across both samples and across informants of psychologically controlling parenting. Specifically, adolescents scoring low on Agreeableness were most vulnerable to the adverse effects of parental psychological control. Conversely, psychological control was unrelated to externalizing problems among highly agreeable adolescents, suggesting that Agreeableness serves as a protective factor against the adverse effects of psychologically controlling parenting. It appears that adolescents high on Agreeableness do not act against their environment in response to pressures experienced at home. This finding is strikingly similar to findings obtained with other types of controlling parenting, such as overreactivity and overt harshness (e.g. de Haan, et al., 2010; Van Leeuwen, Mervielde, Braet, & Bosmans, 2004).

The reason why the interaction occurred with Agreeableness and not with the other personality traits may be explained by the fact that Agreeableness is critical for interpersonal functioning. Jensen-Campbell, Gleason, Adams, and Malcolm (2003) described Agreeableness as an “interpersonally oriented personality characteristic” (p. 1061). Further, Rothbart and Bates (1998) suggested that Agreeableness may emerge from effortful control and, as such, is critical for the way people deal with interpersonal stressors. Given that psychological control represents an interpersonal source of frustration and stress, it becomes intelligible why this parenting style interacts with Agreeableness in particular. Indeed, highly agreeable adolescents have been found to perceive less interpersonal conflict and to display more adaptive modes of conflict resolution (e.g., Graziano, Jensen-Campbell, & Hair, 1996). In light of these findings, we

forward two specific yet rather speculative explanations for why Agreeableness buffers the effects of psychologically controlling parenting (see also Soenens, Vansteenkiste & Van Petegem, 2015). First, adolescents high on Agreeableness may be less likely to interpret potentially psychologically controlling behavior as intrusive and pressuring. Second, even when the behavior is perceived as intrusive, they may cope with this experience more effectively (e.g., by engaging in negotiation with parents; Skinner, Edge, Altman, & Sherwood, 2003).

It is important to note, however, that Agreeableness did not moderate associations of psychological control with internalizing problems. Hence, although children high on Agreeableness do not respond to psychologically controlling parenting with externalizing problems, they do display internalizing problems; that is, they experience internal distress. These findings help explain why associations of psychological control with externalizing problems are relatively less unique and consistent than those with internalizing problems (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). Associations with externalizing problems are somewhat more conditional upon child personality and adolescents' Agreeableness in particular.

Apart from this fairly stable interaction, a few other interactions emerged. In Sample 1, mother-reported but not adolescent-reported psychological control was unrelated to internalizing problems among adolescents high on Extraversion and Emotional Stability. The lack of moderation in the case of adolescent-perceived psychological control is in line with the notion that adolescent perceptions of parenting ultimately determine their adjustment. Specifically, when adolescents perceive their mother to be psychologically controlling, they invariably report heightened internalizing distress, irrespective of differences in personality (Soenens et al., 2015).

UNDERSTANDING THE MECHANISMS UNDERLYING PSYCHOLOGICALLY CONTROLLING PARENTING

The observation that adolescents, regardless of their personality traits, seem to pay at least some price for exposure to psychologically controlling parenting is consistent with SDT. From the SDT perspective, the correlates of psychologically controlling parenting should largely generalize across personality because it frustrates adolescents' basic psychological needs, which are presumed to be universally critical (Deci & Ryan, 2000). When being raised by a psychologically controlling parent, children would feel pressured to think, act, or behave in particular ways (i.e., autonomy frustration), would feel inadequate because of the parent's critical and negative tone of communication (i.e., competence frustration), and would feel a sense of alienation in the parent-child relationship because of the parent's conditional acceptance (i.e., relatedness frustration; Soenens & Vansteenkiste, 2010).

Consistent with this reasoning, results from Sample 2 provided evidence for need frustration as a critical mediator through which psychologically controlling parenting relates to maladaptive outcomes. These results are important because although it has been postulated that psychological control exerts its effects through processes of need frustration (Soenens & Vansteenkiste, 2010), only few studies directly addressed this hypothesis (see, e.g., Ahmad et al., 2013, for an exception). The current study is unique in that it focused specifically on experiences of need frustration rather than on an absence of need satisfaction. Recent SDT-based studies suggest that social conditions that actively thwart children's needs do more than just provide insufficient levels of support for children's needs (Bartholomew et al., 2011; Haerens, Aelterman, Vansteenkiste, & Soenens, 2015). Psychologically controlling parents do not simply afford little autonomy; they actively block children in their pursuits and direct them

toward their own standards, thereby eliciting feelings of compulsion. Also, it has been hypothesized and found that experiences of need thwarting and need frustration are more strongly predictive of psychopathology than an absence of need support and need satisfaction (e.g., Bartholomew et al., 2011; Vansteenkiste & Ryan, 2013). Given that psychological control can be considered a parenting strategy that actively thwarts children's needs, it seemed appropriate to focus in the present study on need frustration as a mediator rather than on low need satisfaction.

Importantly, the presumed explanatory role of need frustration was found to be operative irrespective of specific personality dimensions. As such, the findings are consistent with SDT's assumption that the needs are universally important and that their active thwarting relates to maladjustment for everyone (Deci & Ryan, 2000).

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The current study is limited by its use of a cross-sectional design. Although personality may not buffer effects of psychologically controlling parenting strongly in the short run, it might do so in the longer run. Also, longitudinal studies increasingly show that the associations between psychological controlling parenting and maladjustment are reciprocal (e.g., Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008). As such, personality may play a role in both directions of effects. For instance, adolescents' personality may moderate effects of problem behavior on parental psychological control (e.g., such that parents respond more strongly with psychological control to problem behavior when the adolescent simultaneously displays more maladaptive personality features). At the same time, parents' own personality may play a role in parental reactions to problem behaviors (e.g., such that parents scoring high on adaptive

personality features are less inclined to respond to adolescent problem behavior with psychologically controlling behavior).

Another limitation is the exclusive focus on maternal use of psychological control. Most research suggests that the dynamics of maternal and paternal psychologically controlling parenting are fairly similar (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). Yet it remains to be tested whether the moderating role of personality also operates similarly across parental gender. A third limitation is that the two samples could not be directly and formally compared (e.g., through multigroup analysis) because somewhat different assessment procedures were used in both samples. As such, the moderating role of age needs further attention in future research.

A fourth limitation is that we relied on a relatively brief and broad measure of Big Five personality. Although broad, higher-order dimensions of personality may not moderate effects of psychologically controlling parenting systematically, it might be the case that more specific, lower-level dimensions of personality do. Fifth, for some scales in Sample 1, the reliability was low. This problem was dealt with by modeling all constructs as latent variables (thereby controlling for error variance). Still, the findings with these scales in Sample 1 need to be interpreted with some caution. More generally, parent reports of psychological control may be affected by social desirability, which future research could control for.

Sixth, the lack of adolescent (in addition to mother) reports of problems in Sample 2 is a limitation, particularly with regard to internalizing problems, as adolescents themselves may be the most important source of information. To gain insight in the role of the informant, we performed an additional set of analyses on the Sample 1 data, thereby separating mother and child reports of problem behavior. These analyses showed that both the main effects and interaction effects obtained with the total (multi-informant) scores for internalizing and externalizing problems were also

obtained with the separate scores for problem behaviors. Such findings suggest that the restriction to mother reports of problem behavior in Sample 2 probably did not affect the findings. Still, future research may systematically include adolescent reports of problem behavior.

Although the sample size of our study was substantial, future research may rely on even larger samples. Indeed, statistical interactions are notoriously difficult to find for simple statistical reasons related to effect and sample size. At the same time, one may wonder whether interactions that show up only in very large samples are meaningful and sufficiently large in terms of effect size. Although we obtained few systematic moderating effects of personality, it is premature to conclude that the role of personality in the dynamics of psychologically controlling parenting can be dismissed. In this regard, it is important to note that we measured psychologically controlling parenting through self-reports and mostly even through children's self-reports. Although children are at increased risk to display problem behavior as soon as they perceive their parents to be psychologically controlling, one may wonder how children come to construct perceptions of psychologically controlling parenting and whether personality plays a role in this process of perceiving parental behavior (Soenens et al., 2015). One and the same parental statement (e.g., "I am quite disappointed by your most recent exam results") may be interpreted quite differently by children with different personality traits. Perhaps, then, the moderating role of personality does not need to be situated in between children's perceptions of parents and the developmental consequences but in between parents' actual behavior and the child's perception of parental behavior. Future research can address this hypothesis.

CONCLUSION

The current study showed that maternal psychological control has robust associations with problem behaviors in adolescents, even when controlling for individual differences in personality. Some evidence was obtained for a moderating role of personality, with Agreeableness in particular buffering effects of maternal psychological control on externalizing (but not internalizing) problems. Overall, personality did not have a strong or systematic moderating role. Although further research (using longitudinal designs and separating actual parental behavior from how it is perceived) is needed, the current results are in line with the notion that, in one way or another, psychologically controlling parenting is detrimental to adolescents, irrespective of their personality traits.

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THE ROLE OF CHILD PERSONALITY IN EFFECTS OF PSYCHOLOGICALLY CONTROLLING PARENTING: AN EXAMINATION AT THE LEVEL OF DAILY FLUCTUATIONS¹

Research increasingly demonstrates the detrimental effects of psychologically controlling parenting on children's adjustment. An important and practically relevant question is whether some children are more vulnerable for the effects of psychologically controlling parenting. In the current diary study, we investigated whether daily psychologically controlling parenting relates to children's daily externalizing and internalizing problems and whether these associations depend on child personality. 206 children (M age = 9.93 years; 46.6% female) along with their mothers and fathers (M age = 40.30 and 42.40 years) participated in this multi-informant diary study. All 3 family members filled out a diary each day for 7 days. Multilevel analyses indicated that daily maternal and paternal psychological control were positively related to daily externalizing and internalizing problems, a pattern that was fairly consistent across informants. Out of the 35 interactions tested, only 3 turned out to be significant. Overall, the limited number of interactions suggests that psychologically controlling parenting is generally detrimental to children's daily functioning. Still, children differ somewhat in their susceptibility to the effect of psychologically controlling parenting.

¹ Mabbe, E., Vansteenkiste, M., Van der Kaap-Deeder, J., Dieleman, L. M., Mouratidis, A., & Soenens, B. (in revision). The role of child personality in effects of psychologically controlling parenting: An examination at the level of daily fluctuations. *Manuscript revised for European Journal of Personality*.

INTRODUCTION

Research has convincingly demonstrated the detrimental effects of psychologically controlling parenting on children's and adolescents' well-being and behavioral adjustment (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). An important and understudied question is whether these associations apply to all children, regardless of their personality characteristics. A few studies have begun to address the possible moderating role of children's personality in associations between parental psychological control and children's maladjustment, but little systematic evidence for such moderating effects has been garnered (e.g., Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016; Zarra-Nezhad, Aunola, Kiuru, Mullola, & Moazami-Goodarzi, 2015). The current study aims to add to the literature by examining for the first time the moderating role of child personality in effects of daily psychologically controlling parenting on children's daily adjustment. This is important because, congruent with the idea that parenting is highly variable and susceptible to change (Dix, 1991; Holden & Miller, 1999; Repetti, Reynolds, & Sears, 2015), recent studies (e.g., Aunola, Tolvanen, Viljaranta, and Nurmi, 2013) have demonstrated associations between day-to-day variation in psychologically controlling parenting and children's daily maladjustment. It is not known, however, whether children's personality attenuates or exacerbates the within-person covariation between daily psychologically controlling parenting and maladjustment. Such knowledge is important from a theoretical point of view because it yields insight into the generalization and breadth (versus limits) of effects of psychologically controlling parenting. From an applied perspective it allows for the identification of children most at risk for the adverse consequences of psychologically controlling parenting and for a more tailored intervention approach to these at-risk children.

PSYCHOLOGICALLY CONTROLLING PARENTING

Barber (1996) defined psychological control as a set of parental practices that parents undertake to promote their own agenda, thereby largely ignoring the child's perspective. Guilt induction, love withdrawal, and shaming are key examples of tactics used by psychologically controlling parents to pressure the child to act, think, or feel in certain ways.

Abundant research has shown that psychologically controlling parenting jeopardizes children's development (Barber & Harmon, 2002; Soenens & Vansteenkiste, 2010). Psychologically controlling parenting has been associated with both internalizing problems such as depressive symptoms and anxiety (Barber & Xia, 2013; Loukas, 2009; Soenens & Vansteenkiste, 2010) and externalizing problems such as aggression and delinquency (Kuppens, Grietens, Onghena, & Michiels, 2009; Loukas, Paulos, & Robinson, 2005; Nelson, Hart, Yang, Olsen, & Jin, 2006). Such findings have been obtained not only in cross-sectional studies but also in longitudinal studies, suggesting that parental psychological control has negative implications in the long run. For example, psychological control has been associated with diminished self-confidence over a 3-year period (Conger, Conger, & Scaramella, 1997) and increased internalizing problems such as depressive symptoms (Soenens, Luyckx, Vansteenkiste, Luyten, Duriez, & Goossens, 2008) and externalizing problems such as aggression (Blossom, Fite, Frazer, Cooley, & Evans, 2016; Nelson, Coyne, Swanson, Hart, & Olsen, 2014).

Recently, diary studies also started to investigate associations between daily psychologically controlling parenting and daily adjustment (e.g., Aunola et al., 2013). These studies demonstrated significant variability in psychologically controlling parenting from day to day, with about 50% of the variance in psychologically controlling parenting fluctuating across days. Further, daily variability in psychologically controlling parenting coincided

with daily variation in child outcomes. For instance, Aunola et al. (2013) reported in a study involving mothers and fathers of 6- to 7- year-old children that daily psychological control was associated with children's daily negative emotions. Extending this work, Mushquash and Sherry (2013) showed that perceived daily maternal psychological control related to undergraduate students' daily binge eating symptoms. Most recently, mothers' daily engagement in psychologically controlling parenting was found to relate to increases in elementary school children's daily maladjustment, even when controlling for the contribution of daily psychological control used by siblings and teachers (Van Der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017).

One theory which can help to understand the systematic associations between psychologically controlling parenting and children's maladjustment is Self-Determination Theory (SDT; Ryan & Deci, 2000), a macro-theory on human motivation and socialization. Considered from SDT, psychologically controlling parenting is universally detrimental because it represents a threat to children's basic psychological needs for autonomy (i.e., experiencing ownership), competence (i.e., feeling effective) and relatedness (i.e., experiencing a sense of intimacy) (Soenens & Vansteenkiste, 2010). Confronted with psychologically controlling parents, children are likely to feel pressured to do things against their will (autonomy need frustration), to experience doubts about their ability to meet parental standards (competence need frustration), and to experience insecurity and alienation in the parent-child relationship (relatedness need frustration). Consistent with these claims, studies have shown that psychologically controlling parenting is related to low satisfaction (Ahmad, Vansteenkiste, & Soenens, 2013) and even frustration of these psychological needs and that psychological need frustration accounts for (i.e., mediates) associations between parental psychological control and children's problem behavior

(Costa, Soenens, Gugliandolo, Cuzzocrea, & Larcan, 2015; Mabbe et al., 2016).

THE MODERATING ROLE OF CHILDREN'S PERSONALITY

Although the notion of psychological control is one of the most well-researched ones in the parenting literature, little is known about whether associations between psychologically controlling parenting and developmental outcomes are (dis)similar for different children. Although the assumption within SDT is that *perceived* psychologically controlling parenting may yield a universal cost, the theory does allow room for individual differences in effects of parental psychological control. Specifically, SDT recognizes that there is variation (a) in the degree to which children are susceptible to the detrimental effects of psychologically controlling parenting and (b) that the type of cost associated with psychologically controlling parenting may differ between children (Soenens, Vansteenkiste, & Van Petegem, 2015). As regards differences in susceptibility to effects of psychologically controlling parenting, children with personality traits conveying more vulnerability for problem behaviors may be affected more strongly by psychologically controlling parenting. This possibility is consistent with a diathesis-stress perspective on the interplay between adverse parenting and child characteristics, a perspective that received some support in the parenting literature (e.g., Kiff, Lengua, & Zalewski, 2011) but that has not been examined systematically with regard to psychologically controlling parenting (Mabbe et al., 2016). As for differences in the type of cost associated with psychologically controlling parenting, it can be argued that this type of parenting may manifest in internalizing problems among children scoring high on more overcontrolled personality traits (i.e., low Emotional Stability and Extraversion), while relating primarily to externalizing

problems in children scoring high on more undercontrolled personality traits (i.e., low Agreeableness and Conscientiousness) (Costa et al., 2015).

A few recent studies provided indirect evidence for the moderating role of temperament and of impaired emotion regulation in particular, which is considered a key feature of difficult temperament (Rothbart & Sheese, 2007). Cui, Morris, Criss, Houlberg, and Silk (2014) showed that the positive association between parental psychological control and adolescent depressive symptoms was stronger among adolescents with poor sadness regulation, while the positive association with aggressive behavior was stronger among adolescents with poor anger regulation. Blossom et al. (2016) reported that psychologically controlling parenting relates positively to relational aggression and negatively to physical aggression among emotionally well-regulated children, while an opposite pattern occurred for emotionally dysregulated children. Studies that focused more directly on temperamental characteristics indicated that maternal psychological control was associated most strongly with internalizing problems among children scoring high on social withdrawal (Zarra-Nezhad et al., 2014), while being associated most strongly with negative affect among children with a difficult temperament (Zarra-Nezhad et al., 2015).

To the best of our knowledge, only one study to date focused on the moderating role of personality in the effects of psychologically controlling parenting (Mabbe et al., 2016), thereby providing little systematic evidence for a moderating role of adolescent personality, with the exception of an interaction with Agreeableness. Specifically, psychological control was unrelated to externalizing problems among adolescents scoring high on Agreeableness, yet, Agreeableness failed to moderate the associations between parental psychological control and internalizing problems. Thus, although adolescents high on Agreeableness did not exhibit externalizing

problems in response to psychological control, they did display internalizing problems.

In sum, the available cross-sectional work suggests that psychologically controlling parenting typically comes at a cost for children's adjustment but that characteristics of the child can have an influence on both the severity of this cost as well as on its manifestation. Because available work to date mainly focused on between-person differences in exposure to psychologically controlling parenting, the focus was on the question whether children with certain personality traits are more susceptible to a more pronounced exposure to psychologically controlling parenting *relative to other children*. Yet, child characteristics may also shape children's susceptibility to psychologically controlling parenting relative to a different point of reference, that is, relative to intra-individual (instead of inter-individual) differences in parental psychological control. That is, children with certain personality traits may be affected more strongly by increased parental engagement in psychological control *relative to their own average or typical exposure to such parenting*. Against the background of the observation that parents' use of psychological control varies substantially on a day-to-day basis, the question then becomes: Do children with certain personality traits respond more strongly to an above-average display of psychologically controlling parenting on a given day compared to other days?

Inter- and intra-individual differences in exposure to psychologically controlling parenting represent two distinct and even orthogonal points of reference to evaluate personality-based susceptibility. Accordingly, the limited evidence for a role of child personality in shaping interindividual differences in the susceptibility to psychologically controlling parenting does not preclude the possibility that there are more systematic moderating effects of child personality at the level of intra-individual (i.e., daily)

variation. That is, due to differences in child personality, some children may be more vulnerable for and others more resilient against the costs associated with daily ups and downs in psychologically controlling parenting. There might perhaps be more room for detecting interaction effects at this level. To illustrate, although a child scoring high on Emotional Stability does not seem to be better protected against the negative effects of perceived psychological control in general (Mabbe et al., 2016), Emotional Stability may protect against the cost associated with a relative rise in psychological control on a given day compared to one's own average.

THE PRESENT STUDY

The central aim of the present study was to examine whether associations between day-to-day variation in psychologically controlling parenting and day-to-day variation in children's externalizing and internalizing problems depend on children's personality. The present study goes beyond past work in two ways. First, the number of diary studies on effects of psychologically controlling parenting on children's daily adjustment is still quite limited. Moreover, these studies also typically relied on a single informant (either parents or children). Therefore, our first aim was to examine associations between daily psychologically controlling parenting - as reported by either parents or children - and daily child outcomes. The use of two different informants allowed for a more rigorous test (Podsakoff, MacKenzie, & Podsakoff, 2012) of our hypothesis that daily psychologically controlling parenting would be related to children's daily maladjustment (i.e., internalizing distress and externalizing behaviors). A second lacuna in extant research is the limited work on the potentially moderating role of personality in general and at the day-to-day level in particular. Therefore, the central aim of this study was to investigate whether children's personality would moderate associations between daily

psychologically controlling parenting and daily maladjustment. We generally considered the possibility that the hypothesized covariation between daily psychological control and daily problem behavior would be attenuated as children display more personality maturity (e.g., high Emotional stability, Agreeableness, and Conscientiousness). Reasoned the other way around, this covariation could be more pronounced when children display low personality maturity. More specifically, we considered the possibility that personality would affect the manifestation of developmental problems associated with psychologically controlling parenting. For children scoring high on undercontrolled traits (e.g., low Conscientiousness) psychologically controlling parenting may relate primarily to externalizing problem behavior, whereas for children scoring high on overcontrolled traits (e.g., low Emotional Stability) psychologically controlling parenting may relate primarily to internalizing distress.

METHOD

PARTICIPANTS AND PROCEDURE

Two hundred and six elementary school children (M age = 9.93 years, SD = 0.94, range = 8-12; 46.6% female) along with their mothers (M age = 40.33 years, SD = 4.37, range = 27-52) and their fathers (M age = 42.36 years, SD = 5.30, range = 29-67) participated in this multi-informant diary study. Regarding educational level, 18.5% of the mothers and 28.5% of the fathers completed secondary school, while 81.6% of the mothers and 71.4% of the fathers followed higher education. Parents were either married (79.9%) or lived together (without being married) (20.1%). In most families there were two (48.5%) or three (33.0%) children.

Given the research questions and hypotheses of this study, we were interested in examining daily variation in parenting and child behavior in families from the general population. To recruit participants, students were

asked to contact families as part of an undergraduate course in developmental psychology. They were asked to invite two families (who were not relatives of the student) with at least one child in elementary school between the age of 8 and 12. If there were more than two children between the ages of 8 and 12 in one family, the oldest child was asked to participate in the study. During a one-hour information session with the first author, the students were trained how to approach potentially interested families (of which the mother, father, and child were all willing to participate) and how to collect the data. Further assistance during the data-collection, if needed, was provided to the students via e-mail. During a home visit, students explained how to fill in the diary booklet. Participants (i.e., mothers, fathers, and children) were informed that there were no right or wrong answers and that their answers would be treated confidentially. Additionally, the diary booklet itself also contained detailed instructions. Participants were instructed to fill out the diary questionnaires each day in the evening for seven consecutive days, thereby noting the date and time of each assessment, 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 anonymous, voluntary, and families did not obtain any reward. Furthermore, both mothers and fathers gave their written consent on behalf of their child and themselves. Children also gave their written consent for their participation. This procedure was in accordance with the guidelines and protocol of the university's Ethical Committee.

MEASURES

All instruments have been used successfully in past research with Dutch-speaking populations. Some instruments were adapted to fit within a

diary format. Cronbach's alphas of the scales are reported in Table 1. Likert scales, ranging from 1 (*completely not true*) to 5 (*completely true*), were used for all scales.

PERSON-LEVEL MEASURE

Child personality. Mothers and fathers completed the short version (54 items) of the Hierarchical Personality Inventory for children (HiPIC; based on Mervielde & De Fruyt, 1999 and Mervielde, De Fruyt, & De Clercq, 2009, internal document). The questionnaire assesses children's Big Five personality traits, namely Conscientiousness (e.g., "My child works with sustained attention"), Extraversion (e.g., "My child talks throughout the day"), Agreeableness (e.g., "My child takes care of other children"), Emotional Stability (e.g., "My child is afraid to fail", reverse scored), and Openness to Experience (e.g., "My child has a rich imagination"). Approximately from 10 years of age on, children can reliably report on their own personality (De Pauw, 2016). Because part of the sample was younger, parents were asked to report on their child's personality. Given the substantial agreement for all of the Big Five traits between maternal and paternal ratings (with all correlations exceeding .60), we aggregated across mother and father reports by first standardizing the scores on the personality traits and then computing the mean scores across both ratings.

DAY-LEVEL MEASURES

Psychological control. Children reported on parents' daily use of psychological control for their mother and father separately. The same items were used as in a previous diary study in this age group (Van der Kaap-Deeder, Vansteenkiste et al., 2017). Specifically, we used four items from the Psychological Control Scale – Youth Self-Report (PCS – YSR; Barber, 1996), which were slightly adapted to make them amendable for the diary format,

(e.g., “Today, my mother/father was less friendly with me if I did not see things her/his way”). Mothers and fathers also reported on their own psychological control, using the same items in a parent-version (e.g., “Today, I was less friendly with my child if he/she did not see things my way”).

Externalizing and internalizing problems. Mothers and fathers filled out three items tapping into children’s aggressive behavior (e.g., “Today, my child was aggressive”), three items tapping into children’s rule-breaking behavior (e.g., “Today, my child lied”) and three items tapping into children’s withdrawn behavior (e.g., “Today, my child preferred to be alone, rather than with others”) (Child Behavioral Checklist; CBCL, Achenbach, 1991). The items tapping into aggressive and rule-breaking behavior were combined into a score representing externalizing problems. The items tapping into withdrawn behavior were used as a measure for internalizing distress.

Table 1
Descriptive Statistics, Internal Consistencies, and Correlations between Dispositional and Daily Variables (Aggregated Scores)

	1	2	3	4	5	6	7	8	9	10	11	12	13
Daily level measures													
Parenting													
1. PC mother (M)													
2. PC mother (C)	.35**												
3. PC father (F)	.41**	.35***											
4. PC father (C)	.30**	.90**	.37**										
Outcomes													
5. Externalizing problems (M)	.52***	.30***	.29***	.30***									
6. Externalizing problems (F)	.20**	.27***	.57***	.28***	.54***								
7. Internalizing distress (M)	.41***	.22***	.19**	.20**	.61***	.28***							
8. Internalizing distress (F)	.08	.21**	.34***	.17*	.31***	.65***	.41***						
Person level measures													
9. Extraversion child	.09	-.05	.05	.01	-.06	-.13†	-.31***	-.37***					
10. Agreeableness child	-.28***	-.37***	-.37***	-.36***	-.53***	-.55***	-.36***	-.42***	.17*				
11. Conscientiousness child	-.08	-.18**	-.07	-.20**	-.25***	-.22***	-.09	-.15*	.10	.40***			
12. Emotional stability child	-.06	-.00	-.02	.01	-.17*	-.18**	-.27***	-.24**	.37***	.16*	.11		
13. Openness to experience child	-.07	-.18**	-.11	-.18**	-.20**	-.20**	-.14*	-.16*	.42***	.21**	.43***	.37**	
<i>M</i>	1.53	1.54	1.58	1.52	1.40	1.44	1.33	1.42	0.00	0.00	0.00	0.00	0.00
<i>SD</i>	0.42	0.52	0.40	0.56	0.41	0.44	0.48	0.50	0.90	0.91	0.93	0.90	0.92
α	.64	.69	.63	.73	.84	.86	.85	.87	.83	.87	.86	.83	.85

Note. PC = psychological control, C = child report, M = mother report, F = father report.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

PLAN OF ANALYSIS

This diary study consisted of repeated measurements on seven consecutive days (i.e., Level 1), nested within 412 participants (i.e., mothers and fathers), nested within 206 families. As we were primarily interested in testing the relations between parental psychological control and children's outcomes by using different informants (i.e., mother, father, and the child), we considered parents as the only higher-order level (i.e., Level 2). To take into account between- and within-person differences, multilevel analyses were conducted with the statistical software package MLwiN 2.32 (Rasbash, Browne, Healy, Cameron, & Charlton, 2015). Predictor variables at Level 1 were group-mean centered (i.e., centered around the person's mean), whereas predictors at Level 2 were centered around the grand mean. In total, there were 5.1 % missing values. By default, these missing values are treated as structural missing values by MLwiN.

To examine whether there was significant variability in the study variables, intercept-only models were first estimated. These unconditional (i.e., without predictor) models do not explain any variance, but decompose the variance into two components, namely variation at the between-person and at the within-person level, with the within-person level reflecting daily variation. Intraclass correlations (ICCs) shed light on the proportion of the total variance in the observed variables that is due to either variation at the between-person level or at the within-person level (i.e., the level of daily variation).

In a next step, daily psychologically controlling parenting (i.e., Level 1) was entered as a predictor of daily levels of externalizing and internalizing problems and the Five Factor dimensions (i.e., Level 2) were entered as a predictor of between-person differences in these problems. Next, cross-level interactions between psychologically controlling parenting and Big Five traits were examined. Cross-level interactions were only added when there was

significant variation around the slopes of the association between psychologically controlling parenting and a particular child outcome (Hox, 2010). The interaction terms were added one by one. In all the models tested, the following background variables were included (yet not shown in the tables for reasons of parsimony): number of children in the family, age and gender of the child, age and educational level of the parent and marital status.

RESULTS

DESCRIPTIVE STATISTICS AND PRELIMINARY ANALYSES

Table 1 shows reliability estimates, correlations, means, and standard deviations of the day-level and person-level variables. For the variables measured daily, aggregated scores across the seven days were computed for use in the correlational analyses. This was done only for descriptive purposes and for a first inspection of associations between the variables. To determine whether there were associations between the background variables (gender and age of the child, parental age, educational level of the parent, number of children in the family and marital status) and the study variables, a MANCOVA was conducted with child gender and educational level of the parents and marital status (the categorical background variables) as fixed factors, with the other (continuous) background variables as covariates, and with all study variables as dependent variables. There were no overall multivariate effects for the child's (*Wilks's* $\lambda = .96$; $F(8,126) = 0.65$; $p = .74$), mother's (*Wilks's* $\lambda = .93$; $F(8, 126) = 1.12$; $p = .35$) and father's (*Wilks's* $\lambda = .95$; $F(8, 126) = 0.91$; $p = .51$) age. There were also no overall multivariate effects for number of children (*Wilks's* $\lambda = .92$; $F(8, 126) = 1.34$; $p = .23$), gender of the child (*Wilks's* $\lambda = .94$; $F(8, 126) = 0.97$; $p = .46$), education of the father (*Wilks's* $\lambda = .77$; $F(32, 466) = 1.07$; $p = .37$) and marital status (*Wilks's* $\lambda = .86$; $F(24, 366)$

= 0.82; $p = .71$). There was only an overall multivariate effect for education of the mother (*Wilks's* $\lambda = .57$; $F(32, 466) = 2.39$; $p = .00$). Although most of the background variables did not have a multivariate effect on the study variables, we controlled for their contribution in the main analyses to test our hypotheses as conservatively as possible.

PRIMARY ANALYSIS

Day-to-day variability in the outcome variables. The ICC reflects the percentage of variance located at Level 2 (i.e., the between-person level). ICC values indicate that, respectively, 50% and 55% of the variance in externalizing problems reported by the mother and father reflect between-person differences. There is respectively 57% and 51% of the variance in internalizing distress reported by the mother and father at the between-person level. As a corollary implication, these between-person percentages suggest that most of the variance (i.e., more than 50%) is situated at the within-person level (i.e., the level of daily variability), although the variance at the within-person level also includes error variance.

Role of daily psychologically controlling parenting. Table 2 and 3 present the findings for daily externalizing problems and internalizing distress. Daily maternal and paternal psychological control were significantly positively related to both daily externalizing problems and internalizing distress when parents reported on the use of psychologically controlling parenting (Model 1). When using children's reports of parenting, most associations were also significant. Child-reported maternal psychological control was related positively to mother-reported externalizing problems (but not to internalizing distress) (Table 2, Model 2). Child-reported paternal psychological control was related positively to father-reported externalizing problems and internalizing distress (Table 3, Model 2). Power analysis with

Monte Carlo simulation revealed there was enough power to detect main level-1 effects (with the power being higher than .80 for all analyses).

As for the between-person level predictors, the patterns of associations with the respective developmental outcomes can be found in Table 2 and 3. Consistent with previous research on the Five Factor Model, Agreeableness was related systematically to lower externalizing problems. Somewhat surprisingly, Conscientiousness was unrelated to externalizing problems. Further, Agreeableness and Extraversion were related negatively to internalizing distress. Emotional Stability was related negatively to internalizing distress, albeit only when internalizing distress was reported by the mother.

Table 2
Daily Externalizing Problems and Internalizing Distress as a Function of Daily Psychologically Controlling Parenting of the Mother

	Externalizing problems (M)					Internalizing distress (M)		
	Null model	Model 1	Model 2	Model 2a	Null model	Model 1	Model 2	
<i>Fixed effects</i>								
Overall intercept	1.39 (.03)***	1.39 (.02)***	1.39 (.02)***	1.39 (.02)***	1.31 (.03)***	1.31 (.03)***	1.31 (.03)***	
Day level predictors								
PC mother (M)		.37 (.04)***				.13 (.04)**		
PC mother (C)			.13 (.04)**	.11 (.04)**			.01 (.03)	
Person level predictors								
Extraversion		.06 (.03)	.06 (.03)	.06 (.03)		-.13 (.04)**	-.13 (.04)***	
Agreeableness		-.21 (.03)***	-.22 (.03)***	-.22 (.03)***		-.15 (.03)***	-.15 (.03)***	
Conscientiousness		-.01 (.03)	-.02 (.03)	-.02 (.03)		.01 (.04)	.00 (.04)	
Emotional Stability		-.04 (.03)	-.04 (.03)	-.04 (.03)		-.08 (.03)*	-.07 (.03)*	
Openness to Experience		-.04 (.03)	-.02 (.03)	-.03 (.03)		.06 (.04)	.05 (.04)	
Interaction								
PC*Openness to Experience				-.10 (.04)*				
<i>Random effects</i>								
u ₀	.12 (.01)***	.08 (.01)***	.07 (.01)***	.07 (.01)***	.16 (.02)***	.12 (.01)***	.12 (.01)***	
u ₁		.14 (.03)***	.07 (.02)***	.06 (.02)**		.07 (.03)*	.01 (.01)	
u ₀ u ₁		.06 (.01)***	.03 (.01)*	.03 (.01)**		.02 (.02)	.01 (.01)	
e ₀	.15 (.01)***	.11 (.01)***	.13 (.01)***	.13 (.01)***	.16 (.01)***	.15 (.01)***	.16 (.01)***	
-2*loglikelihood	1626.030	1273.371	1464.265	1457.557	1775.312	1684.518	1680.594	

Note: PC = psychological control, M = mother report, C = child report.

*p < .10. **p < .05. ***p < .001.

Table 3
Daily Externalizing Problems and Internalizing Distress as a Function of Daily Psychologically Controlling Parenting of the Father

	Externalizing problems (F)				Internalizing distress (F)			
	Null model	Model 1	Model 2	Model 2a	Null model	Model 1	Model 2	Model 2a
<i>Fixed effects</i>								
Overall intercept	1.44 (.03)***	1.44 (.03)***	1.44 (.03)***	1.44 (.03)***	1.41 (.03)***	1.42 (.03)***	1.42 (.03)***	1.42 (.03)***
Day level predictors								
PC father (F)		.29 (.04)***				.15 (.05)**		
PC father (C)			.08 (.04)*	.05 (.04)			.10 (.04)*	.07 (.04)†
Person level predictors								
Extraversion		.02 (.03)	.02 (.03)	.02 (.03)		-.16 (.04)**	-.16 (.04)**	-.16 (.04)**
Agreeableness		-.26 (.03)***	-.26 (.03)***	-.26 (.03)***		-.20 (.04)***	-.20 (.04)***	-.20 (.04)***
Conscientiousness		.02 (.03)	.02 (.03)	.02 (.03)		.02 (.04)	.02 (.04)	.02 (.04)
Emotional Stability		-.04 (.03)	-.04 (.03)	-.04 (.03)		-.03 (.04)	-.04 (.04)	-.04 (.04)
Openness to experience		-.04 (.04)	-.04 (.04)	-.04 (.04)		.04 (.04)	.04 (.04)	.04 (.04)
Interaction								
PC*Agreeableness				-.11 (.04)*				-.09 (.04)*
<i>Random effects</i>								
u_0	.16 (.02)***	.11 (.01)***	.11 (.01)***	.11 (.01)***	.20 (.02)***	.14 (.02)***	.14 (.02)***	.14 (.02)***
u_1		.11 (.02)***	.08 (.02)***	.07 (.02)**		.13 (.04)***	.05 (.02)*	.04 (.02)*
u_0u_1		.02 (.01)*	.01 (.01)	.01 (.01)		-.01 (.02)	.00 (.02)	.00 (.02)
e_0	.14 (.01)***	.10 (.01)***	.12 (.01)	.12 (.01)***	.19 (.01)***	.16 (.01)***	.18 (.01)***	.18 (.01)***
-2*loglikelihood	1546.474	1177.874	1378.846	1370.752	1986.473	1797.986	1818.075	1812.893

Note. PC = psychological control, F = father report, C = child report.

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

Personality as a moderator. To examine whether the within-day associations between psychologically controlling parenting and externalizing and internalizing problems depend on children's personality, cross-level interactions were inspected. This was done only in cases where there was significant variation around the slopes of the association between psychologically controlling parenting and a particular outcome (Hox, 2010). There was significant variation around the slopes in all tested models, except for the model with child-reported maternal psychologically controlling parenting predicting internalizing distress. Out of the 35 potential interactions, three turned out to be significant. As can be seen in Figure 1 child-reported maternal psychological control was related to externalizing problems when children were rated low on Openness to Experience ($b = .16$, $t = 4.12$, $p = .00$) but not when they were high on Openness to Experience ($b = .05$, $t = 0.96$, $p = 0.34$). Further, as can be seen in Figures 2 and 3, Agreeableness moderated effects of child-reported paternal psychological control, with effects of psychological control on both externalizing problems and internalizing distress being significant only in children rated low on Agreeableness ($b = .12$, $t = 8.70$, $p = .00$; $b = .14$, $t = 3.39$, $p = .00$) but not in children rated high on Agreeableness ($b = -.03$, $t = -0.80$, $p = .42$; $b = .00$, $t = 0.08$, $p = .94$). With respect to the cross-level interactions, Monte Carlo analyses based on the approach suggested by Mathieu, Aguinis, Cupepper, and Chen (2012) showed that we had more than .80 power to detect those interactions.²

² When performing the analyses with maternal and paternal ratings of the child's personality separately (rather than aggregated across raters), we obtained one more significant interaction. Specifically, there was an interaction between child-reported maternal psychological control and mother-reported Conscientiousness in predicting externalizing problems, with the association being significant when children were rated low on Conscientiousness ($b = .16$, $t = 3.65$, $p = .00$) but not when they were rated as high on Conscientiousness ($b = .07$, $t = 1.45$, $p = 0.15$). This finding is again in line with the notion that psychologically controlling parenting is related most strongly to externalizing problems in children scoring high on undercontrolled personality traits.

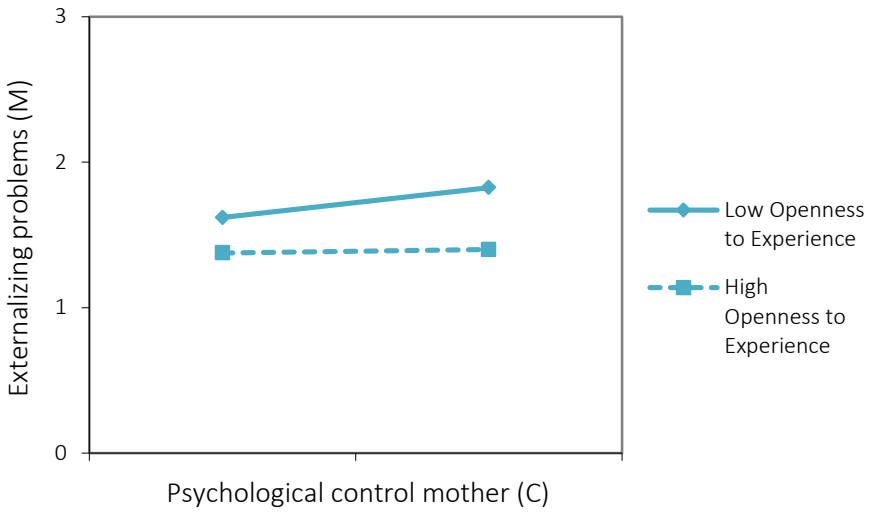


Figure 1. Significant interaction between psychological control of the mother, reported by the child, and Openness To Experience in the association with externalizing problems.

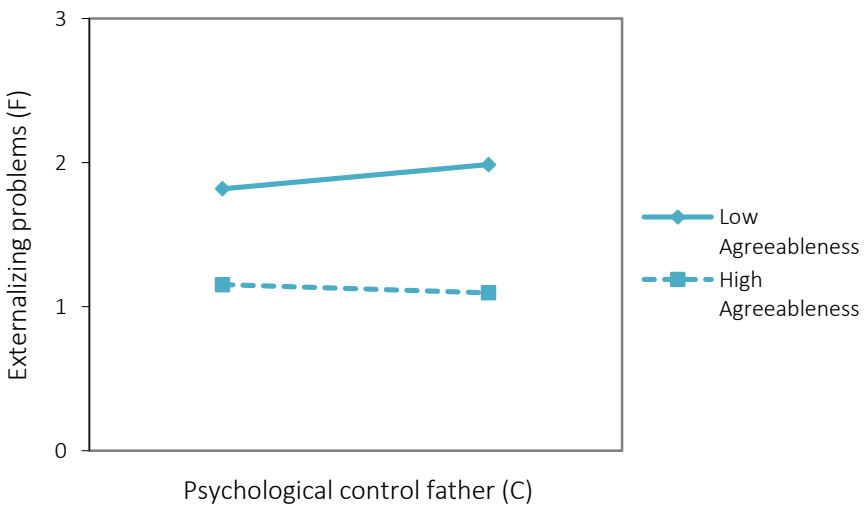


Figure 2. Significant Interaction between psychological control of the father, reported by the child, and Agreeableness in the association with externalizing problems.

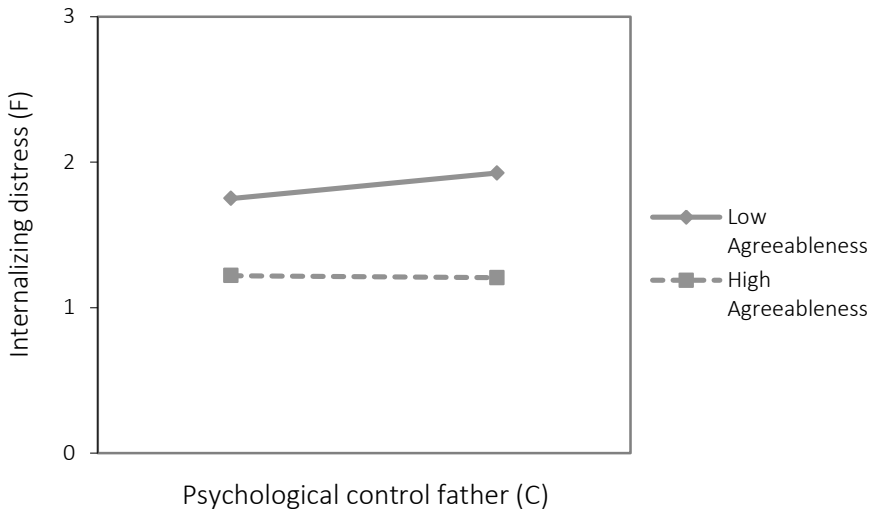


Figure 3. Significant interaction between psychological control of the father, reported by the child, and Agreeableness in the association with internalizing distress.

DISCUSSION

Research convincingly demonstrated the detrimental effects of psychologically controlling parenting on children’s and adolescents’ well-being and behavioral adjustment (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). Recent studies began to show that such effects also occur on a day-to-day basis, with daily psychologically controlling parenting being related to daily maladjustment in children (Aunola et al., 2013; Van der Kaap-Deeder, Vansteenkiste et al., 2017). This study aimed to contribute to this emerging literature (a) by revisiting associations between daily parental psychological control and children’s daily maladjustment using a multi-informant approach and, most importantly, (b) by investigating the role of children’s personality at the level of within-person variation in daily psychologically controlling parenting in the prediction of child outcomes.

EFFECTS OF DAILY PSYCHOLOGICALLY CONTROLLING PARENTING

Consistent with past work (e.g., Aunola et al., 2013; Mabbe, Soenens, Vansteenkiste, Van der Kaap-Deeder, & Mouratidis, 2017) multilevel analyses showed that there was significant day-to-day variability in both maternal and paternal psychologically controlling parenting. About half of the variance in the scores for psychologically controlling parenting represents daily variation, indicating that this dimension of parenting is quite variable and susceptible to daily change. As such, these findings testify to dynamic models of parenting that assume substantial variability in parenting across situations and days (Repetti et al., 2015). More generally, these findings point to the importance of studying family and parenting processes not only at the level of between-person differences but also at the level of within-person change and variation (Keijsers et al., 2016).

While previous diary studies already demonstrated associations between daily psychologically controlling parenting and children's daily maladjustment, these studies relied on single informants, focusing either on parent reports only (Aunola et al., 2013) or on child reports only (Van der Kaap-Deeder, Vansteenkiste et al., 2017). The present study included both parent and child reports of parenting and examined associations between both types of reports and parent-reported child problems (externalizing problems and internal distress). Multilevel analyses indicated that daily maternal and paternal psychological control were significantly positively related to daily externalizing problems and internalizing distress, a pattern that was fairly consistent across informants. Evidently, associations were less pronounced when using different informants for parenting and the child outcomes (i.e., child-reports of parenting and parent-reports of problem behavior), with one of the four associations turning out to be non-significant (i.e., the association between child-reported maternal psychological control and mother-reported internalizing distress). Overall, the findings further

confirm the relevance of parents' daily engagement in psychologically controlling parenting for children's daily adjustment. Children are perceived to display more externalizing problems and internalizing distress on days when parents engage in more psychologically controlling parenting compared to the child's average experienced psychological control.

Importantly, these associations do not necessarily reflect a parenting-effect, as it is equally possible that children's maladjustment elicits more psychologically controlling parenting. Children's externalizing problems on a given day in particular have been shown to predict an increase in parental psychological control the next day (Aunola, Viljaranta, & Tolvanen, 2016), an effect that might be accounted for by the negative emotions evoked by such behavior in parents (Dix, 1991). Most likely, daily parenting and daily child maladjustment are related reciprocally and in a mutually reinforcing fashion, with child maladjustment giving rise to more psychologically controlling parenting and with such parenting further increasing children's proneness to problem behaviors and distress (Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008; Wang, Pomerantz, & Chen, 2007). In the remainder of this Discussion, we focus on the latter part of this bidirectional process, addressing the question whether children's personality affects their susceptibility to daily psychologically controlling parenting.

MODERATING ROLE OF CHILD PERSONALITY

Consistent with diathesis-stress models of the interplay between child characteristics and parenting (Kiff et al., 2011), we considered the possibility that the within-person association between psychologically controlling parenting and externalizing and internalizing problems could be stronger among children with personality traits conveying more vulnerability for problem behaviors. For those children, a relative increase or decrease in

psychologically controlling parenting on a given day may have more effect on their externalizing and internalizing problems that day.

To date, research on the moderating role of child characteristics has mainly focused on between-person differences in exposure to psychologically controlling parenting. Theoretically, the distinction between studies at the between- and within-person level is important because they involve a different point of reference to evaluate children's personality-based susceptibility to parenting. Studies at the between-person level consider the question whether a child exposed to more (perceived) psychologically controlling parenting *compared to other children* will be more vulnerable to the effects of such parenting based on his or her personality. At the within-person level, the key point of reference shifts to the average degree of parental psychological control within a given relationship, which in the current study was either the mother-child or the father-child relationship. Findings at this level reflect children's susceptibility (depending on personality traits) to problems on days when parents report engaging in more psychologically controlling strategies compared to the average degree of psychological control in the specific relationship (Binneweis & Wornlein, 2011). Thus, studies at the within-person level focus on a different, and perhaps more personally relevant and salient, point of reference to evaluate how children differ in their reactivity or sensitivity to aspects of their own environment (Fisher & To, 2012).

Interaction analyses showed that out of the 35 interactions tested, three turned out to be significant (i.e., 8%). Consistent with the prediction that psychologically controlling parenting primarily yields an emotional cost (Barber, 1996; Soenens & Vansteenkiste, 2010) previous research examining between-person differences has yielded consistent evidence for associations between psychologically controlling parenting and internalizing distress, an effect not strongly moderated by personality (Mabbe et al., 2016). In

contrast, somewhat less consistent evidence has been obtained for the association between psychologically controlling parenting and externalizing problems (Barber, Olsen, & Shagle, 1994). To account for this pattern of findings, it has been argued that the association between parental psychological control and externalizing problems perhaps depends on children's personality. More specifically, the possibility was raised that psychologically controlling parenting relates to externalizing problems primarily in children scoring high on more undercontrolled personality traits (low Agreeableness and low Conscientiousness) (Mabbe et al., 2016; Costa et al., 2015). This prediction received some support in past work focusing on between-person differences in psychologically controlling parenting (Mabbe et al., 2016) as well in this study focusing on within-person differences in psychologically controlling parenting. Specifically, the association between daily maternal psychologically controlling parenting and externalizing problems was found to be significant only among children scoring low on Openness to Experience. Further, associations between daily paternal psychological control and externalizing problems were significant only among children low on Agreeableness. These two personality dimensions (i.e., low Openness to Experience, and Agreeableness) indeed indicate an undercontrolled profile of personality, with such a profile being particularly involved in risk for externalizing problems (Asendorpf, Borkenau, Ostendorf, & van Aken, 2001; Prinzie et al., 2004). Only children with these more undercontrolled traits appear to respond to daily psychologically controlling parenting with an inclination to engage in externalizing behaviors. Future research could address the question whether these children are more likely to display non-compliance and even defiance against parental authority when confronted with parental psychological control (Van Petegem, Soenens, Vansteenkiste, & Beyers, 2015).

There was only one interaction effect involving internalizing distress, with low Agreeableness moderating the association between daily paternal psychologically controlling parenting and children's internalizing distress. Because this was the only significant interaction with internalizing distress (among 15 tested interactions), it should be interpreted with some caution. The findings suggest that associations between psychologically controlling parenting and internalizing problems are largely unaffected by the child's personality. As such, the emotional cost associated with daily psychologically controlling parenting seems to be quite robust and largely unaffected by children's personality.

Again, caution is warranted also in interpreting the direction of effects in these few interactions with the child's personality. An alternative interpretation of these moderating effects is that parents react more strongly to children's display of maladjustment with a psychologically controlling response when they perceive the child's personality as being more difficult. With such perceptions of a difficult personality, parents may more easily make hostile attributions when the child displays problem behavior, with these hostile attributions in turn evoking a more intrusive and domineering parental response (Dix, 1991). Although this alternative possibility cannot be dismissed entirely on the basis of the current data, the finding that the few significant interactions showed up only with the child reports of parenting (and not with the parent reports) seems to argue somewhat against this alternative interpretation. If parents' perception of the child's personality and their subsequent hostile attributions (both of which represent subjective parental processes) would be key mechanisms underlying the obtained interaction, then the interaction should be obtained in the first place with parents' own (subjective) perception of their parenting behavior (which was not the case). Still, future research needs to consider the possibility that the child's personality (or at least parents' perceptions of

it) could affect not only children's susceptibility to parenting but also parents' responses to child behavior.

Generally speaking, the number of significant interactions obtained was quite limited. Much like research examining the moderating role of child personality at the between-person level (Mabbe et al., 2016), this research suggests that personality plays a modest moderating role in effects of psychologically controlling parenting. The few interactions obtained are consistent with the diathesis-stress model (Kiff et al., 2011), stating that the combination of adverse parenting and vulnerable child characteristics is leading to the least favorable outcomes. However, because of the limited number of interactions, it seems fair to conclude that psychologically controlling parenting is generally detrimental to children's adjustment. This conclusion meshes with the Self-Determination Theory perspective on psychologically controlling parenting, according to which such parenting threatens and even undermines children's basic psychological needs for autonomy, competence, and relatedness (Soenens & Vansteenkiste, 2010). Because these needs are considered universally important, contextual influences that thwart these needs (such as psychologically controlling) are thought to yield systematic costs for children's functioning.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The present study had a number of limitations. In the first place, the diary study had a paper and pencil format. Participants were asked to fill out the diary each day in the evening, noting date and time. This is no guarantee however that they filled it out at the appropriate time. In future studies, electronic diaries can be used to overcome this problem. Another limitation is the homogeneity of the sample. Parents were relatively highly educated compared to the national population (Statistics Belgium, 2014), which was probably due to the selection procedure used to recruit participants.

Furthermore, only intact families took part in the studies. In future research, it will be important to investigate the daily variability in parenting in more heterogeneous samples. Given the young age of the children in this sample, child personality was reported by the parents and not by the children themselves. Given that children can, approximately from the age of 10 years on, reliably report on their own personality (De Pauw, 2016), future research could include an older age group of children to investigate whether a judgement of their own personality would play a moderating role.

In this diary study, personality has been measured at the between-person level. It would be interesting in future research to assess personality also at the between-days level (Debusscher, Hofmans, & De Fruyt, 2016; Judge, Simon, Hurst, & Kelley, 2014). In this respect, it would be interesting for example to investigate whether (a) day-to-day variability in personality would alter the contribution of day-to-day variability in psychologically controlling parenting in the prediction of problem behavior (i.e., moderation) and (b) whether day-to-day variation in psychologically controlling parenting predicts the type of personality traits that surface and get expressed on a given day (i.e., main effect).

CONCLUSION

This study showed that daily fluctuations in maternal and paternal psychologically controlling parenting were related to daily fluctuations in externalizing problems and internalizing distress. In only 8% of the tested interactions, the association between psychologically controlling parenting and child outcomes was moderated by child personality, especially in the prediction of externalizing problems. Overall, these findings suggest that daily psychologically controlling parenting is generally detrimental to children's daily functioning but that children do differ somewhat in their susceptibility to its effect on externalizing behaviors in particular.

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THE MODERATING ROLE OF ADOLESCENT PERSONALITY IN ASSOCIATIONS BETWEEN PSYCHOLOGICALLY CONTROLLING PARENTING AND PROBLEM BEHAVIORS: A LONGITUDINAL EXAMINATION AT THE LEVEL OF WITHIN-PERSON CHANGE¹

While abundant research has demonstrated associations between psychologically controlling parenting and adolescent problem behavior, little is known about the moderating role of adolescent personality in these associations. This study examined whether the Five Factor Model (FFM) dimensions of adolescent personality alter the strength of associations between parental psychological control and both internalizing and externalizing problems at the level of within-person change. 198 families participated in a 3-wave longitudinal design, with one-year intervals between waves, and using multi-informant assessment, with both adolescents (M age = 14.89 years; 51 % female) and their fathers (M age = 46.79 years) and mothers (M age = 45.14 years) reporting on parenting and problem behaviors at each wave. Adolescents additionally provided ratings of their personality at Wave 1. Multilevel analyses demonstrated that changes in maternal psychological control (as reported by both mother and adolescent) and paternal psychological control (as reported by adolescents) related positively to changes in multi-informant scores of both internalizing

¹ Mabbe, E., Vansteenkiste, M., Brenning, K., De Pauw, S. S. W., Beyers, W., & Soenens, B. (2017). The moderating role of adolescent personality in associations between psychologically controlling parenting and problem behaviors: A longitudinal examination at the level of within-person change. *Manuscript submitted for publication.*

and externalizing problems. The moderating role of personality was tested using both a dimensional approach (where dimensional scores of the personality variables were used as moderators) and a person-centered approach (where configurations of personality dimensions or personality profiles were used as moderators). Evidence for the moderating role of personality was found for 3 out of 25 interactions (12%) in a variable-centered approach and for 3 out of 8 interactions (25%) in a person-centered approach. The interactions obtained indicated that a mature personality (i.e., higher scores on Emotional Stability, or membership in a resilient profile in comparison to an overcontrolled profile) buffered against the detrimental effects of psychologically controlling parenting on internalizing problems. A resilient profile (in comparison to an undercontrolled profile) also buffered against effects of psychologically controlling parenting on externalizing problems. In contrast, higher scores on Openness to Experience or membership in an over- or undercontrolled profile (in comparison to a resilient profile) appeared to increase adolescents' sensitivity to the effects of psychologically controlling parenting. Overall, the number of interactions was limited, suggesting only a modest moderating effect of adolescent personality. Directions for future research are discussed.

INTRODUCTION

The literature on parenting in adolescence witnesses a strong and still increasing interest in the concept of parental psychological control (Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). As defined by Barber (1996), psychologically controlling parenting involves the use of intrusive and often insidious parental tactics to pressure the child to think, act, and feel in particular ways, even by manipulating the parent-child bond. Examples of psychologically controlling practices are: induction of anxiety and/or guilt, love withdrawal, and shaming.

Recent research has started to address the question whether some adolescents are more susceptible to the detrimental effects of psychologically controlling parenting than others (Cui, Morris, Criss, Houtberg, & Silk, 2014; El-Sheikh, Hinnant, Kelly, & Erath, 2010; Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016). Most of these studies examined the role of moderating factors (such as adolescents' personality) in concurrent associations between psychologically controlling parenting and developmental outcomes in adolescents. By investigating the moderating role of personality, these cross-sectional studies aimed to address the question for whom (i.e., children with certain personality profiles) the associations between psychological control and developmental outcomes are stronger, weaker, or even nonexistent. However, adolescence is essentially a time of change, both in terms of the parent-child relationship (Soenens, Vansteenkiste, & Beyers, in press; Steinberg & Silk, 2002) and in terms of developmental problems (Moffitt, 1993; Petersen et al., 1993; Steinberg & Morris, 2001). As such, an examination of the role of individual differences in susceptibility to effects of psychologically controlling parenting ideally needs to be conducted at the level of change. Accordingly, the present study uses a longitudinal design to focus on associations between psychologically controlling parenting and adolescent internalizing and

externalizing problems from the perspective of within-person change and to investigate the moderating role of adolescent's personality, as operationalized from the Five Factor Model framework (Caspi & Shiner, 2006) in these longitudinal associations.

PSYCHOLOGICALLY CONTROLLING PARENTING

Abundant cross-sectional research has demonstrated the detrimental effects of psychologically controlling parenting on adolescents' psychosocial adjustment (Barber & Harmon, 2002; Barber & Xia, 2013; Soenens & Vansteenkiste, 2010). Most systematically, psychologically controlling parenting is associated with internalizing distress, as indicated by general measures of internalizing problems (e.g., Costa, Soenens, Gugliandolo, Cuzzocrea, & Larcan, 2015; Symeou & Georgiou, 2017) as well as more specific manifestations of internalizing distress such as depressive symptoms (Cui et al., 2014; Daryanani, Hamilton, Abramson, & Alloy, 2016; Gargurevich & Soenens, 2016; Soenens, Park, Vansteenkiste, & Mouratidis, 2012) and anxiety (McLeod, Wood, & Weisz, 2007; Pettit, Laird, Dodge, Bates, & Criss, 2001). Furthermore, psychologically controlling parenting is also associated with general measures of externalizing problems (Daryanani et al., 2016; Mabbe et al., 2016; Symeou & Georgiou, 2017) and with specific manifestations of externalizing problem behavior such as relational aggression (Kawabata, Alink, Tseng, van Ijzendoorn, & Crick, 2011), aggressive behavior (Cui et al., 2014) and destructive conflict resolution styles (Missotten, Luyckx, Van Leeuwen, Klimstra, & Branje, 2016).

Longitudinal studies increasingly show that psychological control not only relates to maladjustment concurrently but also predicts increases in maladjustment across time. In a three-year longitudinal study with 12-14 years old adolescents, Conger, Conger and Scaramella (1997) found that psychological control by both parents was associated with increases in

adolescents' internalizing and externalizing problems. Several more recent longitudinal studies with adolescents similarly demonstrated that psychologically controlling parenting predicts increases in both internalizing (e.g., Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008) and externalizing (e.g., Janssens et al., 2017) problems, with these problems in turn eliciting more psychologically controlling behavior across time. Recent meta-analyses by Pinquart (2016, 2017) confirmed that associations of psychologically controlling parenting with both internalizing and externalizing problems are bidirectional in nature.

Self-Determination Theory (SDT; Deci & Ryan, 2000), a general theory on human motivation and social development, offers an explanation for the systematic and seemingly pervasive effects of psychologically controlling parenting on adolescents' problems. Psychologically controlling parenting is said to heighten adolescents' vulnerability as it thwarts three universal psychological needs, that is, the needs for autonomy (i.e., experiences of volition and psychological freedom), relatedness (i.e., experiences of being loved by others) and competence (i.e., experiences of being capable of attaining goals) (Deci & Ryan, 2000). These needs are essential for psychological growth, well-being and adaptive behavior (Ryan & Deci, 2017). Adolescents raised in a psychologically controlling parenting climate would be prone to maladjustment because their psychological needs get thwarted (Soenens & Vansteenkiste, 2010). Psychologically controlling parenting is indeed likely to give rise to feelings of pressure (autonomy frustration), inadequacy (competence frustration), and alienation from parents (relatedness frustration). In addition to yielding an emotional cost (resulting in internalizing distress), psychological need frustration gives rise to compensatory and defensive reactions, including oppositional defiance and resulting externalizing problem behaviors (Van Petegem, Soenens, Vansteenkiste, & Beyers, 2015). Consistent with this reasoning, studies have

shown that psychologically controlling parenting is related to lower psychological need satisfaction and even to experiences of need frustration, with these experiences accounting for associations between parental psychological control and adolescent problem behaviors (Ahmad, Vansteenkiste, & Soenens, 2013; Costa, Cuzzocrea, Gugliandolo, & Larcán, 2016; Costa et al., 2015; Mabbe et al., 2016).

INDIVIDUAL DIFFERENCES IN SUSCEPTIBILITY TO PARENTAL PSYCHOLOGICAL CONTROL

The finding that the universally important needs for autonomy, competence, and relatedness account for the detrimental effects of psychologically controlling parenting does not automatically imply that all adolescents are affected by such parenting equally. Adolescents might still differ in their susceptibility to (or resilience against) the risks associated with parental psychological control. Still, given the role of psychologically controlling parenting in psychological need frustration, it is unlikely that some adolescents would be entirely unaffected by such parenting, let alone that some adolescents would benefit from it (Soenens, Vansteenkiste, & Van Petegem, 2015).

Although it seems plausible that adolescents' personality could play a role in this vulnerability to (versus resilience against) parental psychological control, only few studies to date addressed this possibility. This is unfortunate because research addressing the moderating role of personality may help to identify adolescents most at risk for the detrimental effects of psychologically controlling parenting and most in need of counseling. An examination of the moderating role of adolescents' personality is also important to better understand the specific manifestations of developmental problems associated with psychologically controlling parenting. It is possible that, while some adolescents are more prone to develop internalizing problems when raised in a psychologically controlling

home, other adolescents are more inclined to respond to psychologically controlling parenting with externalizing problems. Thus, an investigation of the role of adolescents' personality may help to unravel the question of multifinality in effects of parental psychological control (Cicchetti & Rogosch, 1996).

One useful framework to chart the role of adolescents' personality in effects of psychologically controlling parenting is the Five-Factor Model (FFM) of personality (i.e., Emotional Stability, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness; Caspi & Shiner, 2006), which offers a comprehensive taxonomy of individual differences relevant in adolescence. Research has shown that the FFM dimensions of personality become increasingly stable in adolescence (Caspi, Harrington, Milne, Amell, Theodore, & Moffitt, 2003; Caspi, Roberts, & Shiner, 2005; Fraley & Roberts, 2005) and reliably predict a variety of developmental outcomes in this life period (Klimstra, Akse, Hale, Raaijmakers, & Meeus, 2010; Shiner & Masten, 2012). While low Emotional Stability and low Extraversion (indicating introversion) are the strongest predictors of internalizing problems (Muris, Meesters, & Blijlevens, 2007; Van Leeuwen, Mervielde, Braet, & Bosmans, 2004), low scores on Agreeableness and Conscientiousness are strongly predictive of externalizing problems (Lynam et al., 2005; Ozer & Benet-Martinez, 2006).

Such findings have been obtained using a dimensional approach, which considers the associations between continuous scores for each of the FFM dimensions and problems behaviors, as well as using a person-centered approach, which focuses on the patterning and organization of traits within a person. Through the use of person-oriented analyses (such as cluster analysis) on comprehensive dimensional personality models such as the Big Five, research with adolescents and adults has yielded evidence for three personality profiles (Asendorpf, Borkenau, Ostendorf, & van Aken, 2001;

Claes, Vandereycken, Luyten, Soenens, & Vertommen, 2006; Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1995): (a) a resilient type, characteristic of individuals scoring high on the Big Five dimensions, (b) an overcontrolled type, characteristic of individuals primarily scoring low on Emotional Stability and low on Extraversion, and (c) an undercontrolled type, characteristic of individuals primarily scoring low on Conscientiousness and Agreeableness. Whereas resilient individuals score high on indicators of psychosocial adjustment, overcontrolled individuals are mainly vulnerable to internalizing problems, and undercontrolled individuals are mainly vulnerable to externalizing problems (Asendorpf et al., 2001; Dubas, Gerris, Janssens, & Vermulst, 2002; Robins et al., 1996).

In addition to affecting adolescents' problem behaviors directly (as indicated by main effects of personality on problem behaviors), adolescent personality may also affect adolescents' susceptibility to environmental influences, including psychologically controlling parenting (Mabbe et al., 2016). While adolescents scoring higher on more adaptive personality traits may be armed better against the deleterious effects of parental psychological control, adolescents scoring higher on traits reflecting more vulnerability may be more sensitive to the effects of such parenting. Further, because of their differential associations with adolescent problem behaviors, the FFM dimensions may also help to explain the manifestation of developmental problems associated with psychologically controlling parenting. Perhaps, such parenting is associated mainly with internalizing problems when adolescents have a personality-based propensity towards such problems, that is, when they score high on more overcontrolled traits. In analogy, parental psychological control would be mainly associated with externalizing problems when adolescents have a personality-based propensity to score high on such problems, that is, when they score higher on more undercontrolled traits.

To the best of our knowledge, to date, only one cross-sectional study examined the moderating role of adolescents' personality in effects of psychologically controlling parenting from the FFM framework. In a set of cross-sectional studies, Mabbe et al. (2016) found evidence for the moderating role of Agreeableness in the association between psychologically controlling parenting and externalizing problems. Specifically, psychologically controlling parenting related to externalizing problems only among adolescents scoring low on Agreeableness, which represents a risk factor for this type of problem behaviors in particular. In contrast to this moderation effect obtained for externalizing problems, the contribution of psychological control in the prediction of internalizing problems appeared unmoderated by Agreeableness, suggesting that psychologically controlling parenting comes with an emotional cost, regardless of adolescents' Agreeableness. Overall, the number of interactions with adolescent personality was limited.

Such results are consistent with moderation findings obtained in previous research on other types of controlling parenting and on externally controlling parenting (i.e., domineering, over-reactive, and harsh parenting) in particular. While externally controlling parenting pressures adolescents "from without", psychological control pressures them "from within" and is therefore considered a more internally controlling type of parenting (Soenens & Vansteenkiste, 2010). Specifically, previous studies examining the moderating role of adolescent personality in effects of externally pressuring types of parental control also demonstrated that Agreeableness in particular and to some extent also Conscientiousness and Extraversion dampened the strength of associations between controlling parenting and children's and adolescents' maladjustment (de Haan, Prinzie, & Dekovic, 2010; Prinzie et al., 2003; Van den Akker, Dekovic, & Prinzie, 2010; Van Leeuwen et al., 2004).

ON THE IMPORTANCE OF ADOPTING A WITHIN-PERSON AND CHANGE-ORIENTED PERSPECTIVE

Because the Mabbe et al. (2016) study was cross-sectional in nature, it addressed the moderating role of personality only at the level of concurrent, between-person differences. This level of analysis focuses on adolescents' susceptibility to the detrimental effects of psychologically controlling parenting *relative to other* adolescents. At this between-person level of analysis, limited evidence was found for moderation (Mabbe et al., 2016). However, this does not preclude moderation at the within-person level, that is, at the level of changes within an individual across time. When examining within-person differences, the focus is on adolescents' susceptibility to the detrimental effects of increases in psychological control *relative to their own average exposure* to or perception of controlling parenting. Accordingly, depending on the level of analysis, the point of reference to evaluate the moderating role of personality is different. Possibly, the point of reference examined at the level of within-person change is more relevant to examine the role of personality because deviations from one's own usual levels of experienced parenting might be more salient to adolescents than deviations from the levels of parenting experienced by other adolescents.

The focus on the level of within-person change in the current study meshes with a more general trend in psychology to analyze developmental phenomena both at between-person and within-person levels (Curran & Bauer, 2011; Hamaker, Kuiper, & Grasman, 2015; Keijsers, 2016), thereby identifying associations that hold both across and within persons. To the best of our knowledge, only one study to date investigated the moderating role of Big Five personality dimensions in effects of psychologically controlling parenting at the within-person level (Mabbe, Vansteenkiste, Van der Kaap-Deeder, Dieleman, Mouratidis, & Soenens, under review). In this

diary study, daily maternal and paternal psychological control were positively related to pre-adolescents' daily externalizing and internalizing problems. The moderating effect of Agreeableness demonstrated cross-sectionally by Mabbe et al. (2016) was partially replicated at the level of daily associations, with effects of paternal (but not maternal) psychological control on daily externalizing behaviors being significant only among children low in Agreeableness. In this diary study, the same interaction involving paternal (but not maternal) psychological control was also found in the prediction of internalizing behaviors.

As the Mabbe et al. (under review) study investigated day-to-day changes in parenting, one may wonder whether personality may rather play a moderating role in effects of more long-term and enduring exposure to psychologically controlling parenting over time (and not so much in effects of short-term psychologically controlling exposure in the day). To test this possibility, it is important to investigate the role of personality in effects of psychologically controlling parenting over a longer period of time. Therefore, in the current study, we examined associations between psychologically controlling parenting and adolescents' problem behaviors using a 3-wave longitudinal design, with the waves separated by a 1-year interval. Specifically, we used a multilevel approach to detect associations at the within-person level and to examine the moderating role of adolescents' personality herein.

THE PRESENT STUDY

First, we aimed to investigate the associations between psychologically controlling parenting and internalizing and externalizing problems at the within-person level, thereby controlling for variance situated at the between-person level (cfr. Preacher, Zyphur, & Zhang, 2010). We hypothesized that within-person changes in psychologically controlling

parenting would be significantly related to within-person changes in both internalizing and externalizing problems. That is, to the extent that experienced parental psychological control would deviate from one's own average, similar deviations in problem behavior are expected.

Second, and most importantly, we aimed to examine the potentially moderating role of adolescents' personality in these associations at the within-person level. Based on previous research, we considered the possibility that associations with internalizing problems would be most pronounced among adolescents scoring lower on Emotional Stability and Extraversion and that associations with externalizing problems would be most pronounced among adolescents scoring low on Agreeableness and Conscientiousness. The moderating role of personality was examined using both a dimensional and a person-centered (i.e., profile-based) approach. Because the personality profiles (i.e., resilient, overcontrolled, and undercontrolled) are assumed to be more than the sum of their constituting parts and to represent personality organization at the level of the individual person (Asendorpf et al., 2001), it could be the case that, even in the absence of moderation by specific personality dimensions, these profiles do moderate the effects of parental psychological control. As such, a person-centered approach yields an alternative and perhaps more complete test of the moderating role of adolescent personality. Another benefit of a person-centered approach is that results can be communicated and translated more easily to practitioners (e.g., clinical psychologists or family counselors). For practitioners working with parents and adolescents, the personality profiles may be more face valid and informative as different personality dimensions cluster within adolescents instead of being operative in an isolated way. The advantage of the more abstract dimensions underlying these personality profiles is, however, that if any moderation effect with personality profiles would emerge, the specific personality dimensions driving the effect get

identified. With respect to the types, we would hypothesize that the association between psychological control and externalizing problems would be more pronounced for the undercontrolled type. The association between psychological control and internalizing problems would be more pronounced for the overcontrolled type.

METHOD

PARTICIPANTS

Participants were 198 Belgian, Dutch-speaking adolescents and their parents (M age at T1 = 14.89 years, SD = 0.88, range = 13-17 years, 51% female). Almost all adolescents (99%) lived in intact families (i.e., with the parents being married or living together). Most families consisted of two children (51%), followed by families with three children (29%), families with one child (10%) and families with four children or more (10%). All adolescents were enrolled in a high school program, with 67% following an academic track and with 33% following a technical or vocational track. Mothers' mean age was 45.14 years (SD = 3.20, range = 37-53 years), fathers' mean age was 47 years (SD = 3.86, range = 39-57 years). On a 6-point scale, parents' mean educational attainment was 4.11 (SD = 1.15), indicating an average of 15 years of education.

RECRUITMENT

In October 2012, 198 families were recruited as part of an undergraduate course in developmental psychology in which students were asked to invite two adolescents living in intact families (who were not relatives or close friends of the student) to participate in the study. Students were trained to approach potentially interested families. They briefly explained the purpose of the study and asked adolescents to assent to participate. In addition, parents were asked to provide active consent and to

also fill out a questionnaire themselves. Questionnaires with detailed information and instructions were provided by the undergraduate students during a home visit and were filled out in the absence of the student. The first page of the instructions emphasized that participation was voluntary and that data would be treated confidentially. After filling out the questionnaires, participants put their questionnaires in separate, sealed envelopes and returned these envelopes to the student who, in turn, returned them to the researchers. Families were again contacted by e-mail in June 2013 (Wave 2) and June 2014 (Wave 3) to participate in the study. At Time 2, 144 adolescents and their parents participated again in an online survey (72% retention rate), while at Time 3, 123 adolescents and their parents participated again (62% retention rate) in an online survey. Analysis of missing values with Little's (1988) test showed that data were missing completely at random (Little's MCAR-test, $\chi^2(712) = 684.740$; $p = .76$). Therefore, the expectation-maximization (EM) algorithm was used for data imputation. This algorithm is a robust method to obtain maximum likelihood estimates (Schafer, 1997). The sample used for all analyses was $N = 198$.

MEASURES

All instruments have been used successfully in past research with Dutch-speaking populations. All variables were assessed at each wave, except for personality, which was measured only at T1. Cronbach's alphas of the scales are reported in Table 1.

Psychologically Controlling Parenting. Adolescents, mothers and fathers were administered the well-validated and frequently used Psychological Control Scale (PCS; Barber, 1996). The scale includes eight items (e.g. "My mother/father is / I am always trying to change how I / my child feel(s) or think(s) about things") that were scored on a 5-point Likert scale, ranging from 1 (*completely not true*) to 5 (*completely true*).

Adolescents rated both maternal and paternal psychologically controlling parenting, whereas mothers and fathers rated their own controlling parenting.

Internalizing and Externalizing Problems. Both mothers and fathers were administered the Child Behavior Checklist (CBCL, Achenbach, 1991). Adolescents were administered the Youth Self Report (YSR; Achenbach, 1991). Items were scored on a 3-point Likert scale, ranging from 0 (*never*) to 2 (*often*). The broadband scale internalizing problems consists of three subscales: anxious/depressed (e.g. "...cries a lot"), withdrawn/depressed (e.g. "...enjoys little") and somatic complaints (e.g. "...has headaches"). The broadband scale externalizing problems consists of two subscales: rule breaking (e.g. "...drinks alcohol") and aggressive behavior (e.g. "...destroys other's things"). Reliabilities of the scale scores ranged between .78 and .90 (mean Cronbach's alpha = .84) across informants.

The correlations between parent and adolescent reports of internalizing and externalizing problems ranged between .38 and .65 (mean correlation = .52). Therefore, we decided to combine maternal, paternal and adolescent ratings to create a multi-informant score. Maternal, paternal and adolescent reports on internalizing and externalizing problems were first standardized. The standardized scores were then averaged across the three informants to obtain aggregated scores for internalizing and externalizing problems.

Personality. Adolescents completed the HiPIC (Mervielde & De Fruyt, 1999; Mervielde, De Fruyt, & De Clercq, 2009), scoring the Big Five personality traits of the adolescent, namely Conscientiousness (e.g., "I work with sustained attention."; 12 items), Extraversion (e.g., "I talk throughout the day."; 12 items), Agreeableness (e.g., "I take care of other children."; 15 items), Emotional Stability (e.g., "I am afraid to fail." reverse scored; 6 items) and Openness to Experience (e.g., "I have a rich imagination."; 9 items). The

items were scored on a 5-point Likert scale, ranging from 1 (*Not*) to 5 (*Very good*). The personality prototypes were determined using *k*-means clustering. The number of clusters was fixed at three, based on the replicated finding of three types in previous research (Asendorpf et al., 2001). A priori initial cluster centers representing the prototype personality types were used, as was done also by van Aken and Dubas (2004). Before creating the clusters, the scores on the Big Five personality traits were first standardized. The distribution within the sample was as follows: resilient ($n = 70$), overcontrolled ($n = 62$) and undercontrolled ($n = 66$). To test the moderating role of the clusters, two contrasts were created (Jaccard & Turrisi, 2003). To do so, we took the resilient profile as the point of reference and we created two dummy variables, one contrasting resilient (0) with overcontrollers (1) and one contrasting resilient (0) with undercontrollers (1).

RESULTS

PLAN OF ANALYSIS

The main hypotheses were investigated using multilevel modeling in MPlus 7.0 (Muthén & Muthén, 2010). The Comparative Fit Index (CFI), the Root Mean Squared Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR) were selected to evaluate model fit. According to Hu and Bentler (1999), combined cut-off values close to .95 for CFI and close to .06 for RMSEA and .09 for the SRMR indicate good fit. In the multilevel structural equation modeling analyses, the measurement occasions (Wave 1-3) represented the within-person level which were nested within participants, representing the between-person level (Madigan, Stoeber, & Passfield, 2016; Preacher et al., 2010). First, intraclass correlations for all study variables were calculated to examine whether multilevel modeling was appropriate. Intraclass correlations (ICC's) shed light

on the proportion of the total variance that is due to between- and within-person variation, with the ICC reflecting the percentage of variance located at the between-person level. The ICC's were .55 and .68 for psychologically controlling parenting of the mother, as reported by the adolescent and the mother respectively, .69 and .66 for psychologically controlling parenting of the father, as reported by the adolescent and the father respectively, .73 for internalizing problems and .75 for externalizing problems. Hence, substantial variation in psychologically controlling parenting and outcomes at the within-person level was observed. Also, the data are suitable for multilevel modeling because the ICC values were well above .05 (Preacher et al., 2010).

DESCRIPTIVE STATISTICS AND PRELIMINARY ANALYSES

Table 1 shows reliability estimates, means, and standard deviations of all variables. Table 2 shows the correlations between the variables at the between and within level.

Table 1

Descriptive Statistics and Internal Consistencies of Within-level and Between-level Variables

	<i>M</i>	<i>SD</i>	α
Within level measures			
1. Psychological control mother (A)	2.03	0.50	.78 - .85
2. Psychological control mother (M)	2.19	0.42	.70 - .77
3. Psychological control father (A)	2.12	0.51	.74 - .78
4. Psychological control father (F)	2.28	0.42	.71 - .83
5. Internalizing problems (AGG)	0.00	0.73	-
6. Externalizing problems (AGG)	0.00	0.75	-
Person level measures			
7. Extraversion (A)	3.52	0.43	.88
8. Agreeableness (A)	3.50	0.36	.88
9. Conscientiousness (A)	3.12	0.49	.90
10. Emotional Stability (A)	3.27	0.60	.87
11. Openness to Experience (A)	3.46	0.44	.85

Note. A = adolescent report, M = mother report, F = father report, AGG = aggregated score.

Table 2
Correlations at the Between and Within Level

	Within level					Between level									
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10
Within level measures															
1. PC mother (A)															
2. PC mother (M)	.03					.39***									
3. PC father (A)	.44***	.06				.61***	.17*								
4. PC father (F)	.05	.05	.12			.25**	.36***	.39***							
5. INT (AGG)	.19**	.14*	.31***	.02		.27**	.22*	.16*	.17*						
6. EXT (AGG)	.34***	.26**	.32***	.10	.51***	.52***	.52***	.31***	.37***	.48***					
Person level measures															
7. Extraversion (A)						-.07	.08	.05	.11	-.33***	-.02				
8. Agreeableness (A)						-.51***	-.24**	-.44***	-.22*	-.14*	-.42***	.00			
9. Conscientiousness (A)						-.34***	-.07	-.23**	-.13†	-.19**	-.48***	.08	.40***		
10. Emotional Stability (A)						-.26**	-.05	-.18*	.07	-.48***	-.13†	.27**	.18*	.10	
11. Openness to Experience (A)						-.17*	.04	-.01	.04	-.03	.04	.34***	.12	.28**	.09

Note: PC = psychological control, INT = internalizing problems, EXT = externalizing problems, A = adolescent report, M = mother report, F = father report, AGG = aggregated score.

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

To determine whether there were associations between the background variables (gender, age and education of the child, parental age, educational level of the parent, number of children in the family and marital status) and the study variables, a MANCOVA was conducted with child gender and education and educational level of the parents and marital status as fixed factors and the other continuous background variables as covariates, and with all study variables as dependent variables. There were no overall multivariate effects for the child's (Wilks's $\lambda = .91$, $F(11, 102) = 0.93$, $p = .52$), mother's (Wilks's $\lambda = .89$, $F(11, 102) = 1.12$, $p = .36$) and father's (Wilks's $\lambda = .89$, $F(11, 102) = 1.18$, $p = .31$) age. There were also no overall multivariate effects for number of children in the family (Wilks's $\lambda = .97$, $F(11, 102) = 0.32$, $p = .98$), education of the child (Wilks's $\lambda = .70$, $F(33, 301) = 1.16$, $p = .26$), education of the father (Wilks's $\lambda = .72$, $F(44, 392) = 0.78$, $p = .87$) and marital status (Wilks's $\lambda = .85$, $F(22, 204) = 0.80$, $p = .72$). There was an overall multivariate effect for education of the mother (Wilks's $\lambda = .54$, $F(44, 392) = 1.58$, $p = .01$) and gender of the child (Wilks's $\lambda = .80$, $F(11, 102) = 2.35$, $p = .01$). Follow up analyses showed that there was a significant difference between boys and girls in Emotional Stability ($F(1, 197) = 32.80$, $p = .00$), with girls reporting less Emotional Stability ($M = 3.04$, $SD = 0.56$) compared to boys ($M = 3.50$, $SD = 0.55$). Educational level of the mother related to adolescent-reported Openness to Experience ($F(4, 197) = 3.65$, $p = .007$). The higher the educational level of the mother, the higher the adolescent scored on Openness to Experience. We decided to control for the effect of child gender and education of the mother in subsequent models.

A repeated measures ANOVA with time as within-subject variable was conducted to investigate changes in psychologically controlling parenting and internalizing and externalizing problems over time. There was a significant effect of time for maternal psychological control [as reported by

adolescents ($F(2, 197) = 6.96, p = .001$) and mothers ($F(2, 197) = 8.67, p = .00$)] and for paternal psychological control [as reported by fathers ($F(2, 197) = 8.57, p = .00$)]. For adolescent-reported maternal control, there was a decline from Wave 1 to Wave 3. For mother-reported maternal control and father-reported paternal control, there was a decline from Wave 1 to Wave 2 and an increase from Wave 2 to Wave 3. Further there was also a significant effect of time for father-reported internalizing problems ($F(2, 197) = 3.31, p = .04$) and father-reported externalizing problems ($F(2, 197) = 4.00, p = .02$). For father-reported internalizing and externalizing problems, there was an increase from Wave 1 to Wave 2 and a decline from Wave 2 to Wave 3.

PRIMARY ANALYSIS

The models for our primary analysis were built step by step. In the first step, intercept-only models were estimated. In step two, the within-level predictors (i.e., psychological control) were added. These models also allowed us to look whether there was significant slope variance in the within-person association between psychological control and problem behaviors. The third step consisted of including the between-level predictors (i.e., personality traits). In the last step, models were estimated in which either a personality trait or a personality profile contrast was included, accompanied by the interaction between that personality trait or personality profile contrast and psychological control. Effects of personality traits and personality profile contrasts were tested one at the time.

Within-person associations. Models were tested separately for adolescent and parent reports of maternal and paternal psychologically controlling parenting in the prediction of internalizing problems (Table 3) and externalizing problems (Table 4). Entering the within-level predictors in Step 2 yielded significant positive associations between mother and

adolescent-reported maternal psychologically controlling parenting ($b = .21$, $SE = 0.09$, $p = .02$; $b = .13$, $SE = 0.06$, $p = .03$) and adolescent-reported paternal psychologically controlling parenting ($b = .35$, $SE = 0.07$, $p = .00$) on the one hand and internalizing problems on the other hand. With respect to externalizing problems, there was a significant positive association with adolescent and mother-reported psychologically controlling parenting ($b = .26$, $SE = 0.05$, $p = .00$; $b = .40$, $SE = 0.07$, $p = .00$) and adolescent-reported paternal psychologically controlling parenting ($b = .31$, $SE = 0.07$, $p = .00$). The association with father-reported paternal psychologically controlling parenting was marginally significant ($b = .13$, $SE = 0.08$, $p = .08$). These findings suggest that deviations of parents' use of psychologically controlling practices at a given time point from what they on average do went hand in hand with corresponding deviations from adolescents' average level of internalizing and externalizing problems. The associations held significant for maternal psychological control, regardless of the reporter (adolescent or mother), while the findings for paternal psychological control were found only for the adolescent reports.

Table 3
Internalizing Problems as a Function of Psychologically Controlling Parenting

Internalizing problems				
	Step 1	Step 2	Step 3	Step 4
<i>Fixed effects</i>				
Overall intercept	.00 (0.05)***	-.46 (0.15)**	-.46 (0.15)**	-.11 (0.15)
Within level predictors				
PC mother (M)		.21 (0.09)*	.21 (0.09)*	.19 (0.09)*
PC mother (A)		.13 (0.06)*		.34 (0.07)***
PC father (F)			.02 (0.08)	
PC father (A)			.35 (0.07)***	
Person level predictors				
Extraversion			-.46 (0.14)**	
Agreeableness			-.08 (0.15)	
Conscientiousness			-.22 (0.10)*	
Emotional Stability			-.41 (0.08)***	-.53 (0.08)***
Openness to Experience			.22 (0.13)†	-.07 (0.11)
<i>Interactions</i>				
PC mother (M) x Emstab				-.33 (0.15)*
PC father (A) x Open				.35 (0.16)*
<i>Random effects</i>				
u ₀	.47 (0.09)***	.46 (0.08)***	.46 (0.08)***	.33 (0.06)***
u ₁		.24 (0.13)†	.14 (0.19)	.24(0.13)†
e ₀	.17 (0.03)***	.15 (0.03)***	.16 (0.03)***	.15 (0.03)***

Note. M = mother report; F = father report; A = adolescent report.
†p < .10. *p < .05. **p < .01. ***p < .001.

Table 4
Externalizing Problems as a Function of Psychologically Controlling Parenting

	Externalizing problems			
	Step 1	Step 2	Step 3	Step 4
<i>Fixed effects</i>				
Overall intercept	.00 (0.05)**	.03 (0.18)	.03 (0.18)	.03 (0.18)
Within level predictors				
PC mother (M)		.40 (0.08)***	.40 (0.07)***	
PC mother (A)		.26 (0.05)***		
PC father (F)			.13 (0.08)†	
PC father (A)			.31 (0.07)***	.30 (0.07)***
Person level predictors				
Extraversion			-.08 (0.15)	
Agreeableness			-.53 (0.14)***	
Conscientiousness			-.63 (0.13)***	
Emotional Stability			-.05 (0.09)	
Openness to Experience			.35 (0.14)*	.07 (0.12)
Interactions				
PC father (A) x Open				.36 (0.16)*
<i>Random effects</i>				
u ₀	.51 (0.10)***	.51 (0.10)***	.52 (0.10)***	.52 (0.10)***
u ₁		.01 (0.09)	.15 (0.15)	.23 (0.06)***
e ₀	.17 (0.04)***	.16 (0.04)***	.12 (0.03)***	.12 (0.03)***

Note. M = mother report; F = father report; A = adolescent report.
 †p < .10. *p < .05. **p < .01. ***p < .001.

The moderating role of Big Five traits. Before testing the cross-level interactions, in a next step, the main effects of the between-level predictor personality traits were simultaneously entered in Step 3 in Tables 2 and 3. We found a significant negative contribution for Extraversion ($b = -.46$, $SE = 0.14$, $p = .002$), Conscientiousness ($b = -.22$, $SE = 0.10$, $p = .03$) and Emotional Stability ($b = -.41$, $SE = 0.08$, $p = .00$) in the prediction of internalizing problems. Neither the association with Openness to Experience ($b = .22$, $SE = 0.13$, $p = .09$), nor the association with Agreeableness was significant ($b = -.08$, $SE = 0.15$, $p = .59$). With respect to externalizing problems, there was a significant negative association with Agreeableness ($b = -.53$, $SE = 0.14$, $p = .00$) and Conscientiousness ($b = -.63$, $SE = 0.13$, $p = .00$) and a positive association with Openness to Experience ($b = .35$, $SE = 0.14$, $p = .01$). Neither the associations with Extraversion ($b = -.08$, $SE = 0.15$, $p = .61$), nor with Emotional Stability ($b = -.05$, $SE = 0.09$, $p = .54$) were significant.

Next, cross-level interactions were entered to investigate whether the Big Five traits would moderate within-person associations between psychologically controlling parenting and internalizing and externalizing problems. To investigate the cross-level interactions, we first tested whether there were interindividual differences in the strength of the within-person association between psychologically controlling parenting and internalizing and externalizing problems, which means that the random slopes of these associations were tested on their significance. The random slope turned out to be significant for the association between adolescent-reported paternal psychologically controlling parenting and externalizing problems ($b = .26$, $SE = 0.07$, $p = .00$, $CI = [.11, .40]$) and for the association between adolescent-reported paternal psychologically controlling parenting and internalizing problems ($b = .19$, $SE = 0.08$, $p = .02$, $CI = [.03, .34]$). The random slope turned out to be marginally significant for the association between adolescent-reported maternal psychologically controlling parenting and

externalizing problems ($b = .07$, $SE = 0.04$, $p = .07$, $CI = [-.01, .14]$), for the association between adolescent-reported maternal psychologically controlling parenting and internalizing problems ($b = .12$, $SE = 0.07$, $p = .09$, $CI = [-.02, .27]$) and for the association between mother-reported psychologically controlling parenting and internalizing problems ($b = .24$, $SE = 0.13$, $p = .07$, $CI = [-.02, .49]$). The random slopes for the three other associations were not significant. Whereas some scholars recommend testing moderation only in associations with significant random slope variance (Hox, 2010), other scholars argue that it is possible to find significant cross-level interactions in the absence of significant variance in the slopes (LaHuis & Ferguson, 2013). In order to provide a comprehensive picture of the moderating role of personality, we decided to examine the potential moderating role of adolescents' personality in models where there was significant and marginally significant random slope variance, which was the case for five of the eight models.

With respect to the cross-level interactions in the prediction of internalizing problems, the interactions between mother-reported psychologically controlling parenting and Emotional Stability ($b = -.33$, $SE = .15$, $p = .02$, $CI = [-.62, -.05]$) and between adolescent-reported paternal psychologically controlling parenting and Openness to Experience ($b = .35$, $SE = .16$, $p = .03$, $CI = [.03, .67]$) were significant. With respect to the cross-level interactions in the prediction of externalizing problems, the interaction between adolescent-reported paternal psychologically controlling parenting and Openness to Experience was significant ($b = .36$, $SE = .16$, $p = .02$, $CI = [.05, .68]$).

Simple slope analyses (at 1 *SD* below and above the mean of the moderator) were performed to get a clear picture of the interactions. As can be seen in Figure 1, there was a positive association between mother-reported psychologically controlling parenting and internalizing problems for

children scoring low on Emotional Stability ($b = .52, t = 3.11, p = .002$), but not among those high on Emotional Stability ($b = -.14, t = -1.28, p = .20$). As can be seen in Figure 2 and 3, there was a significant positive association between adolescent-reported paternal psychologically controlling parenting and internalizing ($b = .69, t = 4.35, p = .00$) and externalizing ($b = .66, t = 3.80, p = .00$) problems for children scoring high on Openness to Experience. These associations were not significant for children scoring low on Openness to Experience ($b = -.01, t = -0.05, p = .96; b = -.07, t = -0.38, p = .70$).

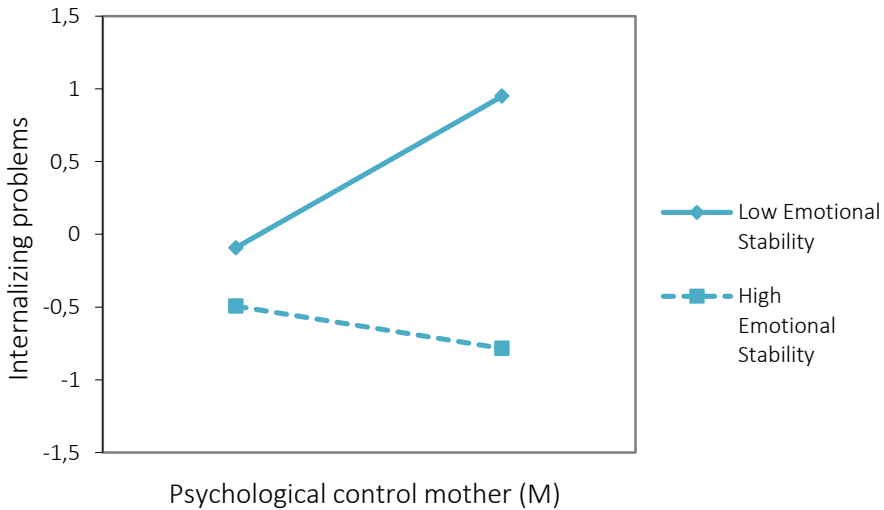


Figure 1. Interaction between psychological control of the mother and Emotional Stability in the association with internalizing problems.

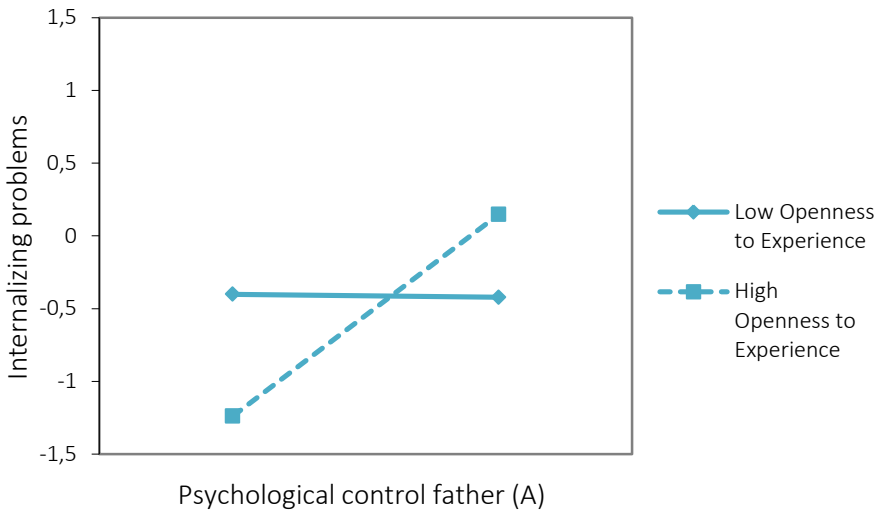


Figure 2. Interaction between psychological control of the father and Openness to Experience in the association with internalizing problems.

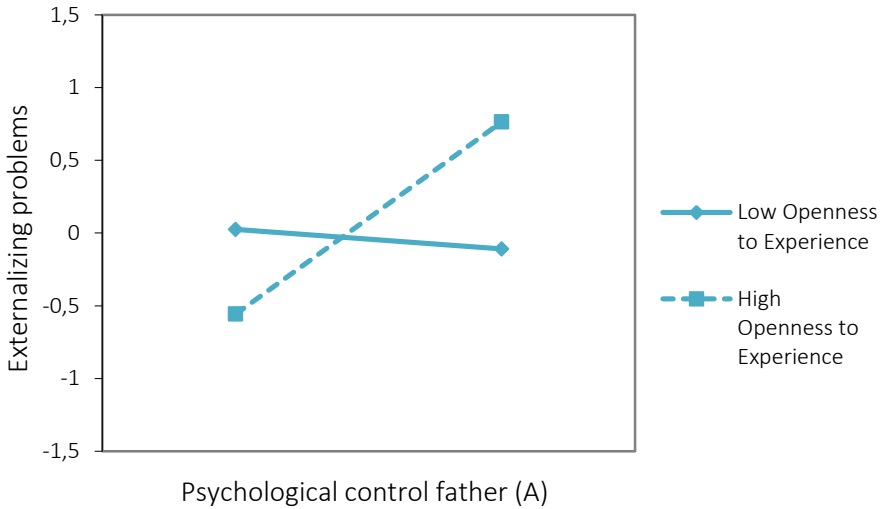


Figure 3. Interaction between psychological control of the father and Openness to Experience in the association with externalizing problems.

The moderating role of personality clusters. With respect to the personality clusters, there was a significant interaction between mother-reported psychologically controlling parenting and the dummy variable contrasting the resilient versus the overcontrolled personality profile in the prediction of both externalizing and internalizing problems ($b = .38$, $SE = 0.17$, $p = .02$, $CI = [.06, .71]$; $b = .40$, $SE = 0.21$, $p = .05$, $CI = [.01, .81]$). With respect to internalizing problems, the association with mother-reported psychologically controlling parenting was not significant for the resilient ($b = .06$, $SE = 0.14$, $p = .69$) and significant for the overcontrollers ($b = .47$, $SE = 0.21$, $p = .03$). With respect to externalizing problems, the association with mother-reported psychologically controlling parenting was not significant for resilient ($b = .18$, $SE = 0.11$, $p = .11$) and significant for overcontrollers ($b = .60$, $SE = .17$, $p = .00$). There was also a significant interaction between mother-reported psychologically controlling parenting and the contrast between the resilient and the undercontrolled profile in the prediction of externalizing problems ($b = .30$, $SE = 0.14$, $p = .03$, $CI = [.03, .58]$). The association was not significant for resilient ($b = .18$, $SE = 0.11$, $p = .11$) but significant for overcontrollers ($b = .45$, $SE = 0.12$, $p = .00$).

DISCUSSION

Two recent meta-analyses comparing the role of several parenting practices in the prediction of both internalizing and externalizing problems (Pinquart, 2016, 2017) have indicated that the strongest bivariate associations were observed for psychologically controlling and harsh parenting. As such, parental psychological control seems to play an important role in both internalizing and externalizing problems in children and adolescents. Given that these effects are quite robust, it is important to investigate whether individual characteristics may alter the strength of these associations. The present study addressed the question whether adolescent

personality, both considered from a dimensional and person-centered perspective, affects the strength of associations between parental psychological control and both internalizing and externalizing problems at the level of within-person change.

MAIN EFFECTS OF PSYCHOLOGICALLY CONTROLLING PARENTING

Before discussing the moderating role of personality, the robust main effects of psychologically controlling parenting on adolescent problem behavior deserve attention. Generally, prior research on the detrimental effects of psychologically controlling parenting focused on between-person differences (see e.g., Barber & Harmon, 2002), at the neglect of within-person changes across time. The present study did focus on within-person change and demonstrated that, even after controlling for the between-person variance in both parental psychological control and Big Five personality characteristics, within-person changes in psychologically controlling parenting were related positively to within-person changes in internalizing and externalizing problems. With respect to maternal psychologically controlling parenting, this was the case for both mother and adolescent reports of parenting, while these associations were only significant for adolescent reports (but not father reports) of paternal psychological control. Content-wise, such findings imply that to the extent adolescents perceive an increase in their parents' use of psychological control compared to the usual levels of psychological control (i.e., a deviation from their own average), adolescents displayed elevated levels of both internalizing and externalizing problems (compared to their own average levels). Such systematic covariation equally suggests that to the extent parents were perceived to be less psychologically controlling than usual, adolescents were less prone for problem behavior. The present 3-wave longitudinal study, goes beyond previous diary studies (Van der Kaap-

Deeder, Vansteenkiste, Soenens, & Mabbe, 2017), which equally yielded evidence for such within-person covariation at the day-to-day level. The present study indicates that similar within-person dynamics apply over longer periods of time.

It is important to note that these within-person associations are very similar to the between-person associations between psychologically controlling parenting and internalizing and externalizing problems documented in previous research. Although Hamaker et al. (2015) and Keijsers (2016) argued that between and within-person analyses may lead to very different conclusions and even to opposite effects, in the case of psychologically controlling parenting, associations are similar at the between- and within-person levels. Psychologically controlling parenting is related to more maladaptive outcomes both when adolescents report more such parenting compared to other adolescents and when they report more such parenting compared to what they are used to. Considered from the perspective of self-determination theory, these findings testify to the notion that psychologically controlling parenting appeals to fundamental psychological needs. Because such parenting thwarts the needs for autonomy, competence, and relatedness (Soenens & Vansteenkiste, 2010), it is generally detrimental at various levels of adolescents' functioning.

The robustness of the effects of psychologically controlling parenting is also evident from the random slope analyses, which examine the extent to which there is systematic variation around the slope of the psychological control – problem behavior association. This variation turned out to be significant in two models, marginally significant in three models, and non-significant in three other models. Such findings imply that in almost half of the tested models, the psychological control – problem behavior association is analogous. That is, there is little room for variation around these within-person associations across adolescents. More specifically, this means that in

almost half of the tested models, the association between psychological controlling parenting and internalizing and externalizing problems has the same strength within each adolescent. In five models, there was statistical evidence for at least some heterogeneity in these associations. This heterogeneity means that the associations between psychologically controlling parenting and internalizing and externalizing problems is stronger in some adolescents compared to other adolescents. As such, this heterogeneity calls for an investigation of adolescent characteristics (i.e., personality) in the strength of these associations, an issue we turn to next.

THE MODERATING ROLE OF ADOLESCENT PERSONALITY IN WITHIN-PERSON ASSOCIATIONS BETWEEN PSYCHOLOGICAL CONTROL AND PROBLEM BEHAVIORS

In this study, the moderating role of personality was investigated using both a variable-centered (i.e., Big Five traits) and a person-centered (i.e., personality types) approach. Using a variable-centered approach, significant interactions were found with Emotional Stability and Openness to Experience.

First, Emotional Stability seemed to play a buffering role in the associations between mother-reported psychologically controlling parenting and internalizing problems. In previous research, Emotional Stability was found to be a strong negative predictor of internalizing problems (Muris et al., 2007; Van Leeuwen et al., 2004). Emotionally stable adolescents who are characterized by self-confidence, generally do not suffer much from negative emotions such as depressive feelings and anxiety. In addition to these main effects, the current findings suggest that Emotional Stability also moderates the role of dysfunctional parenting (i.e., psychological control) in internalizing problems, with adolescents high on Emotional Stability being more resilient against these harmful effects. Interpreted the other way around, mainly adolescents low on Emotional Stability are prone to the

internalizing problems typically associated with parental psychological control. An interpretation of this finding is that, when facing a psychologically controlling parenting context, emotionally stable adolescents may not exhibit internalizing problems because of their high levels of self-confidence. These adolescents appear to be less sensitive to the potentially hurtful message conveyed by psychologically controlling parenting. One possible mechanism in this resilience is that highly emotionally stable adolescents interpret psychologically controlling practices differently, resulting in less internalizing problems. For instance, these adolescents may perceive even psychologically controlling parental messages as relatively well-meant parental attempts to communicate certain rules or standards. In contrast, adolescents low on Emotional Stability may be more sensitive to effects of psychologically controlling practices because they perceive such practices as more hostile and intrusive. Consistent with this reasoning, the trait-congruency hypothesis (Rusting & Larsen, 1998) asserts that personality dimensions associated with negative moods (e.g., low Emotional Stability) predispose individuals to process information that is congruent with those traits. It should be noted, however, that Emotional Stability moderated only 1 out of 8 possible effects of parental psychological control. As such, the buffering role of this personality dimension was quite limited.

Second, the moderation analyses also showed that high scores on Openness to Experience increased adolescents' sensitivity to the effects of adolescent-reported paternal psychologically controlling parenting on both internalizing and externalizing problems. The moderating role of Openness to Experience was rather surprising, since this trait has not been shown to be a moderator in the association between psychologically controlling parenting and internalizing and externalizing problems in previous cross-sectional research (Mabbe et al., 2016). These results thus suggest that adolescents scoring high on Openness to Experience suffer more from a

long-term increase in such parenting across a 1-year interval. Adolescents scoring high on Openness to Experience have a lively fantasy, are creative, and are inclined to explore different lifestyles. Psychologically controlling parenting is likely to suppress these personality-based inclinations because such parenting typically imposes parents' agenda in a rigid fashion. As a consequence, there is little room for adolescents to express themselves, to be creative, and to be open for exploration. Particularly adolescents high on Openness to Experience may feel alienated from who they are when exposed to psychologically controlling parenting and become more sensitive to the detrimental outcomes associated with such parenting. Again, it is important to note that the moderating role of this personality dimension was somewhat limited as it emerged in only 2 out of 8 associations.

In addition to being limited in number, the interactions obtained in the current study are with somewhat different personality variables than in previous studies. To date, Agreeableness has been identified as the most consistent moderator of effects of controlling parenting (Mabbe et al., 2016; Van Leeuwen et al., 2004). Yet, in the current study Agreeableness did not play a moderating role in the associations at the level of long-term, within-person change. Because the present study is the first to examine the moderating role of Agreeableness at this level, it is premature to draw strong conclusions. Clearly, additional studies are needed to replicate the current findings and to revisit the possible moderating role of the other FFM dimensions, including Agreeableness.

One possible reason for the relative lack of consistency and strength of moderating effects by personality in research to date is that, too often, personality dimensions have been examined in isolation from each other. Therefore, in addition to considering the moderating effects of each of the individual personality dimensions, we also considered the moderating role of personality profiles, which represent constellations of combined personality

dimensions. Analyses using these personality profiles revealed three moderating effects, all of which pertained to effects of mother-reported psychologically controlling parenting. Compared to adolescents with a resilient profile, adolescents with an overcontrolled profile were more susceptible to effects of mother-reported psychologically controlling parenting, both in terms of internalizing and externalizing problems. Also, compared to resilient adolescents, those with an undercontrolled profile were more likely to report externalizing problems in response to mother-reported psychologically controlling parenting. The latter finding is in line with previous research showing that undercontrollers especially exhibit externalizing problems in response to adverse contexts (Asendorpf et al., 2001; Dubas et al., 2002; Robins et al., 1996). Apparently, psychological control awakens the behavioral repertoire typically associated with an undercontrolled personality profile, which indeed has been found to relate mainly to externalizing problems (Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996). While it also makes sense that psychological control triggers the specific vulnerability of adolescents with an overcontrolled personality profile (i.e., internalizing distress), it was more surprising to observe in this study that adolescents with an overcontrolled profile display more externalizing problems (compared to resilient adolescents) when confronted with psychologically controlling parenting. At first sight, such a display of externalizing problems is inconsistent with the restricted and overly rigid patterns of behavior typically associated with an overcontrolled profile. It is important to bear in mind, however, that the current study dealt with relatively longer-term changes in exposure to psychologically controlling parenting. While adolescents with an overcontrolled profile may be able to suppress negative feelings (such as anger towards parents) when exposed to brief episodes of parental psychological control, when exposed to more enduring increases in

psychological control even they may lose their self-control and begin to display reactance against parental authority, resulting in externalizing problems (Van Petegem et al., 2015). Future research is needed to gain more insight in the interplay between controlling parenting and an overcontrolled personality profile, thereby attending to the role of the duration of exposure to such parenting. Future research could also aim to identify the precise personality dimensions (or even facets) and mechanisms (e.g., oppositional defiance) linking an overcontrolled personality to externalizing problems under conditions of controlling parenting.

Much like the variable-centered analyses, the person-centered analyses revealed only a limited moderating role of adolescent personality. The buffering effects of the resilient personality type only occurred in the case of maternal parenting and not in case of paternal parenting. Moreover, these effects were observed only with mother reports of parenting and not with adolescent reports. There was thus relatively more room for moderation by personality profiles when mothers reported on parenting compared to when adolescents themselves rate their perception of psychologically controlling parenting. The latter finding is consistent with the notion that, as soon as adolescents perceive parenting as intrusive and pressuring, they are likely to display a cost, either in terms of internalizing distress or in terms of externalizing problems (Soenens et al., 2015). This would be the case because such perceptions of parents as pressuring directly involve a threat to adolescents' universal psychological needs for autonomy, competence, and relatedness (Soenens & Vansteenkiste, 2010; Vansteenkiste & Ryan, 2013).

LIMITATIONS

The present study had a number of limitations. The fact that only half of the models showed heterogeneity between families may be partially

due to the rather homogeneous nature of the sample. Compared to the national population, parents in this study were relatively highly educated and only intact families were recruited. In order to increase the generalizability of the findings, future studies have to rely on more heterogeneous samples.

In this study, lagged within-family associations were not examined, which leaves questions regarding direction of effects unanswered. However, it may be argued that bidirectional effects probably take place on a much shorter time scale and are captured better on a short-term or even daily basis (Keijsers, 2016). Nevertheless, future research may also look at lagged within-family associations in long-term longitudinal designs.

In this study, personality was only measured once. Possibly, the limited moderating effects of personality may be due to the somewhat static approach of this concept. Because research shows that personality is also subject to change during adolescence (Klimstra, 2013), it may be useful for future research to see whether within-person changes in personality play a more pronounced moderating role compared to stable between-person differences in personality.

In this longitudinal study, there was a large amount of attrition. Although data were missing completely at random and maximum likelihood imputation was used, ideally future studies have a higher retention rate.

CONCLUSION

The current study showed that psychologically controlling parenting has robust within-family associations with problem behaviors in adolescents, even when controlling for individual differences in personality. Some evidence was obtained for a moderating role of personality, with Emotional Stability in particular buffering effects of maternal psychological control in the prediction of internalizing problems and with Openness to Experience

being a vulnerability factor. Analyses using a person-centered approach showed that adolescents with a resilient profile were less sensitive to some of the effects of psychologically controlling parenting. Overall, the number of interactions was limited, suggesting only a modest moderating effect of adolescent personality.

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IS AUTONOMY-SUPPORTIVE PARENTING BENEFICIAL ONLY TO ADOLESCENTS WITH AN AUTONOMOUS PERSONALITY? TWO MEANINGS OF GOODNESS-OF-FIT¹

Although autonomy-supportive parenting yields manifold benefits for adolescents' development, there is a dearth of research addressing the question whether children reap the rewards of this parenting style, irrespective of their personality. Based on Thomas and Chess's (1977) notion of goodness-of-fit, this study addressed two aims. First, it aimed to examine whether associations between perceived maternal autonomy support and adolescent well-being depend on adolescents' dispositional motivational orientations (i.e., autonomous or controlled). Second, we examined whether associations between perceived maternal autonomy support and well-being are accounted for by adolescents' subjective experiences of goodness-of-fit. These questions were investigated using a multi-informant three-wave longitudinal study ($N = 198$ at T1, 51% female, M age = 14.89 years), allowing for an analysis of the associations both at the level of between-person differences and at the level of within-person changes. Results showed that adolescents' motivational orientations did not moderate associations between either parent-reported or adolescent-reported maternal autonomy support and well-being. Multilevel structural equation modeling showed

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that, as expected, experiences of goodness-of-fit played an intervening role in associations between maternal autonomy support and adjustment. At the level of within-person change, this intervening role was demonstrated using parent reports as well as adolescent reports of parenting, while evidence for the intervening role emerged using adolescent reports only at the level of between-person differences. The discussion focuses on different meanings of the concept of goodness-of-fit, which can be understood either as an objective match between parental practices and adolescents' personalities or as a subjective experience involving the feeling that parents understand and take into account adolescents' personalities.

INTRODUCTION

Research increasingly demonstrates that autonomy-supportive parenting, which refers to parents' support of children's volitional functioning, is related to positive developmental outcomes in children and adolescents (Joussemet, Landry, & Koestner, 2008). Much of this research is inspired by Self-Determination Theory (SDT), a broad theory on human motivation and social development in which it is assumed that autonomy-supportive parenting appeals to children's basic psychological needs for autonomy, competence, and relatedness (Grolnick, Deci, & Ryan, 1997; Ryan, Deci, & Vansteenkiste, 2016). Because of its association with these universally critical needs (Deci & Ryan, 2000; Ryan & Deci, 2017), autonomy-supportive parenting would be beneficial for children's development, irrespective of their age, gender, and cultural background.

Given these strong claims about the adaptive role of perceived autonomy-supportive parenting in adolescents' development, one may wonder whether the universal benefits associated with autonomy-supportive parenting can be extended towards individual differences in adolescents. Would autonomy-supportive parenting relate to better outcomes in adolescents, irrespective of their personality-based orientation towards autonomy? Or would only adolescents with a more pronounced personal inclination towards autonomy benefit from autonomy-supportive parenting? These contrasting hypotheses relate to the principle of goodness-of-fit (Thomas & Chess, 1977), dealing with the interplay between social contexts (including parenting) and children's individual differences.

Autonomy support refers to the degree to which parents create conditions for adolescents to experience a sense of choice and volition (i.e., the experience of wanting to engage in behavior rather than being pressured to do so; Grolnick, Ryan, & Deci, 1991; Soenens et al., 2007). Autonomy-supportive socialization figures make use of a variety of parental practices to

promote such volitional functioning, including the adoption of adolescents' frame of reference, the provision of choice whenever possible, the encouragement of initiative and personal exploration, and the delivery of a meaningful rationale when choice is constrained.

An extensive body of research has shown that autonomy-supportive parenting, particularly when perceived by the child, is related to a plethora of adaptive outcomes across domains, with different designs, and in different populations. Autonomy support has been related to adaptive motivational (e.g., better quality of study motivation; Grolnick et al., 1991), emotional (e.g., higher well-being and better emotion regulation; Roth, Assor, Niemiec, Ryan, & Deci, 2009), and cognitive (e.g., better cognitive self-regulation; Bernier, Carlson, & Whipple, 2010) outcomes. Evidence for the adaptive outcomes of autonomy support was obtained in cross-sectional, but also in longitudinal (e.g., Aunola, Viljaranta, Lehtinen, & Nurmi, 2013; Van der Giessen, Branje, & Meeus, 2014) and experimental (e.g., Grolnick, Gurland, DeCoursey, & Jacob, 2002) studies. Autonomy support has also been studied among children from different ages (e.g., preschool children; Bernier et al., 2010), different cultural backgrounds (e.g., Chirkov & Ryan, 2001), and among children with behavioral problems (e.g., Savard, Joussemet, Pelletier, & Mageau, 2013).

In Self-Determination Theory (SDT; Deci & Ryan, 2000; Vansteenkiste, Niemiec, & Soenens, 2010), autonomy-supportive parenting is believed to have these systematic positive effects on children's development because it contributes to the satisfaction of children's basic psychological needs, that is, the needs for autonomy, competence, and relatedness. The need for autonomy refers to the experience of volition and psychological freedom in one's acting, thinking and feeling. The need for competence refers to the experience of being able to develop skills and to effectively deal with challenges. The need for relatedness refers to the

experience of reciprocal care and love in relationships with significant others. Clearly, autonomy-supportive parents create conditions in which children can feel a sense of authenticity and ownership of their actions, thoughts, and feelings (autonomy). Through the encouragement of initiative and the provision of choice, these parents also convey a sense of trust in the child's emerging skills (competence). Because autonomy-supportive parents take the child's frame of reference, children are also likely to feel understood (resulting in a sense of relatedness). Consistent with the claim that these needs represent universal nutriments for psychological growth (Deci & Ryan, 2000; Ryan & Deci, 2000), studies in different age groups and cultures have shown that satisfaction of these three needs is related to well-being and to better psychosocial adjustment (Sheldon, Cheng, & Hilpert, 2011). Further, as maintained in the theory, psychological need satisfaction plays an intervening role in the associations between autonomy-supportive parenting and adaptive developmental outcomes (Costa, Cuzzocrea, Gugliandolo, & Larcan, 2016; Grolnick et al., 1991).

The convincing and systematic findings regarding the salutary effects of autonomy-supportive parenting, as well as its presumed role in nurturing universally critical psychological needs, raise questions about the role of individual differences in these effects (Soenens, Vansteenkiste, & Van Petegem, 2015). Do all adolescents benefit from perceived autonomy support to the same extent? Or does adolescents' personality play a role? To address these questions, we turn to a discussion of the notion of goodness-of-fit, which has known a long tradition in developmental psychology and is key to understand the interplay between parenting and child characteristics in the prediction of child outcomes (Thomas, Chess, & Birch, 1968).

The goodness-of-fit concept involves the idea that adaptive child development is a function of an adequate fit between child and environmental characteristics (Thomas et al., 1968). Thomas and Chess

(1977) emphasized that the reciprocal interaction between the child and the environment exerts a major influence on children's adjustment. With regard to parenting, the 'goodness-of-fit' concept entails the view that parenting should be tailored to a child's unique characteristics to assure healthy psychological development (De Pauw & Mervielde, 2010). Adjustment problems are more likely to occur when there is a mismatch between a child's characteristics and parental expectations or practices. For example, a very active and outgoing child is more likely to develop problems when raised by timid parents, who have stronger expectations for the child to be quiet.

The notion of goodness-of-fit is often invoked as an explanation to account for interactions between parenting and child characteristics, with child characteristics typically operationalized as individual differences in personality or temperament (e.g., Manders, Scholte, Janssens, & De Bruyn, 2006; Van Leeuwen, Mervielde, Braet, & Bosmans, 2004). For example, van Aken, Junger, Verhoeven, van Aken, and Dekovic (2007) found that children with a difficult temperament exhibited more externalizing problems when exposed to controlling (i.e., autonomy-suppressing) parenting. They concluded that the combination of a difficult temperament and controlling parenting violates the goodness-of-fit principle, and that this mismatch leads to maladjustment.

Although the notion of goodness-of-fit originally dealt with interactions between parenting and children's temperamental characteristics, the reasoning behind this notion can be extended also to other types of individual differences, including motivational orientations (e.g., the causality orientations). For instance, in the educational literature, there is ongoing debate about the question whether an autonomy-supportive teaching approach is beneficial to all students or whether, instead, this approach is motivating only for students who already have high-

quality (i.e., autonomous) motivation (De Meyer et al., 2016; Mouratidis, Vansteenkiste, Lens, & Sideridis, 2011).

In principle, the notion of goodness-of-fit could be interpreted in a strict and literal fashion. Like a key that fits only one lock, a particular parenting style would be adaptive *only* for children with exactly matching adolescent characteristics. Although few scholars, if any, support this view, such a literal interpretation of the goodness-of-fit idea may open the door for a relativistic position on parenting processes (Soenens et al., 2015). No parenting style (including autonomy support) would have systematic adaptive value and the effects of parenting styles would always depend fully on the presence of particular child characteristics.

Applied to the concept of autonomy-supportive parenting, such a strict interpretation of goodness-of-fit would imply that autonomy-supportive parenting would be adaptive only for adolescents dispositionally oriented towards autonomy. In SDT, personality-based individual differences in autonomy are conceptualized as causality orientations, which reflect relatively stable individual differences in the way people interpret events and in the way they regulate their behavior (Deci & Ryan, 1985). Ryan and Deci (2017, p. 217) define causality orientations as “characteristic adaptations, reflecting people’s propensities to orient to different motivationally relevant aspects of situations.” Thus, in terms of McAdams and Pals’ (2006) multilevel model of personality, causality orientations can be situated at the level of characteristic adaptations, defined as a wide range of motivational, social-cognitive, and developmental adaptations that are specific to a particular time, place, or role (De Pauw, 2017). Individuals with an autonomous causality orientation tend to interpret situations as informational and tend to regulate their behavior on the basis of personal interests and authentic values. This orientation can be contrasted with a controlled causality orientation, which is characteristic of people who tend

to interpret events as threatening and evaluative and who regulate their behavior on the basis of internal or external pressures. If a literal match would be required for autonomy support to yield benefits, parental autonomy support would be related positively to well-being and adjustment *only* among adolescents scoring high on an autonomous orientation and not (or even negatively) among adolescents scoring high on a controlled orientation. This strict interpretation of the goodness-of-fit principle would be at odds with the universality claim of SDT, involving that all adolescents benefit to some degree from perceived autonomy-supportive parenting. Adolescence is a particularly relevant developmental period to examine the interplay between parenting and personality because individual differences, including causality orientations, become increasingly crystallized during adolescence (Deci & Ryan, 1985; Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2009). Also, research shows that adolescents are particularly sensitive to parental practices that fail to take into account their own preferences and goals (e.g., Padilla-Walker & Carlo, 2004).

Much like the relativistic perspective on autonomy-supportive parenting, also the universalistic perspective could be interpreted in a very strict way (Soenens et al., 2015). In the case of an extreme universalistic perspective, there would be no room for moderation whatsoever and all adolescents would be assumed to benefit from autonomy-supportive parenting to the same degree. Importantly, SDT does not represent such a strict universalistic perspective. Instead, it represents a more moderate view according to which individual differences may alter the strength (but not the presence or absence) of the association between parenting and developmental outcomes (Deci & Ryan, 1987). Specifically, in SDT, the notion of sensitization (Moller, Deci, & Elliot, 2010) postulates that people with a history of need-satisfying experiences become more sensitive to the benefits of new potentially need-satisfying events. It can be assumed that

adolescents dispositionally oriented towards autonomy have encountered more need-satisfying experiences in their past and may even proactively elicit such experiences in the present (Reeve, 2013), experiences that make them more sensitive for future need-satisfying experiences. Conversely, adolescents with a more controlled orientation are likely to generally experience less need satisfaction and may become less sensitive to contextual support for their needs (including autonomy-supportive parenting). Technically, a pattern of sensitization will be expressed in a difference in strength of the association between an autonomy-supportive parenting style and positive outcomes, with adolescents scoring higher on an autonomous orientation deriving greater benefits from autonomy support and with adolescents scoring higher on a controlled orientation deriving fewer of these benefits.

In addition to considering the goodness-of-fit principle as a rather static principle, reflecting the degree of objective match between a parent's style and an adolescent's personality, we also suggest another, more dynamic interpretation. In their original writings already, Thomas and Chess (1977) argued that goodness-of-fit should not be regarded as a homeostatic principle, but as a homeodynamic one. That is, the notion conveys the idea that parents continuously try to attune their parenting behavior to their children's needs, thereby seeking optimal synchronization. Ideally, these tailoring attempts lead children to experience that their parents understand their personality characteristics and take into account these characteristics when interacting with the child. The notion that people can differ in their subjective experience of goodness-of-fit was recently underscored by Seifer et al. (2014, p.87), when they noted that *"caregivers and children interpret and experience the objective degree of fit very differently."* While Seifer et al. (2014) focused on parents' subjective experiences of fit, in this study, we focus on adolescents' perception of fit because adolescents' perceptions of

parent-child interactions ultimately affect developmental outcomes (Soenens et al., 2015).

On the basis of SDT, we argue that autonomy-supportive parenting is particularly likely to give rise to adolescents' subjective feelings of goodness-of-fit. This is because a key feature of autonomy support is parents' curiosity and receptivity for the children's frame of reference (Grolnick et al., 1997; Mageau, Sherman, Grusec, Koestner, & Bureau, 2017). Because autonomy-supportive parents are genuinely interested in the child's view, they are better capable of attuning their parenting practices to the child's perspective. For instance, because they provide choices and explain rules with the child's perspective and personality in mind, these choices and explanations are personally meaningful to the child. As a consequence of such perspective-taking and subsequent attunement, children are likely to experience that their parents have a pretty accurate picture of who they are and that, as much as possible, they take into account the child's perspective. Thus, it can be expected that autonomy-supportive parenting is related to a stronger subjective sense of goodness-of-fit in adolescents which, in turn, is related to adaptive developmental outcomes.

THE PRESENT STUDY

The overall aim of this study is to examine the relevance of the concept of goodness-of-fit to autonomy-supportive parenting, thereby distinguishing between two meanings of this concept. First, based on the notion that goodness-of-fit refers to the degree of match between the environment and the child's characteristics, we examine whether associations between autonomy-supportive parenting and well-being depend on adolescents' causality orientations. On the basis of SDT, it is deemed unlikely that these causality orientations will cancel out, let alone turn around effects of autonomy-supportive parenting (i.e., the strict

relativistic position). Instead, SDT entails a moderate universalistic view, according to which the causality orientations can affect the degree to which autonomy-supportive parenting is related to adolescent well-being such that the associations between autonomy-supportive parenting and well-being are more pronounced among adolescents scoring high on the autonomous orientation and attenuated among adolescents scoring high on the controlled orientation) (see Table 1 for a summary of these hypotheses and Figure 1 for a graphical display of this hypothesis).

Table 1
Hypotheses related to the three perspectives

Perspectives	Hypotheses
1. Strict relativistic perspective	No parenting style would have systematic adaptive value. The effects of parenting styles depend <i>exclusively</i> on the presence of particular child characteristics.
2. Strict universal perspective	Some parenting styles are adaptive, while others are maladaptive for <i>all children</i> , irrespective of individual differences.
3. Moderate universal perspective	Adolescents' personality may play a role in moderating the strength of the association between parenting and well-being but not the direction of this association.
	Causality orientations may cancel out or turn around the effects of autonomy-supportive parenting.
	Autonomy-supportive parenting is adaptive for all children, irrespective of their causality orientations.
	Associations between autonomy-supportive parenting and well-being are more pronounced among adolescents scoring high on the autonomous orientation and attenuated among adolescents scoring high on the controlled orientation.

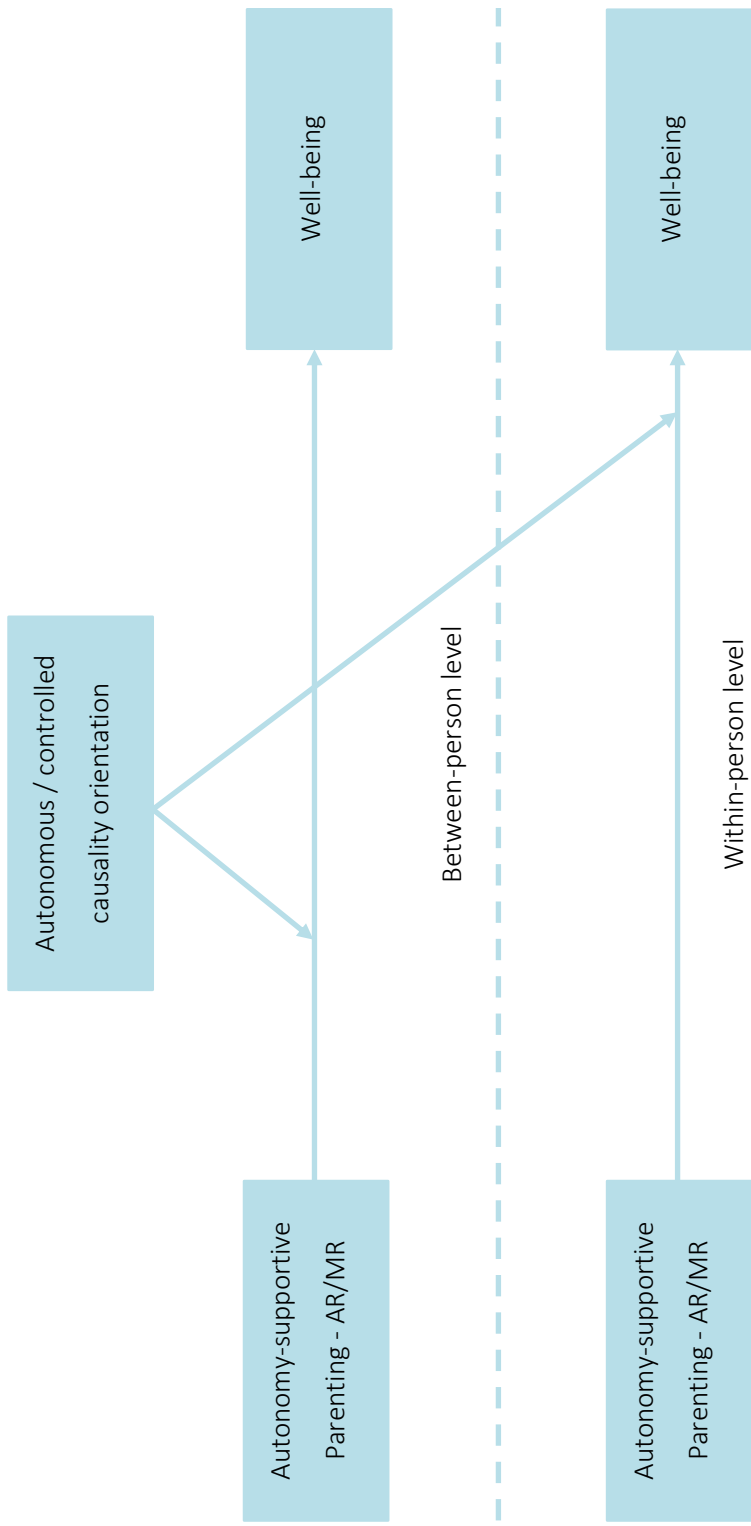


Figure 1. Graphical display Model 1 (AR = adolescent reported, MR = mother reported).

Second, we also consider goodness-of-fit from a more subjective perspective. We will examine whether perceived fit mediates the association between autonomy-supportive parenting and well-being. We hypothesize that autonomy-supportive parenting will relate positively to a subjective sense of goodness-of-fit in adolescents and that this subjective experience of fit will play an intervening role in associations between autonomy-supportive parenting and well-being (see Figure 2 for a graphical display of this hypothesis).

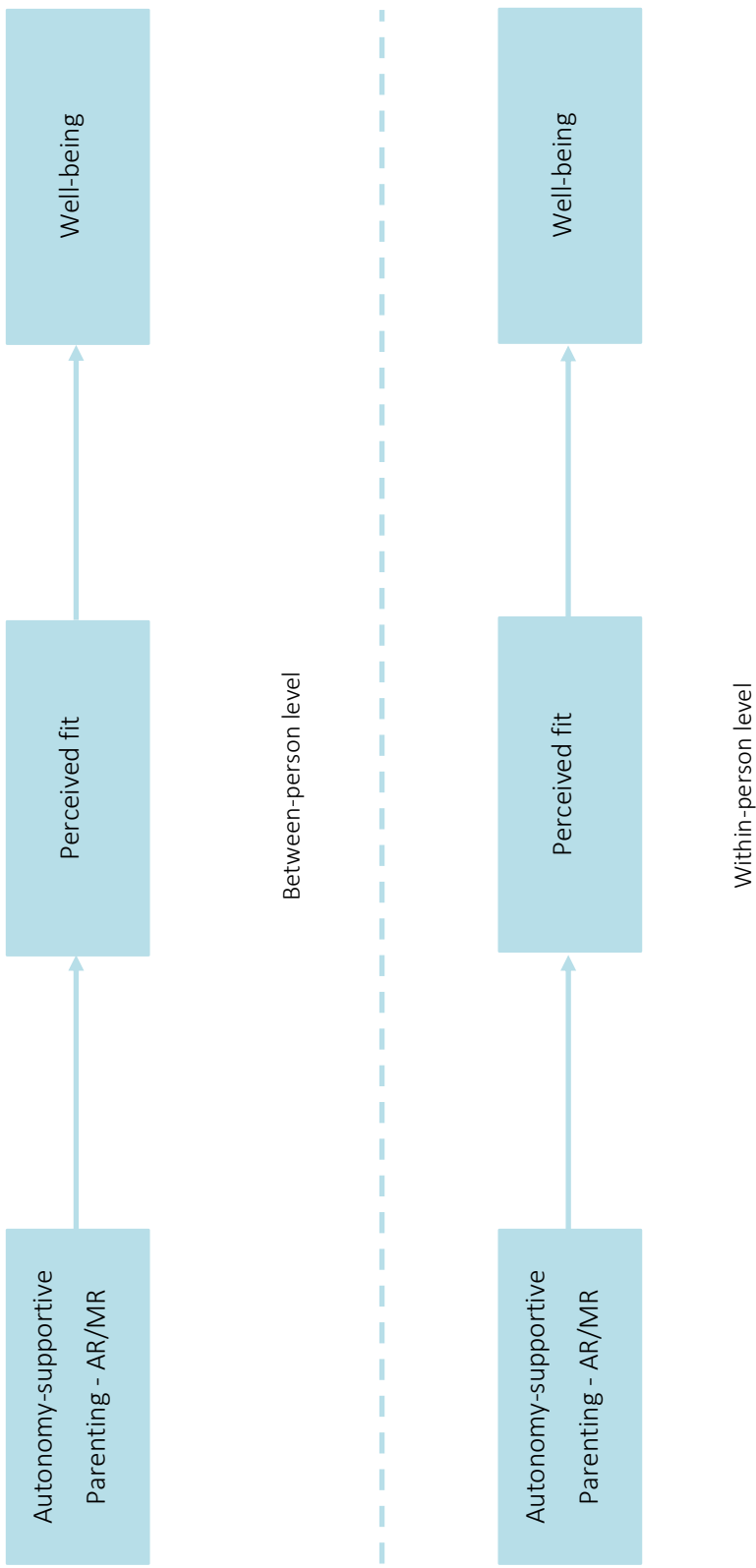


Figure 2. Graphical display Model 2 (AR = adolescent reported, MR = mother reported).

Because the two research questions addressed in this study deal with dynamic intervening processes (i.e., moderation by causality orientations and mediation by goodness-of-fit), it was deemed important to examine these processes using a longitudinal design. Indeed, processes of moderation and mediation essentially deal with processes of change. More specifically, it is increasingly argued that the level of intra-individual change is a particularly important and relevant level to chart such developmental processes (Keijsers, 2016). For instance, the assumed moderating role of an autonomous causality orientation may manifest not only at the level of between-person differences between adolescents, but also at the level of within-person change in adolescents: adolescents high on an autonomous orientation may be particularly sensitive to an experienced increase in autonomy-supportive parenting relative to the degree of parental autonomy support they experienced before. That is, to the extent that these adolescents perceive their mothers' autonomy-supportive parenting to increase compared to before, they would display an even stronger increase in well-being when compared to adolescents low in the autonomous orientation. Similarly, the explanatory role of goodness-of-fit is expected to manifest both with respect to differences between adolescents (i.e., between-person level) as well as with respect to the fluctuations within a given adolescent (i.e., within-person level of change). That is, the very reason why an intra-individual increase in experienced parental autonomy support would go hand in hand with intra-individual increases in well-being is because it would entail an intra-individual increase in goodness-of-fit. To put it less technically, because adolescents perceive their mothers as more autonomy-supportive than before, they would experience a stronger sense of subjective fit and, hence, a higher sense of well-being than before. Overall, to examine our research questions in a dynamic fashion, we relied on a longitudinal design and we relied on multilevel analyses to differentiate

between associations at the between-person level and at the level of intra-individual change.

METHOD

PARTICIPANTS AND PROCEDURE

Participants were Belgian, Dutch-speaking adolescents and their parents (M age at T1 = 14.89 years, SD = 0.88, range = 13-17 years, 51% female). Almost all adolescents (99%) lived in intact families (i.e., with the parents being married or living together). Most families consisted of two children (51%), followed by families with three children (29%), families with one child (10%) and families with four children or more (10%). All adolescents were enrolled in a high school program, with 67% following an academic track and with 33% following a technical or vocational track. Mothers' mean age was 45 years (SD = 3.20, range = 37-53 years). On a 6-point scale, their mean educational attainment was 4.11 (SD = 1.15), indicating an average of 15 years of education.

In October 2012, 198 families were recruited as part of an undergraduate course in developmental psychology in which students were asked to invite two adolescents living in intact families (who were not relatives or close friends of the student) to participate in the study. We chose to recruit intact families because this study was part of a broader project aiming to examine the interplay between maternal and paternal parenting. Students were trained to approach potentially interested families. They briefly explained the purpose of the study and asked adolescents to assent to participate. In addition, parents were asked to provide active consent and to also fill out a questionnaire themselves. Questionnaires with detailed information and instructions were provided by the undergraduate students during a home visit and were filled out in the absence of the student who recruited the family. The first page of the instructions

emphasized that participation was voluntary and data would be treated confidentially. After filling out the questionnaires, participants put their questionnaires in separate, sealed envelopes and returned these envelopes to the student who, in turn, returned them to the researchers. Families were again contacted by e-mail in June 2013 (Wave 2) and June 2014 (Wave 3) to participate in the study. At Time 2, 144 adolescents and mothers participated again, while at Time 3, 123 adolescents and mothers participated again. Analysis of the missing values showed that the missings were completely at random (Little's MCAR-test, $\chi^2(195) = 189.6, p > .05$). Accordingly, full information maximum likelihood (FIML) in Mplus 7.0 (Muthén & Muthén, 1998-2012) was used to estimate missing values.

MEASURES

All instruments have been used successfully in past research with Dutch-speaking populations or were developed in Dutch for the purpose of this study. All variables were assessed at each wave, except for the causality orientations, which were assumed to reflect relatively stable individual differences. Therefore, we relied only on the scores for the causality orientations measured at T1. Although we measured the causality orientations also at T2, the number of participants at T2 was smaller compared to T1 and, therefore, we primarily relied on the T1 assessment. Cronbach's Alphas of the scales are reported in Table 2.

Autonomy-supportive parenting. Both mothers and adolescents were administered the Dutch version (Soenens et al., 2007) of the Autonomy Support Scale of the Perceptions of Parents Scale (POPS; Grolnick et al., 1991). The 7 items (e.g. "My mother allows me to decide things for myself") were scored on a 5-point Likert scale, ranging from 1 (*Completely not true*) to 5 (*Completely true*). We focused on mothers because they continue to represent key socialization figures in early to middle adolescents' lives

(Bornstein, 2015). To avoid problems associated with shared method variance, the study includes both mother reports and adolescent reports of maternal autonomy support. When the association between autonomy support and perceived goodness of fit would be obtained only when using adolescent reports of both constructs, one might argue that this association exists only in the eye of the beholder. If, in contrast, this association emerges across informants of parenting, it indicates a more substantive phenomenon.

Causality Orientations. Adolescents completed the short Dutch version (Soenens, Berzonsky, Vansteenkiste, Beyers, & Goossens, 2005) of the General Causality Orientations Scale (GCOS; Deci & Ryan, 1985). The questionnaire consists of 12 vignettes, starting with a description of an everyday life situation (e.g., “You are thinking of making a new study choice. Your most important consideration is likely to be ...”). Because some of the situations in the original GCOS were relevant only to adults and not to adolescents, these situations were slightly changed to be more appropriate for an adolescent population. These situations are followed by items reflecting an autonomous orientation (e.g., “How interested you are in this new study domain”) and a controlled orientation (e.g., “Whether there are good possibilities for employment after this study”). Although the original GCOS contains items tapping into a third orientation (the impersonal orientation), this orientation was deemed less relevant for our research purposes and was not included. Adolescents rated items on both motivational orientations on a 5-point Likert scale ranging from 1 (*Completely not true*) to 5 (*Completely true*). Because, to the best of our knowledge, this is the first time the GCOS was used in an adolescent sample, we examined its validity by relating both orientations to scores on the Big Five traits, which were measured in this study at T1 with the Hierarchical Personality Inventory for Children (HiPIC; Mervielde & De Fruyt, 1999;

Mervielde, De Fruyt, & De Clercq, 2009). Specifically, we inspected whether associations in our sample of adolescents would be similar to associations obtained with adults. Consistent with research on adults (Olesen, 2011; Olesen, Thomsen, Schnieber, & Tonnesvang, 2010), we found that the autonomous causality orientation was correlated positively with Extraversion ($r = .22, p = .002$), Agreeableness ($r = .24, p = .001$), and Openness to Experience ($r = .33, p = .00$). In addition, the autonomous orientation was also related positively to Conscientiousness ($r = .24, p = .001$) and Emotional Stability ($r = .17, p = .02$). Also consistent with research on adults, the controlled causality orientation was related negatively to Agreeableness ($r = -.31, p = .00$).

As to further examine the validity of this measure in greater detail, we also examined whether the causality orientations would relate differentially to coping and, more specifically, to different ways in which adolescents cope with parental pressure. To do so, we used a measure developed by Van Petegem et al. (2015, 2017) differentiating between a constructive coping strategy (i.e., negotiation or attempts to reconcile one's own goals with parental goals) and a more defensive coping strategy (i.e., oppositional defiance or an inclination to bluntly react against parental authority). On the basis of theory (Deci & Ryan, 1985; Hodgins & Knee, 2002) and previous research with (young) adults (e.g., Koestner et al., 1999; Koestner & Losier, 1996), it could be expected that an autonomous orientation would relate positively to negotiation and that a controlled orientation would relate to defiance. These expectations were clearly confirmed, with the autonomous causality orientation measured at time point 1 being significantly associated with negotiation ($r = .47, p = .000$) and with a controlled causality orientation being significantly related to defiance ($r = .24, p = .001$). These associations are clearly in line with theoretical

predictions and, as such, contribute further to our confidence in the validity of the GCOS in this age group.

Overall, these associations are consistent with findings in adult samples and with the theoretical assumption that an autonomous orientation represents a more resilient and mature type of personality functioning than a controlled orientation (Deci & Ryan, 1985). Furthermore, the stability of the causality orientations across a one-year interval was examined. Evidence for substantial cross-temporal stability was found, with the stability correlations of autonomous and controlled causality orientation between the first two waves being .53 ($p = .00$) and .46 ($p = .00$), respectively. These stability coefficients are similar (in terms of effect size) to stability coefficients reported for other personality traits (e.g., the FFM dimensions) in this age period (i.e., early to middle adolescence; Klimstra et al., 2009).

Perceived Fit. We developed a new 6-item scale for this construct, which was administered to the adolescents. The formulation of the items was derived directly from the conceptual definition of perceived goodness-of-fit used in this study, resulting in a set of items with high face validity. Three items refer to the extent to which adolescents feel like their mother knows their personality (e.g., “I feel that my mother really knows and understands my personality”, “I feel that my mother knows well what my personality is like”, “My mother has a different view on my personality than I do”, reverse scored). The other three items refer to the extent to which adolescents feel like their mother takes into account their personality when interacting with the child (e.g. “I feel that my mother takes into account my personality”, “My mother adjusts her behavior to my personality”, “My mother makes me do things that really do not fit my personality”, reverse scored). The items were scored on a 5-point Likert scale, ranging from 1 (*Completely not true*) to 5 (*Completely true*).

A Principal Components Analysis on the items of this scale clearly pointed towards a 1-component solution, with only one component having an eigenvalue larger than 1 (and explaining 56%, 53%, and 56% of the variance at T1, T2 and T3, respectively). All items had substantial loadings on this component, with loadings ranging between .54 and .84 at T1, between .55 and .89 at T2 and between .51 and .88 at T3. Because autonomy-supportive parenting and perceived goodness-of-fit may appear to be closely related concepts, concerns may be raised regarding adolescents' ability to clearly distinguish between both constructs. We performed a Confirmatory Factor Analysis (CFA) on the items from the scales for adolescent-perceived autonomy-supportive parenting and goodness-of-fit to see whether these items are measuring separate constructs. At each wave, we conducted two CFAs, with one model withholding only one global factor and with another model withholding two distinct factors. At each of the three waves, a two-factor model provided a significantly better fit to the data than a one-factor model ($\Delta\chi^2(1) = 42.50, p < .001$; $\Delta\chi^2(1) = 106.64, p < 0.001$; $\Delta\chi^2(1) = 166.24, p < 0.001$), indicating that adolescents do perceive a clear distinction between mothers' engagement in autonomy-supportive practices and experiences of goodness-of-fit. Finally, to further document the validity of this newly developed scale, we also examined associations between the scale and the Big Five traits, thereby again using scores on the HiPIC obtained at T1. Consistent with the prediction that it is easier for mothers to take into account adolescents' personality when adolescents score high on adaptive and mature personality traits, we found that the scale for goodness-of-fit was related positively to Agreeableness ($r = .32, p = .00$), Conscientiousness ($r = .26, p = .00$), and Emotional Stability ($r = .18, p = .01$).

Well-Being. Adolescents completed three scales, that is, the 5-item Global Self-Worth subscale (e.g. "I am often disappointed with myself", reverse scored) of the Self-Perception Profile for Adolescents (SPPA; Harter,

1988; Wichstrom, 1995), the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) (e.g. "I am satisfied with my life") and the 7-item Subjective Vitality Scale (Ryan & Frederick, 1997). The Satisfaction with Life Scale and Subjective Vitality Scale were rated on a 5-point Likert scale, ranging from 1 (*completely not true*) to 5 (*completely true*). The Self-Worth scale was rated on a 4-point Likert scale, ranging from 1 (*completely not true*) to 4 (*completely true*). A composite score was created by standardizing these measures of well-being and calculating the mean of these three scales. This approach was justified by the observation that correlations between the three measures within each wave were high, ranging from .43 to .69.

RESULTS

PRELIMINARY ANALYSES

Means, standard deviations, and correlations between the study variables are presented in Table 2. To determine whether scores on the study variables that were assessed at each wave, varied by time, gender and age, a repeated measures MANCOVA was conducted (with time as a within-subjects predictor, with gender as a categorical independent variable, and with age as a continuous covariate). There was an overall multivariate effect for gender (*Wilks's* $\lambda = .88$, $F(4, 102) = 3.25$, $p = .01$) and for age (*Wilks's* $\lambda = .89$, $F(4, 102) = 3.12$, $p = .02$), but not for time (*Wilks's* $\lambda = .93$, $F(8, 98) = .98$, $p = .49$). Follow-up univariate analyses revealed that girls reported lower well-being compared to boys, an effect that was not moderated by time or age. A univariate ANOVA was used to determine whether adolescents' scores on the causality orientations at T1 varied by gender and age. Results showed that girls reported higher scores on the autonomous causality orientation ($M = 3.88$, $SD = 0.43$) compared to boys ($M = 3.73$, $SD = 0.44$). Given these results, we controlled for gender in all subsequent analyses.

Table 2
Descriptive Statistics and Correlations between Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Time 1														
1. Autonomy support - AR														
2. Autonomy support - MR	0.18*													
3. Perceived fit	0.57**	0.09												
4. Well-being	0.24**	0.14*	0.45**											
5. Autonomous orientation	0.13†	0.07	0.12†	0.06										
6. Controlled orientation	-0.10	-0.01	-0.11	-0.05	0.09									
Time 2														
7. Autonomy support - AR	0.52**	0.23**	0.33**	0.26**	0.18*	-0.05								
8. Autonomy support - MR	0.23**	0.58**	0.08	0.09	-0.04	-0.11	0.36**							
9. Perceived fit	0.36**	0.14	0.52**	0.20*	0.05	-0.21*	0.58**	0.19*						
10. Well-being	0.17*	0.07	0.31**	0.48**	0.09	-0.02	0.42**	0.16†	0.46**					
Time 3														
11. Autonomy support - AR	0.26**	0.16†	0.19*	0.09	0.08	0.04	0.57**	0.18†	0.17†	0.22*				
12. Autonomy support - MR	0.04	0.50**	-0.05	0.06	0.00	-0.08	0.31**	0.63**	0.18†	0.11	0.17**			
13. Perceived fit	0.16†	0.09	0.35**	0.27**	0.13	-0.04	0.43**	0.08	0.46**	0.38**	0.60**	0.32**		
14. Well-being	-0.02	0.02	0.11	0.33**	-0.05	-0.04	0.26**	0.16†	0.26**	0.60**	0.35**	0.17†	0.47**	
M	3.76	3.86	3.77	0.00	3.81	2.72	3.99	3.94	3.85	0.00	4.02	4.06	3.87	0.00
SD	0.52	0.43	0.65	0.55	0.43	0.45	0.58	0.42	0.61	0.61	0.57	0.43	0.63	0.64
α	.71	.65	.83	.84	.72	.64	.82	.66	.80	.87	.84	.71	.82	.89

Note. AR = Adolescent Report, MR = Mother Report.

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

PRIMARY ANALYSES

To examine the main hypotheses, multilevel structural equation modeling (MSEM) was performed using MPlus 7.0 (Muthén & Muthén, 1998-2012). The Comparative Fit Index (CFI), the Root Mean Squared Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR) were selected to evaluate model fit. According to Hu and Bentler (1999), combined cut-off values close to .95 for CFI and close to .06 for RMSEA and .09 for the SRMR indicate good fit. In the multilevel structural equation modeling analyses, the measurement occasions (Wave 1-3) represented the within-person level which were nested within participants, representing the between-person level (Mackinnon, Kehayes, Clark, Sherry, & Stewart, 2014; Preacher, Zyphur, & Zhang, 2010).

Before starting, intraclass correlations for all study variables were calculated, to examine whether multilevel modeling was appropriate. Intraclass correlations (ICC's) shed light on the proportion of the total variance that is due to between- and within-person variation, with the ICC reflecting the percentage of variance located at the between-person level. The ICC's were .49 for perceived fit, .47 for well-being, and .45 for adolescent-reported and .56 for mother-reported autonomy-supportive parenting. This means that respectively 49%, 47%, 45% and 56% of the variance in perceived fit, well-being, and adolescent-reported and mother-reported autonomy-supportive parenting reflects differences between persons. Conversely, about half of the variance in these constructs represents within-person change across time (although this part of the variance also includes error variance). Data are suitable for multilevel structural equation modeling when the ICC is above .05 (Preacher et al., 2010).

Testing the moderating role of the causality orientations. Models were tested separately for adolescent and mother reports of maternal

autonomy support. In an initial structural model, we tested the direct associations between maternal autonomy-supportive parenting and well-being both at the level of between-person differences and at the level of within-person change. This model included only the main effect of autonomy-supportive parenting on well-being at both levels. As this model is just-identified, the model had by definition perfect fit, so no fit measures are reported. Adolescent-reported autonomy-supportive parenting was associated positively with well-being, both at the between-person level ($\beta = .42$; $p = .00$) and at the within-person level ($\beta = .24$; $p = .01$). Mother-reported autonomy-supportive parenting was associated positively with well-being at the between-person level ($\beta = .25$; $p = .02$) but not at the within-person level ($\beta = .07$; $p = .35$).

Then, we tested the moderating role of the causality orientations in effects of autonomy-supportive parenting on well-being, at the level of between-person differences. We performed analyses separately for the autonomous and the controlled causality orientations and within each of the three waves. Again, we performed these models separately for adolescent and mother reports of autonomy support. Since these models are also just-identified, no fit measures are reported. Results are shown in Table 3. As shown in this table, the causality orientations did not moderate any of the between-person effects of autonomy-supportive parenting on well-being.

Table 3

Beta Coefficients and Standard Errors of the Main and Interaction Effects of Autonomy-Supportive Parenting and the Causality Orientations on Well-being.

	Adolescent reported parenting			Mother reported parenting		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Autonomy-supportive parenting	.24(0.08)**	.41(0.07)***	.36(0.08)**	.13(0.07)*	.14(0.08)†	.16(0.10)
Autonomous causality orientation	.08(0.08)	.07(0.09)	-.03(0.09)	.10(0.08)	.16(0.08)*	-.02(0.09)
Interaction	.11(0.09)	-.04(0.08)	.06(0.07)	.01(0.07)	-.12(0.09)	.04(0.11)
Autonomy-supportive parenting	.26(0.08)**	.42(0.07)***	.38(0.08)**	.15(0.07)*	.13(0.09)	.16(0.12)
Controlled causality orientation	-.04(0.07)	-.03(0.07)	-.07(0.08)	-.06(0.07)	-.01(0.08)	-.06(0.08)
Interaction	-.06(0.08)	.02(0.07)	.08(0.07)	-.07(0.06)	-.07(0.08)	.03(0.09)

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

To examine whether the causality orientations would moderate associations between autonomy-supportive parenting and well-being at the within-person level, we tested cross-level interactions. Again, these analyses were done separately for the autonomous and controlled causality orientations and for adolescent and mother reports of autonomy support. To test whether there were interindividual differences in the strength of the within-person association between autonomy-supportive parenting and well-being, we first inspected whether the random slope of this association was significant. This was the case for adolescent reports of parenting ($b = .51, SE = 0.16, p = .00$), but not for mother reports of parenting ($b = .66, SE = 0.47, p = .16$). This finding indicates that the association between within-person changes in adolescent (but not in mother) reported autonomy-supportive parenting and within-person changes in well-being is more pronounced in some adolescents compared to others. Thus, we could examine the potential moderating role of adolescents' causality orientations only with respect to adolescent reports of parenting.

In the models testing the moderating role of the autonomous causality orientation, the cross-level interaction between the autonomous causality orientation and autonomy-supportive parenting was not significant ($b = .25, SE = 0.26, p = .33$ for adolescent reports of parenting). These findings indicate that the autonomous causality orientation was unrelated to differences in the strength of the within-person association between autonomy-supportive parenting and well-being. Said differently, a perceived intra-individual increase in autonomy-supportive parenting contributed positively to an intra-personal increase in well-being, regardless of whether adolescents were high or low in autonomous orientation.

The model including the controlled orientation as a moderator yielded similar results. The cross-level interaction between autonomy-

supportive parenting and the controlled orientation ($b = .20$, $SE = 0.26$; $p = .44$) in the model with adolescent-reported parenting was not significant.

Overall, these analyses indicate that the causality orientations did not moderate associations between autonomy-supportive parenting and well-being, neither at the level of between-person differences nor at the level of within-person change. To put it less technically, to the extent that adolescents perceive or mothers report greater levels of autonomy support, adolescents report greater well-being, regardless of whether adolescents score low or high on the autonomous or controlled orientation. Similarly, to the extent adolescents perceive or mothers report an increase in autonomy support to before, a parallel increase in well-being is reported, an effect that was observed regardless of whether adolescents score high or low on the autonomous orientation or controlled orientation.

Testing the intervening role of perceived goodness-of-fit. In a final analysis, we examined whether perceived goodness-of-fit would mediate associations between autonomy-supportive parenting and well-being. This integrated model (see Figure 3) included only indirect associations between autonomy-supportive parenting and well-being through perceived goodness-of-fit. Model fit was adequate both for the model including adolescent reports of parenting [$\chi^2(2) = 1.44$; $RMSEA = .00$; $CFI = 1.00$; $SRMR = .03$] and for the model including maternal reports of parenting [$\chi^2(2) = 2.77$; $RMSEA = .03$; $CFI = .99$; $SRMR = .00$]. Results with adolescent reports of parenting showed that perceived autonomy-supportive parenting was related to perceived fit at both the between ($\beta = .67$, $p = .001$) and within-person level ($\beta = .52$, $p = .001$). Perceived fit, in turn, was related to well-being at both the between ($\beta = .60$, $p = .001$) and within-person level ($\beta = .34$, $p = .001$). The indirect effects of autonomy-supportive parenting on well-being (through goodness-of-fit) were significant both at the level of the between-person differences ($b = .62$, $SE = 0.15$, $p = .001$) and at the level of

within-person change ($b = .25, SE = 0.07, p = .001$). Results with mothers' reports of parenting showed that autonomy-supportive parenting was related to perceived fit at the level of within-person change ($\beta = .20, p = .004$) but not at the between-person level. However, even at the between-person level, the association was marginally significant ($\beta = .19, p = .096$). Perceived fit, in turn, was related to well-being at both the between ($\beta = .59, p = .000$) and within-person level ($\beta = .34, p = .00$). The indirect effect of autonomy-supportive parenting on well-being (through goodness-of-fit) was significant at the level of the within-person differences ($b = .14, SE = 0.07, p = .03$), but not at the level of between-person change ($b = .20, SE = 0.15, p = .17$).

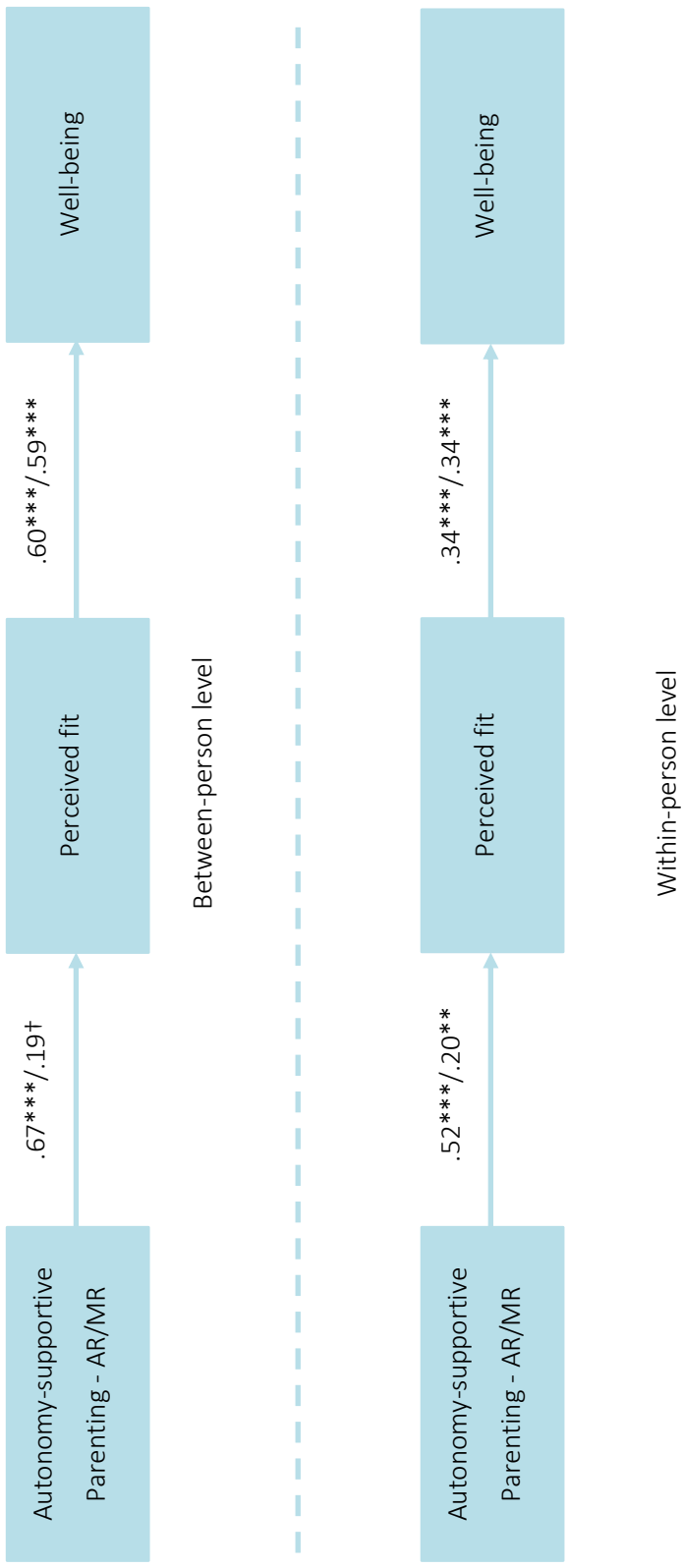


Figure 3. Multilevel structural equation model with perceived fit as a mediator (AR = adolescent report, MR = mother report). Path coefficients are standardized.

Overall, the explanatory role of perceived fit in the association between autonomy-supportive parenting and well-being was confirmed in three out of the four cases. That is, it applied at the within-person level for both adolescent and mother reports and at the between-person level for adolescent reports. Such findings imply that adolescents' level of experienced fit is a robust explanatory mechanism, as it can account for the reason why adolescents who perceive more autonomy support compared to their peers report more well-being and why fluctuations in experienced or mother-reported autonomy support covary with fluctuations in well-being across time.

DISCUSSION

Although an impressive body of research has demonstrated that autonomy-supportive parenting is related to beneficial developmental outcomes in children and adolescents (Joussemet et al., 2008), few studies addressed the question whether these benefits are limited to adolescents with particular personality characteristics. This study examined the role of adolescents' causality orientations in the association between autonomy-supportive parenting and well-being, with an autonomous orientation possibly representing a better match with such parenting than a controlled orientation. It also addressed the possibility that autonomy-supportive parenting is related to a subjective feeling of "match" between one's personality and parental behavior, an experience that in turn can relate to well-being.

GOODNESS-OF-FIT AS AN OBJECTIVE MATCH BETWEEN PARENTING AND ADOLESCENTS' PERSONALITY

On the basis of Thomas and Chess' (1977) notion of goodness-of-fit, it could be argued that parental autonomy support is particularly adaptive

(or even only adaptive) for adolescents with matching personality characteristics, that is, for adolescents with a strong dispositional inclination towards autonomy. In contrast, parental autonomy support would be less adaptive (or not adaptive at all) for adolescents with a more controlled orientation, that is, adolescents who are inclined to regulate their behavior on the basis of external and internal pressures rather than on the basis of personal preferences and interests. This interpretation of the goodness-of-fit principle as an objective match between parental behavior and child characteristics however did not receive support in this study. The autonomous and controlled causality orientations failed to moderate the associations of either adolescent-reported or mother-reported maternal autonomy support with well-being, neither at the level of between-person differences nor at the level of within-person change. That is, adolescents with a high autonomous orientation do not derive greater well-being benefits when experiencing more autonomy-supportive parenting compared to others, nor do they report a more pronounced increase in well-being when they experience greater autonomy support than usual. These findings, which suggest that autonomy-supportive parenting is beneficial irrespective of adolescents' motivational orientation, are consistent with the notion that autonomy-supportive parenting contributes to the satisfaction of psychological needs that are universally important for children's well-being (Deci & Ryan, 2000; Ryan & Deci, 2017). In line with these claims about the universal effectiveness of autonomy-supportive parenting, research increasingly demonstrates the benefits of such parenting across cultures (Chirkov & Ryan, 2001) and developmental periods (Bernier et al., 2010). Our findings add to this research by showing that autonomy-supportive parenting is also related to well-being among adolescents with different personality-based motivational profiles.

It would be very premature, however, to conclude that individual differences play no role whatsoever in effects of autonomy-supportive parenting (and to see the results as evidence for a strict universalistic perspective) because there are other possible ways in which causality orientations could play a role. In addition to the possibility that adolescents' causality orientations moderate effects of autonomy-supportive parenting, these orientations may affect parenting processes in a number of other ways. First, consistent with the notion of evocative child x environment transactions (Caspi & Roberts, 2001), adolescents with different causality orientations may elicit different parental reactions. Because adolescents high on autonomy are in touch with their personal preferences, they may communicate more clearly to parents about these preferences. By doing so, these adolescents may make it easier for their parents to take into account adolescents' personal interests through an autonomy-supportive style. Future research could test this possibility that adolescents' causality orientations elicit more autonomy-supportive versus controlling parenting with a longitudinal research design (see also Jang, Kim, & Reeve, 2016).

Second, consistent with the notion of reactive child x environment transactions (Caspi & Roberts, 2001), adolescents' causality orientations may also affect their perception and interpretation of parental behavior (Deci & Ryan, 1985; Soenens et al., 2015). One and the same parental practice may be appraised differently by adolescents depending on their causality orientation. For instance, adolescents high on autonomy orientation may be more likely to interpret parental provision of choice as an opportunity to pursue self-endorsed goals compared to adolescents high on a controlled orientation, who may be more likely to perceive choice as a lack of parental guidance or even as a stressful practice giving rise to feelings of indecision. To examine such reactive processes, future research should aim to separate parents' actual behavior (i.e., what they actually do and say) from how it is

perceived and appraised by adolescents. Rather than including only self-report measures of parenting (as was done in the current study), such studies could benefit from including observational measures of parenting (which can be correlated with adolescents' perception of the behavior) or from relying on vignettes presented to adolescents, which provide more nuanced descriptions of actual parental behavior (e.g., Chen et al., 2016; Van Petegem, Soenens, Vansteenkiste, & Beyers, 2015).

THE EXPLANATORY ROLE OF GOODNESS-OF-FIT AS A SUBJECTIVE EXPERIENCE

Having shown that the causality orientations did not moderate associations between autonomy-supportive parenting and well-being, we tested whether a subjective interpretation of the goodness-of-fit principle would apply to autonomy-supportive parenting. Different from an objective match between autonomy-supportive parenting and adolescents' personality, the subjective interpretation of goodness-of-fit involves adolescents' perception that their parents understand their personality and take into account adolescents' personality in family decisions and interactions. As expected, we found evidence for rather systematic associations between autonomy-supportive parenting and subjectively felt goodness-of-fit, an association that emerged both at the level of between-person differences and at the level of within-person change across three waves. Associations were more pronounced when using adolescent reports of parenting compared to mother reports. Still, even when using maternal reports of parenting, the association was significant at the level of within-person change and marginally significant at the level of between-person differences. Moreover, our findings also showed that subjectively felt goodness-of-fit played an important intervening role in associations between autonomy-supportive parenting and adolescents' well-being at both levels. Thus, one and the same mechanism, that is, subjective fit could account for

the autonomy support benefits at both levels. That is, the very reason why adolescents who perceive their parents to be more autonomy-supportive report greater well-being is because they experience greater fit. In analogy, the reason why ups and downs in adolescent perceived or mother reported autonomy support go hand in hand with ups and downs in adolescent' well-being is because adolescents report greater experienced fit in periods when their mothers are more autonomy-supportive.

These findings are consistent with the assumption that the basic attitude behind parental autonomy support involves an active interest in and respect for the child's frame of reference (Grolnick et al., 1997; Mageau et al., 2017). Because of their sincere curiosity for what is going on with their children, autonomy-supportive parents are likely to become quite well-informed about their children's personal functioning and personality features. This knowledge is an important starting point to take into account their children's personality in the process of child-rearing.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

This study had a number of methodological limitations. First, because this was just a first study examining the role of causality orientations in effects of autonomy-supportive parenting, we did not have a point of reference to ensure sufficient statistical power a priori. A post-hoc power analysis using Monte Carlo simulation showed that, while our study had sufficient power (i.e., over 80%) to detect main effects of parenting at the level of intra-individual change, the power to detect cross-level interactions was low (i.e., well below 80%). However, the results of such a post-hoc power analysis are difficult to interpret because the lack of power may be due to the fact that the observed effects are actually small (Levine & Ensom, 2001). Hence, it is important for future research to rely on larger

samples in order to replicate the effects sizes obtained in the current study and to use these effects sizes as a criterion for an a priori power analysis.

Related to the issue of statistical power, there was a rather large amount of attrition in our study. Although data were missing at random, ideally future studies have a higher retention rate. Further, we focused only on maternal parenting and our sample involved, on average, relatively well-adjusted adolescents with a fairly homogeneous background (i.e., traditional, two-parent families and mothers with rather high levels of education). More research is needed testing the role of the causality orientations with regard to paternal parenting and in larger samples with more heterogeneity in terms of demographics and level of psychosocial adjustment. To shed light on the potential differential or complementary role of mothers and fathers, a domain-specific approach to perceived fit may be useful. That is, past research found perceived maternal autonomy-supportive parenting among late adolescents' to be primarily predictive of their autonomous motivation for school work and friendships, while perceived paternal autonomy-supportive parenting predicted their autonomous motivation for job search (Soenens & Vansteenkiste, 2005). Such work suggests that a domain-specific assessment (instead of a global assessment as the one used in the current study) of perceived fit may shed light on the specific role of mothers and fathers. The inclusion of both parents also allows addressing the question of interaction between both. A synergistic interaction would indicate that the combined presence of two autonomy-supportive parents creates a surplus effect on perceived fit not accounted for by the main effects, while a compensatory interaction would suggest that the low perceived fit following from the low autonomy support from one parent could be compensated by the presence of high autonomy support of the second parent.

The low reliability of the mother-reported score for autonomy-supportive parenting is another limitation. Although it is not unusual to obtain lower reliability with a parent-reported score for parenting variables (e.g., Soenens, Vansteenkiste, Luyckx, & Goossens, 2006), the findings with this scale need to be interpreted with some caution.

In addition to addressing the methodological limitations discussed thus far, future research could build on this study in substantive ways as well. Future research on the role of individual differences in autonomy-supportive parenting needs to go beyond an assessment of causality orientations and can include measures of adolescents' broader personality functioning [e.g., the Five Factor Model (FFM) dimensions of personality]. This is important because results from our multilevel analyses demonstrated that the strength of the association between adolescent-perceived autonomy-supportive parenting and well-being indeed differs between adolescents. The question remains, then, which factors in adolescents' functioning are associated with these individual differences. The reason why we focused on causality orientations in this initial study is that these orientations have a clear and direct conceptual link with autonomy-supportive parenting. As such, they seemed the most likely and proximal candidates to play a moderating role in the interplay between autonomy-supportive parenting and adolescents' personal characteristics. However, the lack of moderation observed in this study does not preclude the possibility that the FFM dimensions do play a moderating role. Past research (Olesen, 2011) and our own data (reported in the Method section) have shown that the causality orientations are related to, yet distinct from, the FFM dimensions. While the causality orientations can be considered as characteristic adaptations of personality or as individual differences situated at the level of surface personality characteristics (i.e., traits that are more easily susceptible to change), the FFM personality dimensions can be

situated at the level of core personality traits (i.e., traits that are relatively more fixed; Olesen, 2011; Soenens, Berzonsky et al., 2005; Vansteenkiste et al., 2010).

Given that the FFM dimensions capture more enduring aspects of personality, they may play a more robust moderating role in effects of autonomy-supportive parenting. Research has begun to examine the moderating role of the FFM dimensions in effects of controlling (i.e., autonomy-suppressing) parenting, showing for instance that effects of controlling parenting on externalizing problems are particularly pronounced among children and adolescents scoring low on Agreeableness (e.g., De Clercq, Van Leeuwen, De Fruyt, Van Hiel, Mervielde, 2008; De Haan, Prinzie, & Dekovic, 2010; Van Leeuwen et al., 2004), while the effects of controlling parenting on internalizing problems were found to apply to all children, regardless of their FFM traits (e.g., Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016). Because an absence of controlling parenting cannot be equated with the presence of autonomy-supportive parenting, research still needs to begin and explore the moderating role of FFM traits in effects of autonomy-supportive parenting.

Although the findings regarding the intervening role of perceived goodness-of-fit are promising, at least three issues deserve greater attention in future work, involving (a) the conceptual boundaries between autonomy support and subjective fit, (b) the exact way how such perceived fit is created, and (c) the possibility of alternative mediating mechanisms.

Conceptually, there is a thin line between perceived autonomy support and subjective fit. Yet, we do believe that both constructs are conceptually distinct for two reasons. First, the primary *focus* of both constructs differs: while autonomy-supportive parenting refers to a parent's behavior towards an adolescent, goodness-of-fit refers to an adolescent's feelings vis-à-vis the parent. Thus, autonomy-supportive parenting entails

the things parents actively do and say to promote adolescents' sense of choice and volition. Ideally, these parental attempts to support autonomy give rise to experiences of goodness-of-fit, which reflect feelings adolescents have towards their parents. To illustrate, when introducing a rule, autonomy-supportive parents would provide a meaningful rationale which, at best, is well-attuned to the adolescent's viewpoint, preferences, and personality. Although, ideally, this provision of a rationale results in the adolescent's perception of a fit between the rationale and his/her personality, this is not necessarily the case. Some rationales are parent- instead of child-focused and too vague to result in a perception of fit. Second, both concepts differ in terms of their *breadth*, with autonomy-supportive parenting being a broader construct than the goodness-of-fit construct, at least in the way how these constructs were operationalized in this study. While the concept of goodness-of-fit (as used in this study) deals specifically with an experience of match between parental practices and one's personality, being autonomy-supportive entails more broadly taking the perspective of the adolescent and being attuned not only to the adolescent's personality, but also to his/her emotions, feelings, and point of view.

We do agree that, in spite of these arguments, there is a thin line between both constructs. This is particularly the case when measuring both constructs using adolescent reports, because both reports then reflect an adolescent's perception and experience. This is exactly the reason why we examined using CFA whether both concepts could be distinguished in adolescents' self-reports (which was actually the case). The thin line between both concepts was also the very reason why we deemed it important to rely also on parent reports of autonomy-supportive parenting. While parents may have the intention to act autonomy-supportive towards their adolescent, these attempts to be autonomy-supportive are not

necessarily successful and, as such, do not necessarily translate into adolescent experiences of being understood. Thus, by examining associations between maternal reports of autonomy support and adolescent reports of goodness-of-fit we tried to provide a stronger test of the hypothesized association between both concepts.

Although our findings suggest that autonomy-supportive parents create a climate in which adolescents experience a subjective fit between their personality and the parents' behaviors, it is not exactly clear how these parents manage to do this. Precisely how do they respond to their adolescents' personality traits in a way that adolescents feel that their personality is understood and acknowledged? Research in younger children has begun to explore these micro-processes in the context of temperamental differences. Kochanska (1995), for instance, argued and found that behaviorally inhibited children benefit the most (in terms of internalization of parental rules) from gentle parental discipline (e.g., reasoning and polite requests) because this type of discipline elicits the ideal level of arousal for children to be attentive to parental requests. In a recent overview of contemporaneous research and theorizing about temperament, Rettew (2013) described how parents can adjust their parenting practices to children with different temperamental profiles. He argued that it is particularly important for parents of children with a more challenging temperament (e.g., children displaying high levels of negative emotionality and low levels of self-regulation) to be aware of their spontaneous response to the child's behavior because this response is often suboptimal or even counterproductive (e.g., with negative parental reactions such as shouting further exacerbating the child's difficult behavior). A next step for these parents is then to override their natural response and to replace it with a response that better takes into account the child's temperament. Consistent with SDT and the basic attitude behind parental autonomy support, Rettew

(2013) considers this attunement of parental behavior to children's temperament key to foster healthy development.

Much more research is needed to understand how parenting practices can contribute to feelings of goodness-of-fit in adolescents, thereby focusing both on adolescents' core personality features (e.g., the FFM dimensions) and lower-level personality characteristics such as the causality orientations. Such research, which ideally includes detailed observations of how parental autonomy support manifests in response to adolescents with different personality characteristics, is essential to inform practice. To illustrate, it would be interesting to explore whether the type of choices and type of rationales for requests autonomy-supportive parents provide, two key features of an autonomy-supportive style, would vary as a function of children's personality. Ultimately, the knowledge gained from these studies can be used to enrich parenting interventions with guidelines for how parents can adjust their interaction style to children's personality and temperament (Rettew, 2013; Shiner et al., 2012). For instance, McClowry, Rodriguez, and Koslowitz (2008) discussed the usefulness of temperament-based interventions, in which unique qualities of the child are recognized in order to resolve temperament-environment mismatches. Temperament-based interventions assist parents to enhance goodness of fit by replacing negative patterns of interaction with more responsive and effective child management strategies that are matched to specific types of temperament. Perceptions of fit may also be approached from both a state and trait perspective. Diary studies would be useful to further and more clearly separate different sources of variance, with adolescents possibly experiencing greater fit on some days than on other days (thereby displaying variability at the state level).

A final issue concerns the question of possible alternative pathways other than goodness of fit. On the basis of SDT it has also been argued and

shown that satisfaction of the basic psychological needs for autonomy, competence, and relatedness can explain the beneficial effects of autonomy-supportive parenting (e.g., Grolnick et al., 1991). Future research can address the question how our findings regarding the intervening role of goodness-of-fit can be integrated with findings documenting the intervening role of psychological need satisfaction. Possibly, a sense of goodness-of-fit represents one important route through which adolescents experience more need satisfaction within parent-child relationships. For instance, when adolescents feel that their parents have an accurate view on the adolescents' personality and take into account their personality, adolescents are more likely to feel a genuine sense of connection to their parents (i.e., relatedness satisfaction) and to feel that there is room to be who they really are (i.e., a sense of authenticity giving rise to satisfaction of the need for autonomy). Most likely, experiences of need satisfaction in turn reinforce feelings of goodness-of-fit. A final possibility is that the experience of goodness-of-fit is a direct manifestation or by-product of experienced need satisfaction, which yields the more powerful effect on well-being when entered simultaneously. Longitudinal research is ideally suited to further examine the dynamic interplay between parenting, goodness-of-fit, and the psychological needs.

CONCLUSION

Although the notion of goodness of fit has figured in the parenting literature for quite some time (Kiff, Lengua, & Zalewski, 2011; Thomas & Chess, 1977) and has been invoked to account for parenting by personality interactions (e.g., Declercq et al., 2008), the empirical work directly targeting the concept is limited. This study undertook an integrative attempt to study the relation between autonomy-supportive parenting, as conceived within Self-Determination Theory (Ryan & Deci, 2017), and the literature on

goodness of fit, thereby proposing two different interpretations. When interpreted in terms of a fairly literal match, no evidence was obtained. That is, maternal autonomy support was generally related to well-being, irrespective of individual differences in adolescents' personality-based motivational orientation. These findings suggest that the benefits of autonomy-supportive parenting are not limited to adolescents with personality characteristics that match an autonomy-supportive style, as would be assumed from a relativistic parenting perspective. When interpreted in terms of a subjective sense of goodness-of-fit, the findings were more promising, indicating that the very reason why autonomy-supportive parenting relates to greater well-being among adolescents is because it goes along with a greater subjective sense of fit. Much additional research is needed, preferably relying on longitudinal designs and multi-method measures of parental behavior, to unravel the undoubtedly complex and dynamic processes involved in parents' adjustment to their children's personality features. Such research is important because it may ultimately strengthen parenting interventions aimed at enhancing parents' support for their children's psychological needs.

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THE IMPACT OF FEEDBACK VALENCE AND COMMUNICATION STYLE ON INTRINSIC MOTIVATION IN MIDDLE CHILDHOOD: EXPERIMENTAL EVIDENCE AND GENERALIZATION ACROSS INDIVIDUAL DIFFERENCES¹

Prior research among adolescents and emerging adults has provided evidence for the beneficial effects of positive (relative to negative) feedback and an autonomy-supportive (relative to a controlling) communication style on students' intrinsic motivation. Unfortunately, similar experimental research during middle childhood is lacking. Moreover, little attention has been paid to the question whether individual differences in personality and perceived parenting play a role in these effects. In the present experimental study ($N = 110$; M age = 10.71 years), children completed puzzles at school under one of four experimental conditions, thereby crossing normative feedback valence (i.e., positive vs. negative) with communication style (i.e., autonomy-supportive vs. controlling). Prior to the experiment, children filled out questionnaires tapping into the Big Five personality traits and into perceived maternal autonomy support and psychological control. After the experimental induction, children rated several motivational constructs (i.e., intrinsic motivation and need-based experiences). Also, their voluntary behavioral persistence in a subsequent challenging puzzle task was recorded objectively. Providing positive normative feedback in an autonomy-

¹ Mabbe, E., Soenens, B., De Muynck, G.-J., & Vansteenkiste, M. (in press). The impact of feedback valence and communication style on intrinsic motivation in middle childhood: Experimental evidence and generalization across individual differences. *Journal of Experimental Child Psychology*.

supportive way yielded the most favorable motivational outcomes. Both feedback valence and communication style yielded an independent impact on children's experiences of competence and autonomy during task engagement which, in turn, helped to explain children's elevated intrinsic motivation, as reflected by their perceived interest and behavioral persistence. A few effects were moderated by children's perceived parenting and personality traits, but the number of interactions was limited. The discussion focuses on the motivating role of positive normative feedback and an autonomy-supportive communication style for children.

INTRODUCTION

When intrinsically motivated, children are attracted by the content of an activity at hand, thereby finding the activity interesting, enjoyable, and challenging in its own right (Deci & Ryan, 2000). Intrinsic motivation has been found to predict manifold beneficial outcomes, including better learning, higher persistence, and improved well-being, a finding that emerged in both middle childhood (e.g., Dishman, Mciver, Dowda, Saunders, & Pate, 2015) and adolescence (e.g., Beiswenger & Grolnick, 2010). Given the educational advantages associated with intrinsic motivation, abundant, yet mainly correlational, research has addressed its contextual antecedents. For instance, research has documented beneficial effects of positive (relative to negative) feedback (Deci, 1971; Deci, Koestner, & Ryan, 1999; Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008) and an autonomy-supportive or inviting (relative to a controlling or pressuring) communication style (Ryan, 1982) on intrinsic motivation.

However, most of this research has been conducted in older age groups, that is, among adolescents (De Muyne et al., 2017) and university student populations (Hagger, Koch, & Chatzisarantis, 2015). As a result, there is a paucity of research, and of experimental research in particular, on the contextual determinants of intrinsic motivation in middle childhood. This is unfortunate because middle childhood represents a developmental period in which the acquisition of new skills represents a key development task (Erikson, 1968), which can be spurred by children's intrinsic motivation. Moreover, children's intrinsic motivation has been found to undergo significant declines (Gottfried, Marcoulides, Gottfried, & Oliver, 2009; Lepper, Corpus, & Iyengar, 2005). This raises the question what can be done to preserve their intrinsic motivation. A second issue that has received virtually no attention is the extent to which individual differences play a role in these effects. Do children, regardless of their personality profile and the

perceived childrearing style of their parents, benefit similarly from contextual resources of intrinsic motivation? Or do certain individual differences or perceived environments create a heightened sensitivity to contextual influences on intrinsic motivation?

In light of these lacunae, the present experimental study aims to contribute to the extant literature (a) by examining the effects of experimentally induced normative feedback valence and communication style on elementary school children's intrinsic motivation, (b) by addressing the mechanisms accounting for these effects, and (c) by addressing the possible moderating role of individual differences in personality and perceived parenting in these effects. In doing so, we used Self-Determination Theory (SDT; Ryan & Deci, 2000, 2017) as a theoretical framework.

INTRINSIC MOTIVATION AND PSYCHOLOGICAL NEED SATISFACTION

Because intrinsic motivation comes with a high degree of volition and spontaneity, it represents the hallmark of high-quality motivation (Ryan & Deci, 2017). When intrinsically motivated, enjoyment of and interest in the behavior itself provide the basis for carrying out the activity (Deci & Ryan, 2000). Intrinsically motivating activities serve as 'magnets' in individuals' lives. That is, people spontaneously gravitate to these activities because of their manifold benefits (Vansteenkiste et al., 2018). Indeed, intrinsic motivation is a powerful resource for learning and development (Larson & Rusk, 2011; Taylor et al., 2014). A recent meta-analysis clearly documented the positive effects of intrinsic motivation on school achievement in elementary school, high school, and university populations (Cerasoli, Nicklin, & Ford, 2014).

According to Cognitive Evaluation Theory, one of SDT's six mini-theories (Ryan & Deci, 2017), intrinsic motivation is nurtured by the

satisfaction of three basic psychological needs that are considered universally important for individuals' well-being and growth (Deci & Ryan, 2000). First, the need for competence refers to the need to feel effective and to be able to meet challenges. When children feel capable to engage in a requested activity, they typically find more interest in the activity itself (Sheldon & Filak, 2008). While children enjoy activities they feel skilled at, they lose their interest when they feel like a failure. Second, the need for autonomy refers to the need to experience a sense of volition and psychological freedom in carrying out an activity. For children to begin enjoying an activity, they need to experience a sense of choice regarding the initiation and maintenance of the activity. In contrast, interest in an activity typically wanes when children feel pressured to partake and persist in the activity. Autonomy and competence are considered to be the most proximal predictors of intrinsic motivation (Ryan & Deci, 2017; Vansteenkiste, Niemiec, & Soenens, 2010). Relatedness, which represents a third basic need in SDT, has a more distal relation to intrinsic motivation. Children may enjoy doing an activity more with beloved others. However, a sense of warmth and reciprocal care is not always required to develop and maintain interest in an activity as many intrinsically motivating activities are done without the company of others (e.g., reading).

Abundant research has demonstrated that when these needs are satisfied, people are more likely to become intrinsically motivated. That is, people indicate on self-reports that they like the activity more but their intrinsic motivation also manifests behaviorally, for instance, through their continued persistence in the activity (Deci et al., 1999) and their choice to engage in challenging activities (De Muijnck et al., 2017). The conducive role of psychological need satisfaction for individuals' intrinsic motivation has been documented in different developmental periods, including adolescence (e.g., Schneider & Kwan, 2013), emerging adulthood (e.g., Grouzet,

Vallerand, Thill, & Provencher, 2004), and middle childhood (e.g., Rutten, Boen, & Seghers, 2012; Sebire, Jago, Fox, Edwards, & Thompson, 2013).

CONTEXTUAL SUPPORTS OF INTRINSIC MOTIVATION

In analogy with the claim that the fulfilment of the needs for competence and autonomy is implicated in individuals' intrinsic motivation, social contexts that support these psychological needs are argued to foster intrinsic motivation, while contexts that thwart these needs would hinder or even forestall the development of intrinsic motivation. One key strategy to promote intrinsic motivation is through the provision of feedback (Deci, 1972), the motivational effect of which depends on the feedback valence (Vallerand & Reid, 1984) and on the communication style (Ryan, 1982).

Feedback Valence. While positive feedback contains information signaling that one has performed well, negative feedback contains information signaling that one's performance is inadequate (Askew, 2000; Kluger & DeNisi, 1996). Both positive and negative feedback can be provided in relation to different types of standards (Elliot, Murayama, & Pekrun, 2011; Pekrun, Cusack, Murayama, Elliot, & Thomas, 2014). That is, the standards can be normative (i.e., feedback comparing performance to an age-specific norm table), task-oriented (i.e., feedback concerning how the task is executed) or self-referential (i.e., feedback comparing performance to an individual's previous task execution). When the positive feedback is explicitly aimed at confirming and reinforcing desirable behaviors, it has also been labelled promotion-oriented feedback (Carpentier & Mageau, 2013). In contrast, negative feedback that aims to modify behavior and ameliorate performance has also been labelled change-oriented (Carpentier & Mageau, 2013) or corrective feedback (Mouratidis, Lens, & Vansteenkiste, 2010).

Effects of feedback have been addressed in both correlational and experimental studies. While the nature of feedback is typically

undifferentiated in correlational studies (with items tapping into general positive or negative feedback without specifying the standards used to provide feedback), experimental studies have focused on specific forms of feedback, with especially normative feedback being examined. Correlational studies have shown that perceived positive feedback relates positively to intrinsic motivation, whereas perceived negative feedback yields a negative relation (e.g., Koka & Hein, 2005; Mouratidis et al., 2008). In experimental studies, negative, compared to positive feedback, was found to lead to lower self-efficacy (Dahling & Ruppel, 2016), to produce performance deficits on a memory test (Eckert, Schilling, & Stiensmeier-Pelster, 2006), and to elicit greater negative affect (Slagt, Dubas, van Aken, Ellis, & Dekovic, 2017) and tension (Cianci, Klein, & Seijts, 2010). In a meta-analysis summarizing the effects of experimentally induced positive feedback on intrinsic motivation (Deci et al., 1999), positive feedback was found to enhance both self-reported interest and behavioral persistence across age groups. Yet, when breaking down the findings based on age group, positive feedback enhanced intrinsic motivation among college students, while yielding a null-effect among children. Because of the limited number of studies on positive feedback on children's motivation, Deci et al. (1999) called for additional experimental studies in middle childhood.

In the current study, we heeded this call by examining whether normative positive, compared to normative negative, feedback would engender intrinsic motivation among middle school children because it enhances competence need satisfaction (Deci & Ryan, 2000; Guay, Bogiano, & Vallerand, 2001). Although previous studies have contrasted the effects of positive, relative to negative, feedback on the intrinsic motivation of adolescents (e.g., De Muyck et al., 2017) and university students (e.g., Weidinger, Spinath, & Stainmayr, 2016), to the best of our knowledge no such studies have been conducted among elementary school children yet.

The studies with elementary school children included in the meta-analysis by Deci et al. (1999) instead compared the effects of positive feedback relative to a neutral control condition or a reward (either tangible or symbolic) condition in the prediction of intrinsic motivation (e.g., Anderson, Manoogian, & Reznick, 1976; Danner & Lonky, 1981; Dollinger & Thelen, 1978).

As positive feedback signals to a child that s/he is skilled at the activity at hand, it may stimulate interest and challenge seeking via enhanced competence satisfaction. Because negative feedback, in contrast, signals failure, participants' intrinsic motivation would plummet because of engendered feelings of competence frustration. There is some evidence for the hypothesized mediating role of competence in associations between positive feedback and intrinsic motivation, findings that emerged in correlational research in the domains of sport (e.g., Hollembeak & Amorose, 2005), physical education (e.g., Koka & Hagger, 2010), and general education (Levesque, Zuehlke, Stanek, & Ryan, 2004). Similarly, experimental studies conducted with university students or adults indicated that positive feedback positively impacts on individuals' intrinsic motivation via the satisfaction of the need for competence (e.g., Burgers, Eden, van Engelenburg, & Buningh, 2015; Vallerand & Reid, 1984, 1988). To the best of our knowledge, the intervening role of competence in effects of positive feedback on intrinsic motivation has not been examined yet in experimental research with elementary school children.

Communication style. In addition to feedback valence, the communication style used to convey feedback and to introduce the task more broadly also matters (Deci et al., 1999; Hattie & Timperley, 2007). That is, regardless of their valence, tasks and feedback can be administered in a more informational, inviting, and autonomy-supportive way or in a more pressuring, evaluative, and controlling way (Ryan, 1982). Research has

focused on three features of an autonomy-supportive (relative to controlling) communication style. First, experimental research indicated that the use of pressuring language (e.g., “should”) to introduce a task undermines both adolescents’ (e.g., Hooyman, Wulf, & Lewthwaite, 2014; Vansteenkiste, Simons, Soenens, & Lens, 2004) and middle school children’s (e.g., Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005) autonomy, interest, and free-choice persistence compared to introducing the same task in a more inviting and autonomy-supportive way. Second, the communication style can differ in the extent to which it either elicits ego-involvement, thereby hooking participants’ self-worth upon successful task completion (e.g., signaling that the task is diagnostic of participants’ intelligence or a highly valued skill) or instead prompts task-involvement, thereby securing that participants are focused on their task execution and derive a sense of enjoyment from engaging in the activity (e.g., Ryan, Mims, & Koestner, 1983; Wuyts, Vansteenkiste, Mabbe, & Soenens, 2017). Third, to vary communication style, some studies have presented the task as an evaluative test in the controlling condition (e.g., “the task you will perform is a test, which involves...”), while it was portrayed as an interesting challenge (e.g., “the task you will perform is an exercise, which involves ...”) in the autonomy-supportive condition (e.g., De Muyne et al., 2017).

The use of a more autonomy-supportive (versus more controlling) communication style can be applied to both the introduction of the task at hand and on the provision of feedback on performance during the task. Indeed, according to SDT, the benefits associated with positive feedback will be attenuated when it has an evaluative rather than an informational connotation (Deci et al., 1999; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Ryan, 1982). In an experimental laboratory study among university students (Ryan, 1982), controlling (relative to autonomy-supportive) feedback was found to hamper intrinsic motivation even though the

provided feedback was kept constant and was positive (e.g., “Good, you’re doing as you should.”). In another experimental study with undergraduates, Zhou (1998) demonstrated that the most favorable motivational outcomes were obtained in the condition where positive feedback was delivered in an autonomy-supportive way, suggesting that the combination of two facilitating factors is most beneficial. More recently, De Muijnck et al. (2017) demonstrated in an ecologically valid task among adolescent tennis players that both the style and valence of feedback yielded a unique impact on intrinsic motivation and challenge seeking, as operationalized through participants’ behavioral persistence at more challenging tennis exercises. While autonomy-supportive feedback promoted intrinsic motivation via autonomy need satisfaction, the facilitating effect of positive feedback could be explained via increased competence satisfaction. To the best of our knowledge, no previous experimental research addressed the combined effects of positive feedback delivered in an autonomy-supportive way on intrinsic motivation among elementary school children.

THE ROLE OF INDIVIDUAL DIFFERENCES

Not only is there a paucity of experimental work on the effects of feedback and communication style on intrinsic motivation in middle childhood, even less is known about the role of individual differences in these effects. As such, it is unclear whether some children are more sensitive than other children to the benefits of positive feedback and an autonomy-supportive communication style. From an SDT perspective, it is maintained that experiences of autonomy and competence (and perceived contextual support for these needs) yields motivational benefits for all children because psychological need satisfaction is universally important (Deci & Ryan, 2000). However, this universality claim does not imply that individual differences are neglected in SDT (Soenens, Vansteenkiste, & Van Petegem, 2015).

Indeed, as a function of personality differences or exposure to different socialization experiences, children may develop individual differences in their sensitivity to potentially need-supportive contexts.

According to Moller, Deci, and Elliot (2010), individuals' sensitivity to need-supportive events depends on their more general levels of experienced need satisfaction. When children grow up in a need-supportive environment or routinely experience greater need satisfaction due to their personality, they may more easily perceive contextual support of the needs as actually meeting their needs, thus reaping more easily the motivational benefits of contextual need support (e.g., in terms of intrinsic motivation). While preliminary evidence for these assumptions is available from research with high school students (Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011) and adults (Moller et al., 2010 but see Hagger et al., 2015 for contrasting evidence), no research to date examined the possibility of such a 'sensitization effect' in middle childhood. Herein, we consider the role of both individual differences in personality and in perceived maternal parenting.

Differences in Personality. The Five-Factor Model (FFM) currently represents the most comprehensive and widely used framework to describe children's and adults' personality (Caspi & Shiner, 2006). It describes personality in terms of the dimensions Extraversion, Emotional Stability, Conscientiousness, Agreeableness, and Openness to Experience. Past research on the intersection between the FFM and SDT has found that individuals scoring higher on more adaptive traits, in particular Agreeableness, Openness to Experience, and Extraversion, report more need satisfaction and less need frustration (Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016; Nishimura & Suzuki, 2016). Similarly, individuals scoring higher on Conscientiousness and Openness to Experience reported higher levels of intrinsic motivation (Komarraju, Karau, & Schmeck 2009).

Although individuals with particular personality traits may more easily experience need satisfaction and intrinsic motivation, the precise mechanism underlying this association is unclear. That is, such individuals may self-select them into different environments or activities (i.e., through a proactive mechanism), interpret the same environment differently (i.e., through a reactive mechanism), or evoke different responses from others (i.e., through an evocative mechanism; Caspi & Roberts, 2001). Herein, we standardized (through experimental induction) the specific event to which children were exposed, which allowed us to zoom in on the reactive mechanism. That is, we could examine whether children scoring higher on adaptive personality traits would interpret the same environment more favorably, thereby displaying more sensitivity to need-supportive cues in the environment. Specifically, these children would report greater psychological need satisfaction and display more intrinsic motivation following the exposure to positive and autonomy-supportive feedback.

Differences in Perceived Maternal Parenting. In addition to personality-based differences in children's need-based experiences, children can build a history of need satisfaction through interactions with need-supportive parents. Such a history of parental need support is reflected in children's perceptions of parents as being generally autonomy-supportive. Autonomy-supportive socializing agents take the child's perspective, which allows them to better follow the child's pace of development, to acknowledge children's feelings, to provide age-appropriate choices, and to give a child-focused rationale when choices are constrained (Grolnick, Ryan, & Deci, 1991; Reeve, 2009; Soenens et al., 2007, Soenens, Deci, & Vansteenkiste, 2017). An autonomy-supportive style can be contrasted with a more controlling style, which involves pressuring children to act, think, and feel in certain ways (Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010). While autonomy-supportive environments support satisfaction of the

basic psychological needs and the need for autonomy in particular, controlling environments thwart children's needs (Grolnick, 2003; Soenens & Vansteenkiste, 2010). Research has shown consistently that children and adolescents who perceive parents as autonomy-supportive report more satisfaction of the basic psychological needs and – through satisfaction of these needs – display high quality motivation and well-being (Costa, Cuzzocrea, Gugliandolo, & Larcan, 2016; Grolnick et al., 1991), while an opposite pattern emerged in the case of controlling parenting (Ahmad, Vansteenkiste, & Soenens, 2013; Mabbe et al., 2016).

Again consistent with the principle of sensitization, children perceiving their parents as autonomy-supportive may be more sensitive to new need-supportive situations (Moller et al., 2010; Van Petegem et al., 2017), resulting in a more pronounced effect of positive and autonomy-supportive feedback on psychological need satisfaction and intrinsic motivation. It is particularly intriguing to examine whether this potential process of sensitization is operative across contexts: Will children experiencing a need-supportive (i.e., autonomy-supportive) style in one context (at home) be more sensitive to the potential benefits of need support in a different context (i.e., positive and autonomy-supportive feedback provided in a school context)? If so, the findings would point to a cross-contextual transfer of need-based experiences (cfr. Hagger et al., 2009).

THE PRESENT STUDY

The broad aim of this study was to examine the effects of normative feedback valence and communication style on elementary school children's intrinsic motivation, to detect the processes (i.e., need satisfaction) underlying these effects, and to examine the generalizability of these effects across differences in personality and perceived autonomy-supportive and

controlling parenting. To do so, children filled out questionnaires tapping into personality and perceived parenting prior to being placed in one of four experimental conditions in a 2x2-design. The four conditions were created by crossing normative feedback valence (i.e., positive versus negative) with communication style (i.e., autonomy-supportive versus controlling). We chose to manipulate normative (instead of task-related or self-referential) feedback as elementary school children are often exposed to normative grading practices at school and are known to engage in social comparison processes to detect their position relative to others (Pomerantz, Ruble, Frey, & Greulich, 1995).

The general conceptual model guiding this study is depicted in Figure 1. We hypothesized, first, that both normative feedback valence and communication style will have an independent impact on children's intrinsic motivation (Hypothesis 1), such that positive (relative to negative) and autonomy-supportive (relative to controlling) normative feedback would predict elevated intrinsic motivation, as indexed by a self-report measure and by continued behavioral persistence at challenging activities. Second, with respect to mechanisms explaining these effects, we expected that an autonomy-supportive, relative to a controlling, communication style would be conducive to experiences of high autonomy (Hypothesis 2a) and that positive, relative to negative, feedback would prompt greater feelings of competence (Hypothesis 2b). In addition, feedback valence was expected to predict feelings of autonomy satisfaction (relative to pressure) as well because the feedback was provided both halfway the task and at the end of task completion. Participants who find out that they are doing well relative to their peers may feel more volitional and less pressured to engage in the puzzle solving activity (see Cianci et al., 2010). Third, we examined possible interactions between experimentally induced feedback valence and communication style and individual differences in child personality and

perceived autonomy-supportive and controlling maternal parenting in the prediction of children’s psychological need-based experiences and intrinsic motivation. We aimed to test these interaction effects in the prediction of all intervening and outcome variables so as to obtain a comprehensive picture of the moderating role of children’s personality and perceived parenting. The variables depicted in Figure 1 are situated at different “distances” from the manipulated variables, with the intervening variables being more proximally related to the manipulations (i.e., autonomy, competence) and with the dependent variables yielding a more distal relation to the manipulations (i.e., intrinsic motivation). Given that few studies addressed this possibility of moderation, we were interested to examine whether the moderation would occur primarily for the more proximal outcomes or instead would be found primarily for the “downstream” outcomes.

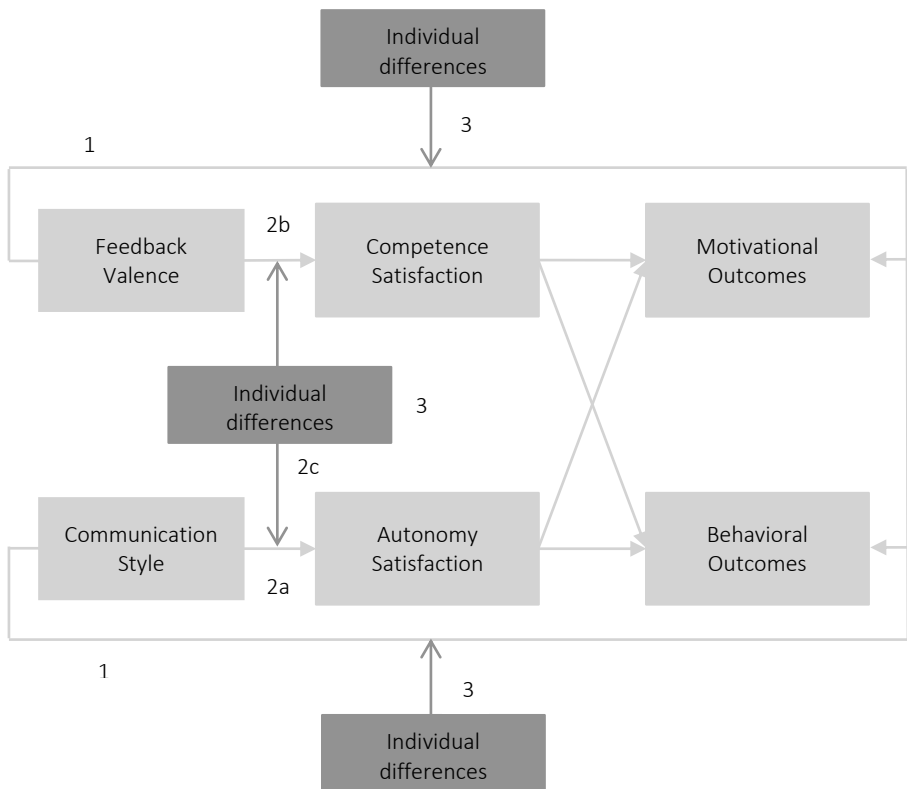


Figure 1. Theoretical model. Numbers are referring to hypotheses.

METHOD

PARTICIPANTS

The Ethical Committee at Ghent University approved the protocol of this experiment. The experimental study took place in four elementary schools in Flanders, the Dutch speaking part of Belgium. In total, 158 children and their parents received an information letter about the study and an informed consent form which was signed when they agreed upon participation. We received signed informed consents from 112 families (i.e., 71% of the families that were contacted). From these families, two children were excluded, one because he was sick on the day of the experiment, and one because he discontinued participation during the experiment. This resulted in a final sample of 110 children (M age = 10.71 years; SD = 0.85; range = 9-13 years; 48% boys).

PROCEDURE

The experiment took place in the participants' school within the school hours. At the beginning of the school day, the three (female) experimenters introduced themselves in class. Children were told that the experimenters were interested in how children of their age solved 3D-puzzle tasks. Children who got permission from their parents to participate and who filled out the informed consent themselves were asked to fill out a questionnaire in class. The children who did not get permission from their parents were instructed by their teacher to work independently on a task. After all children had finished filling out the questionnaire, one child at a time went along with one experimenter to another room, where the experimenter and child sat at a table in front of each other. The experimenter informed the child that s/he would be making 3D-puzzles while being filmed. The children were reassured that the tapes were confidential and that only the researchers would view these tapes. After

provision of this information, the experimenter explained the different parts of the study, saying that she would first give instructions about the puzzle task and that children would then be given time to work on the puzzles and fill out a short questionnaire afterwards.

The task itself involved solving a series of SOMA puzzles, a 3D-puzzle task in which several different figures can be constructed with seven colored blocks. The experimenter presented two booklets which each contained eight different figures (e.g., an airplane, a dog, ...). Children were told that they had six minutes to work on the puzzles in the first booklet and another six minutes to work on the puzzles in the second booklet. After this information was provided, the camera was turned on and children got the opportunity to practice two puzzles (i.e., a train and a skyscraper). Children got all the time they needed to solve both puzzles.

Next, children were provided with more specific instructions for how to solve the first series of puzzles. Children were instructed to make the puzzles in the order as they appeared in the booklet and were asked to indicate on a sheet whether they had made the puzzle correctly. If a puzzle was too hard to make, they could move to the next puzzle and they needed to put a cross next to 'failed' on their sheet. They were informed that an alarm would sound after six minutes, indicating that their puzzle time was over. Children could see the timer, so that they could estimate how much time they had left to solve puzzles.

Experimental Manipulation. Depending on children's random condition assignment (27 or 28 children per condition), they received instructions in either an autonomy-supportive or controlling fashion (see Appendix A). While the autonomy-supportive instructions included inviting language and emphasized task enjoyment and challenge, the more controlling instructions included pressuring language and emphasized the evaluative nature of the situation, thereby prompting ego-involvement.

Specifically, the autonomy-supportive instructions differ in three different aspects from the controlling instructions. The first aspect is the type of language being used either inviting/informational (e.g., *“Let’s take a look at how you have solved the puzzles.”*) or pressuring/evaluative (e.g., *“You have to perform at least equally well as before.”*). The second aspect is the way how the task was presented either as a challenge (e.g., *“You will get an exercise, where you can try to make the figures in this booklet”*) or a test (e.g., *“You will get a test, where you will have to make the figures in this booklet.”*). The third aspect is the type of focus and involvement that was prompted either ego-involvement (e.g., *“If you want to be proud again, you have to perform at least equally well as before.”*) or task-involvement (e.g., *“Try to focus on how such a puzzle is built.”*).

After six minutes, the researcher entered the room and provided, congruent with their condition-assignment but independent of children’s actual performance, either positive or negative normative feedback in an autonomy-supportive or controlling way (see Appendix B). Feedback valence was manipulated by telling children that they performed better or worse in comparison with their age-mates.

After feedback provision, the children were again instructed in either an autonomy-supportive or controlling way to work independently (i.e., in absence of the instructor) on the second puzzle task, which also lasted six minutes. After six minutes, the researcher entered the room, pretended to switch off the camera (while in reality the camera was still running) and provided feedback for a second time, again consistent with their condition assignment (see Appendix B).

Free-Choice Phase. To tap into behavioral perseverance, a free choice period was implemented (Deci et al., 1999). This was done by the experimenter informing the child that the final stage of the experiment involved filling out a questionnaire. The experimenter then pretended that

she had to pick up those questionnaires in the school's secretariat, thereby leaving the child alone for five minutes in the presence of three new booklets with puzzles and three comic books. The children were told that two of the three booklets were of similar difficulty compared to the puzzles they solved before, while one booklet contained more challenging puzzles. The latter puzzles were more difficult to solve as they were printed in greyscale instead of color. Before leaving the room, the experimenter told the children they could freely choose to either work on the puzzles or read the comic books. The time spent on puzzles and comic books was unobtrusively registered with the camera. After five minutes, the experimenter re-entered the room and asked the children to fill out a questionnaire tapping into their experiences during the puzzle task.

MEASURES

All measures were administered in Dutch, the participants' native language. Reliability information of the measures can be found in Table 1.

PRE-EXPERIMENTAL MEASURES

Perceived parenting. Children filled out the Autonomy Support Scale of the Perceptions of Parents Scale (POPS; Grolnick et al., 1991), which includes 7 items (e.g., "My mother allows me to decide things for myself"). Children were also administered the well-validated and frequently used Psychological Control Scale - Youth Self-Report (PCS-YSR; Barber, 1996), which includes 8 items (e.g., "My mother is always trying to change how I feel or think about things"). All items tapping into perceived parenting were scored on a 5-point Likert scale, ranging from 1 (*Completely not true*) to 5 (*Completely true*).

Personality. Children completed the short version of the HiPIC (based on Mervielde & De Fruyt, 1999 and Mervielde, De Fruyt, & De Clercq, 2009,

internal document), scoring the Big Five personality traits of the child, namely Conscientiousness (e.g., “I work with sustained attention.”; 12 items), Extraversion (e.g., “I talk throughout the day.”; 12 items), Agreeableness (e.g., “I take care of other children.”; 15 items), Emotional Stability (e.g., “I am afraid to fail.” reverse scored; 6 items) and Openness to Experience (e.g., “I have a rich imagination.”; 9 items). The items were scored on a 5-point Likert scale indicating how well the items describe the child, ranging from 1 (*Not*) to 5 (*Very good*).

POST-EXPERIMENTAL MEASURES

Manipulation check. Several items were included to serve as manipulation check. There were 2 items measuring perceived controllingness (e.g., “The experimenter pressured me to perform well on the task.”), 3 items tapping into perceived autonomy support (e.g., “The experimenter told me I had found my own way to solve the puzzles.”), 2 items tapping into perceived positive feedback (e.g., “The experimenter was positive about my performance.”) and 2 items tapping into negative feedback (e.g., “The experimenter told me I’ am not that smart with this kind of task.”).

Needs experiences. To tap into children’s experience of competence, we made use of the perceived competence (e.g., “I think I am pretty good at this puzzle task.”; 6 items) subscale of the Intrinsic Motivation Inventory (IMI; Ryan, 1982). To measure autonomy satisfaction, the autonomy satisfaction scale of the Basic Psychological Need Satisfaction and Need Frustration Scale (BPNSNF; Chen et al., 2015) was used, which contains 4 items (e.g., “During the puzzle task, I had the feeling that I could choose what I did.”). In addition, experiences of pressure and tension (e.g., “I was anxious while working on this puzzle task.”; 5 items) while working on the puzzle task were assessed with the ‘felt pressure’ subscale of the IMI (Ryan,

1982). As can be expected theoretically (Ryan & Deci, 2017), autonomy satisfaction and pressure were negatively correlated, $r(110) = -.29, p = .002$. To restrict the number of explanatory variables to two, a composite score was created by averaging the reverse scored pressure items and the autonomy satisfaction items.

Intrinsic motivation. Intrinsic motivation was measured using both a self-report measure and a behavioral measure. Children indicated how interesting and enjoyable they found the puzzles using the Intrinsic Motivation Inventory (Ryan, 1982; e.g., “Making the puzzles was fun to do.”; 7 items). In addition, time spent on the most challenging puzzles during the free-choice period was used as a behavioral indicator of intrinsic motivation.

Table 1
Descriptive Statistics and Correlations Between the Study Variables

	Mean (SD)	α	1	2	3	4	5	6	7	8	9	10
Pre-experimental measures												
1. Perceived maternal autonomy support	3.80 (0.58)	.62										
2. Perceived maternal control	2.04 (0.57)	.67	-.44 ^{****}									
3. Extraversion	3.60 (0.52)	.65	.26 ^{**}	-.15								
4. Agreeableness	3.57 (0.50)	.75	.31 ^{**}	-.41 ^{****}	.28 ^{**}							
5. Conscientiousness	3.22 (0.52)	.63	.28 ^{**}	-.31 ^{**}	.28 ^{**}	.52 ^{****}						
6. Emotional Stability	3.34 (0.74)	.68	.20 [*]	-.29 ^{**}	.41 ^{****}	.35 ^{****}	.30 ^{**}					
7. Openness to experience	3.32 (0.64)	.74	.56 ^{****}	-.23 [*]	.35 ^{****}	.22 [*]	.35 ^{****}	.15				
Post-experimental measures												
8. Autonomy satisfaction	3.40 (0.73)	.74	.27 ^{**}	-.20 [*]	.19 [†]	.27 ^{**}	.09	.24 [*]	.18 [†]			
9. Competence satisfaction	3.39 (1.04)	.90	.15	-.08	.08	.07	.03	.00	.22 [*]	.61 ^{****}		
10. Self-reported intrinsic motivation	4.05 (0.82)	.87	.21 [*]	-.14	.25 ^{**}	.30 ^{**}	.12	.10	.19 [†]	.64 ^{****}	.75 ^{****}	
11. Behavioral challenge seeking	64.54 (100.41)	-	.01	-.12	.00	.02	-.14	-.10	.12	.21 [*]	.31 ^{**}	.28 ^{**}

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

RESULTS

PRELIMINARY ANALYSES

Descriptive statistics and correlations among the study variables are shown in Table 1.

Background Variables. To determine whether children's scores on the study variables varied by several background variables, a MANCOVA was conducted with gender, school and experimenter as fixed factors, with age as a covariate, and with all study variables as dependent variables. There were no overall multivariate effects for age (*Wilks's* $\lambda = 0.87$, $F(12, 67) = 0.84$, $p = .61$), gender (*Wilks's* $\lambda = 0.83$, $F(12, 67) = 1.12$, $p = .36$), school (*Wilks's* $\lambda = 0.51$, $F(36, 199) = 1.43$, $p = .06$), or experimenter (*Wilks's* $\lambda = 0.78$, $F(24, 134) = 0.73$, $p = .81$).²

Manipulation Check. In order to examine whether the feedback valence and communication style manipulations were effective, a MANOVA was conducted with the manipulation check variables as dependent variables. The feedback valence manipulation yielded a significant effect on children's perceived positive ($F(1, 102) = 761.97$, $p = .00$, $\eta^2 = .84$) and negative ($F(1, 102) = 125.36$, $p = .00$, $\eta^2 = .46$) feedback, with children in the positive feedback condition reporting having received more positive feedback ($M = 4.66$, $SD = 0.55$) and less negative feedback ($M = 1.27$, $SD = 0.60$), compared to children in the negative feedback condition ($M = 1.96$, $SD = 0.63$; $M = 3.00$, $SD = 1.28$, respectively). The communication style manipulation yielded a significant effect on children's perceived autonomy support ($F(1, 102) = 11.15$, $p = .001$, $\eta^2 = .07$) and control ($F(1, 102) = 10.71$, $p = .001$, $\eta^2 = .09$), with children in the autonomy-supportive condition

²Since the background variable 'school' had a marginally significant effect on the study variables ($p = .06$), the primary analyses were reran including school as a covariate. All of the initially reported findings remained significant after controlling for school.

reporting less control ($M = 1.84, SD = 0.86$) and more autonomy support ($M = 3.22, SD = 0.85$) compared to children in the controlling condition ($M = 2.44, SD = 1.11; M = 2.74, SD = 0.90$, respectively).

Randomization. A MANOVA was conducted with the two manipulations as fixed factors and with child age, experienced parenting and personality as dependent variables. Neither the feedback valence manipulation ($Wilks' \lambda = 0.97, F(8, 92) = 0.36, p = .94$), nor the communication style manipulation ($Wilks' \lambda = .86, F(8, 92) = 1.94, p = .06$) yielded an effect on these variables. Chi-square tests indicated that child gender ($Pearson \chi^2(3) = 2.68, p = .44$), school ($Pearson \chi^2(9) = 1.58, p = .97$) and experimenter ($Pearson \chi^2(6) = 0.56, p = .98$) were equally distributed across the four conditions. Randomization across conditions was successful.

PRIMARY ANALYSIS

Hypothesis 1: Independent Impact of Feedback Valence and Communication Style on Children's Intrinsic Motivation and Needs Experiences. The effects of the manipulations were investigated using a MANOVA. Feedback valence and communication style were entered as independent variables. The self-reported post-experimental measures and the behavioral challenge seeking measure obtained during the free-choice period were entered as dependent variables. Results indicated a multivariate effect for feedback valence ($Wilks' \lambda = 0.33, F(4, 97) = 48.83, p = .00, \eta^2 = .67$) and communication style ($Wilks' \lambda = 0.88, F(4, 97) = 3.44, p = .01, \eta^2 = .12$), whereas the multivariate effect for the interaction was non-significant ($Wilks' \lambda = 0.94, F(4, 97) = 1.61, p = .18, \eta^2 = .06$).

Table 2 shows the means and standard deviations for the four experimental conditions, together with the effects of the feedback valence and communication style manipulation. The effect size on the outcomes was investigated by inspecting the partial eta-squared and Cohen's d values. A

partial eta-square of 0.01 and a Cohen's *d* between 0.2 and 0.5 represent a small effect, a partial eta-square of 0.06 and a Cohen's *d* between 0.5 and 0.8 represent a medium effect, and a partial eta-square of 0.14 and a Cohen's *d* greater than 0.8 represent a large effect (Cohen, 1992). Both manipulations yielded a main effect on self-reported intrinsic motivation, autonomy satisfaction and competence satisfaction. As hypothesized, children reported more intrinsic motivation ($\eta^2 = .33$; $\eta^2 = .07$ for effects of feedback valence and communication style, respectively), autonomy satisfaction ($\eta^2 = .22$; $\eta^2 = .06$, respectively) and competence satisfaction ($\eta^2 = .65$; $\eta^2 = .08$, respectively) when receiving positive, relative to negative, feedback and when exposed to an autonomy-supportive, relative to a controlling, communication style. The valence manipulation (but not the communication style manipulation) also had a main effect on behavioral challenge seeking ($\eta^2 = .06$), with children in the positive, relative to those in the negative, feedback condition spending more time making puzzles in the most challenging booklet.

Table 2
Means and Standard Deviations for the Four Experimental conditions Together with the Effects of the Feedback Valence, Communication Style and their Interaction on Assessed Outcomes.

	Autonomy-supportive style		Controlling style		Valence manipulation		Style manipulation		Valence by Style			
	Positive	Negative	Positive	Negative	F	η^2_p	d	F	η^2_p	F	η^2_p	
Self-reports												
Autonomy satisfaction	3.86 (0.69)	3.27 (0.65)	3.61 (0.64)	2.86 (0.56)	28.02***	.22	1.05	6.89*	.06	0.52	0.39	.00
Competence satisfaction	4.24 (0.63)	2.86 (0.73)	4.14 (0.49)	2.27 (0.59)	195.78***	.65	1.58	9.67**	.08	0.55	4.50*	.04
Self-reported intrinsic motivation	4.54 (0.44)	3.88 (0.88)	4.45 (0.49)	3.29 (0.74)	52.56***	.33	1.37	7.45**	.07	0.53	4.00*	.04
Behavioral indicators												
Behavioral challenge seeking	89.36 (116.64)	23.59 (65.62)	88.14 (111.18)	55.26 (88.88)	7.09**	.06	0.51	0.54	.01	0.15	0.74	.01

Note. d= Cohen's d
 * $p < .10$. ** $p < .05$. *** $p < .001$.

For competence satisfaction ($\eta^2 = .04$) and self-reported intrinsic motivation ($\eta^2 = .04$), an interaction effect emerged between the two manipulations (see Figures 2a and 2b). The undermining impact of negative feedback on perceived competence and self-reported intrinsic motivation was less pronounced for those participants being addressed in an autonomy-supportive way. Although these interactions are informative, they should be interpreted with caution because the interaction between the two manipulations was not significant at the multivariate level.

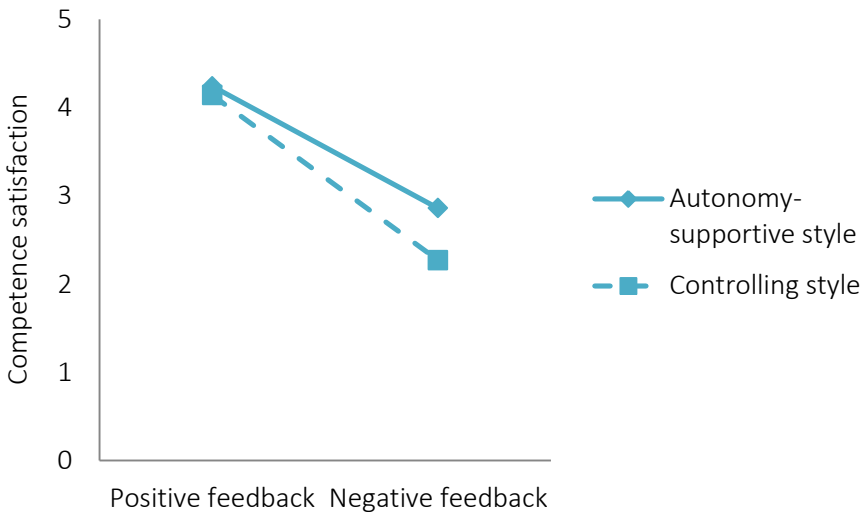


Figure 2a. Significant interaction effect of valence by style of feedback in the prediction of self-reported competence.

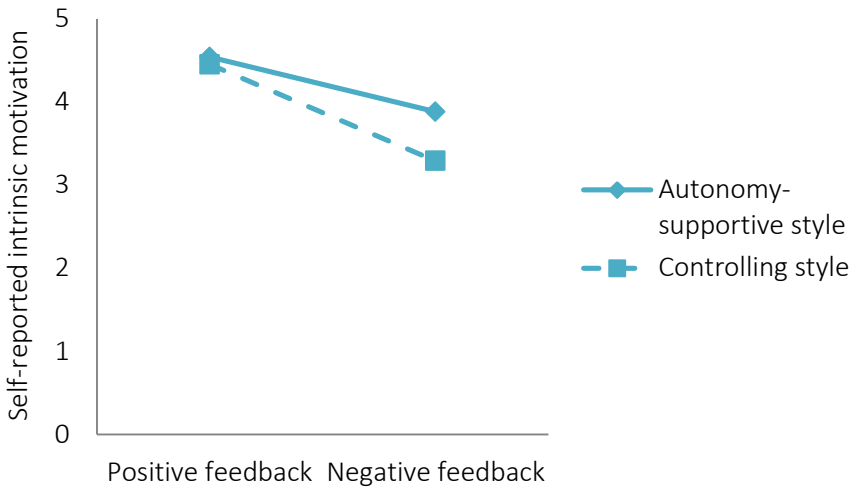


Figure 2b. Significant interaction effect of valence by style of feedback in the prediction of intrinsic motivation.

Hypothesis 2: The Intervening Role of Psychological Need Experiences. To test the intervening role of psychological need satisfaction in the effects of the manipulations on self-reported intrinsic motivation and behavioral challenge seeking, an integrated path model was tested. Path analysis with manifest variables using MPlus 7 software with robust maximum likelihood estimation (Muthén & Muthén, 2010) was used to estimate this model. We inspected the comparative fit index (CFI), the root-mean-square residual (RMSEA), and the standardized root-mean-square residual (SRMR) as indicators of model fit. Values lower or close to .06 for RMSEA and .09 for SRMR and values of .95 or higher for CFI reflect adequate fit (Hu & Bentler, 1999).

In this model (see Figure 3), self-reported intrinsic motivation and behavioral challenge seeking are modeled as outcome variables. The model showed adequate fit ($\chi^2(4) = 2.84, p = .59, RMSEA = .00, CFI = 1.00, SRMR = .03$). Both positive (compared to negative) feedback and an autonomy-supportive (compared to a controlling) communication style predicted more

competence satisfaction ($\beta = .79, p = .000, CI = [.73, .85]$; $\beta = .17, p = .003, CI = [.06, .28]$) and autonomy satisfaction ($\beta = .44, p = .000, CI = [.30, .59]$; $\beta = .23, p = .005, CI = [.07, .39]$). In turn, the more participants' needs for autonomy and competence were satisfied, the more intrinsic motivation they reported ($\beta = .29, p = .000, CI = [.15, .42]$; $\beta = .58, p = .005, CI = [.45, .70]$). In addition, competence satisfaction ($\beta = .31, p = .000, CI = [.14, .47]$), but not autonomy satisfaction ($\beta = .01, p = .89, CI = [-.17, .20]$), was associated with behavioral challenge seeking.

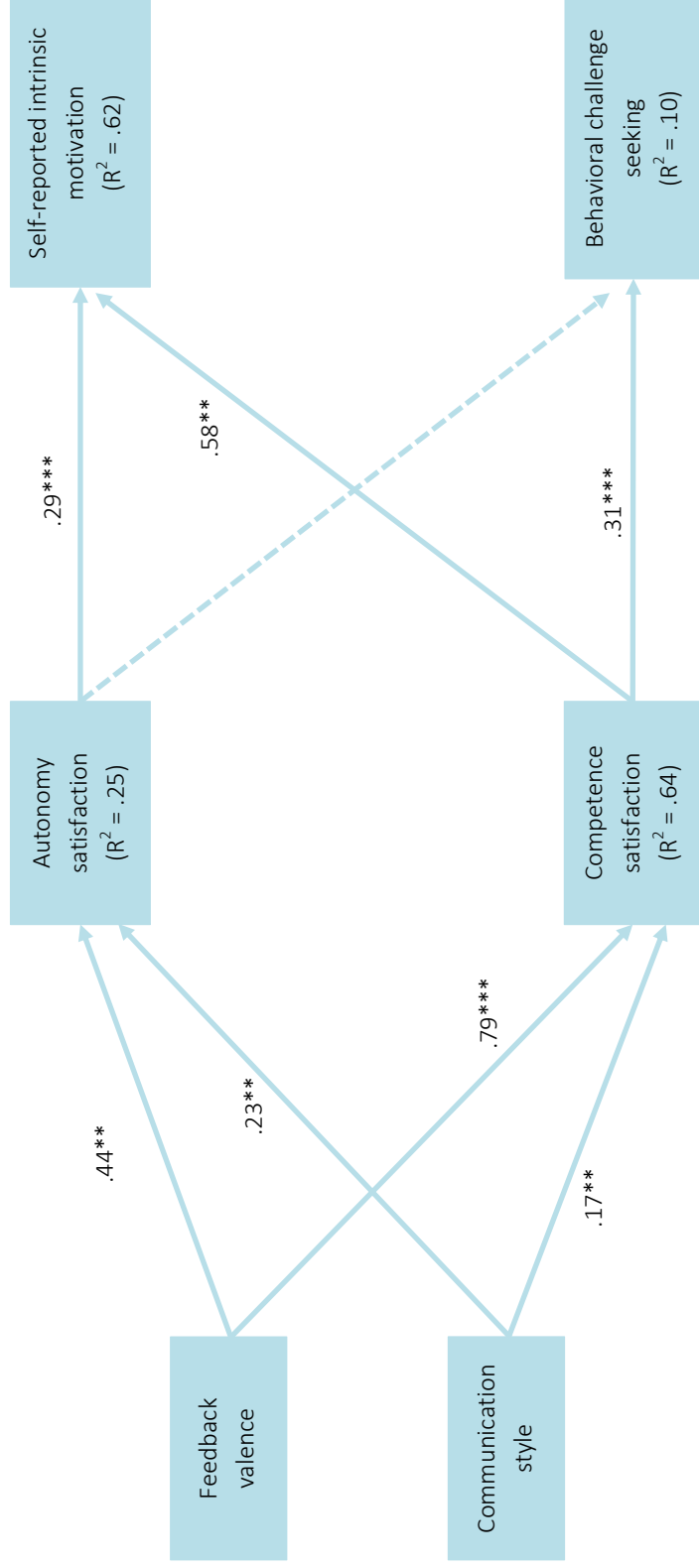


Figure 3. Obtained Structural Model. Coefficients are standardized. Dotted lines are non-significant pathways.

A test for indirect effects in Mplus indicated significant indirect associations from feedback valence to self-reported intrinsic motivation through competence satisfaction ($\beta = .45, p = .000, CI = [.34, .55]$) and autonomy satisfaction ($\beta = .13, p = .000, CI = [.06, .18]$) and from feedback valence to behavioral challenge seeking through competence satisfaction ($\beta = .24, p = .000, CI = [.11, .37]$). As for feedback style, there was a significant indirect association from feedback style to self-reported intrinsic motivation through competence satisfaction ($\beta = .10, p = .004, CI = [.03, .16]$) and autonomy satisfaction ($\beta = .07, p = .03, CI = [.01, .13]$), while the indirect effect from feedback style to behavioral challenge seeking through competence satisfaction was equally significant ($\beta = .05, p = .02, CI = [.01, .10]$).

Hypothesis 3: The Moderating Role of Personality and Perceived Parenting.³ To examine the potential moderating role of the personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, Emotional Stability, Openness to Experience) and perceived parenting (i.e., perceived autonomy-supportive or controlling maternal parenting), each of these variables were included separately in the integrated model. In each of these separate models, the main effects of the experimental manipulations, one single potential moderator and the interaction terms between the manipulated variables and the potential moderator were introduced as predictors of all intervening and dependent variables. The predictor and

³ An a priori power analysis using G*Power software (Faul, Erdfelder, Buchner, & Lang, 2009) based on effect sizes obtained in the De Mynck et al. (2017) study showed that the sample was sufficiently large to detect main effects. For instance, one of the central effects in the De Mynck et al. (2017) study (i.e., the effect of feedback valence on competence) had an effect size of .43. The a priori power analysis showed that this effect would require a sample size of 113, which is very close to our sample size of 110. Given the lack of any previous studies that studied similar interactions as the ones we examined herein, it was impossible to conduct a power analysis as no estimation could be made of the expected effect size.

moderating variables were standardized before calculating a product term (Aiken and West, 1991), as to make the interpretation of the coefficients simpler (Cohen & Cohen, 1983; Kleinbaum, Kupper, & Muller, 1988).

Given the presence of seven moderators, four outcomes, and two condition variables in total 56 interactions were tested. Seven interactions were significant, with three of them involving parenting and four of them involving personality traits. One interaction emerged in the prediction of competence satisfaction, four in the prediction of self-reported intrinsic motivation and two in the prediction of behavioral persistence in the most challenging booklet. Finally, five interactions emerged in relation to communication style and two in relation to feedback valence.

With respect to the main effects of the personality traits children scoring high on Agreeableness and Extraversion reported more self-reported intrinsic motivation ($\beta = .22, p = .002, CI = [.08, .35]$; $\beta = .11, p = .04, CI = [.01, .21]$) and autonomy satisfaction ($\beta = .24, p = .002, CI = [.09, .39]$; $\beta = .22, p = .04, CI = [.01, .42]$). Children scoring high on Extraversion and Openness to Experience reported more competence satisfaction ($\beta = .13, p = .02, CI = [.02, .23]$; $\beta = .16, p = .002, CI = [.06, .27]$). Children scoring high on Emotional Stability reported more autonomy satisfaction ($\beta = .24, p = .003, CI = [.08, .39]$).

The interaction effects with personality can be found in Figure 4 through 6. The graphical presentation of interactions was limited to those for which at least one simple slope, thereby creating groups 1 standard deviation above and below the moderator, was found significant. A significant interaction between Agreeableness and communication style ($\beta = -0.22, p = .02, CI = [-.40, -.04], R^2\text{change} = .05$) in the prediction of challenge seeking was found (Figure 4). A simple slopes test indicated that, children scoring high on Agreeableness persisted less in the most challenging booklet after receiving feedback in an autonomy-supportive, relative to a controlling,

way ($b = -31.59$, $t = -2.34$, $p = .02$) while there was no difference in behavioral challenge seeking in both conditions among children low on Agreeableness ($b = 17.00$, $t = 1.11$, $p = .27$). Second, although there was a significant interaction between Extraversion and feedback valence ($\beta = -.20$, $p = .00$, $CI = [-.30, -.10]$) in the prediction of self-reported intrinsic motivation, the regressions at both values of the moderator turned out to be non-significant ($b = .31$, $t = 1.57$, $p = .12$; $b = -.19$, $t = -1.11$, $p = .27$). Third, there was a significant interaction between Conscientiousness and communication style ($\beta = .12$, $p = .05$, $CI = [.01, .25]$, $R^2\text{change} = .01$) in the prediction of competence satisfaction (Figure 5). Children scoring high on Conscientiousness benefit more from an autonomy-supportive communication style in terms of experienced competence ($b = .29$, $t = 4.50$, $p = .00$) compared to those scoring low on Conscientiousness ($b = .04$, $t = 0.59$, $p = .56$). Fourth, there was a significant interaction between Conscientiousness and communication style ($\beta = -.12$, $p = .03$, $CI = [-.23, -.01]$, $R^2\text{change} = .01$) in the prediction of self-reported intrinsic motivation (Figure 6). Children scoring low on Conscientiousness reported a marginally significant decrease in self-reported intrinsic motivation in the controlling condition compared to the autonomy-supportive condition ($b = .26$; $t = 1.73$; $p = .08$), while such a difference was not found among children high on Conscientiousness ($b = -.04$; $t = -.33$; $p = .74$).

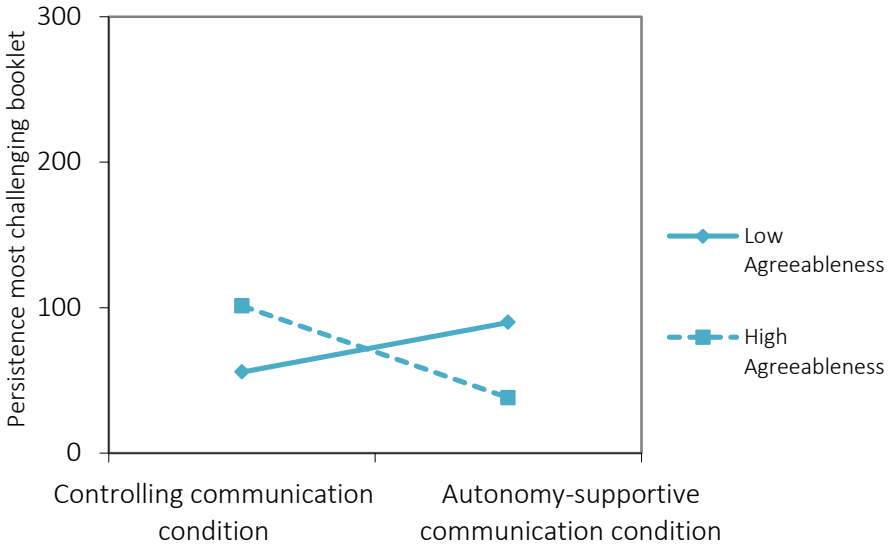


Figure 4. Significant interaction effect between style of feedback and Agreeableness in the prediction of persistence in the most challenging booklet.

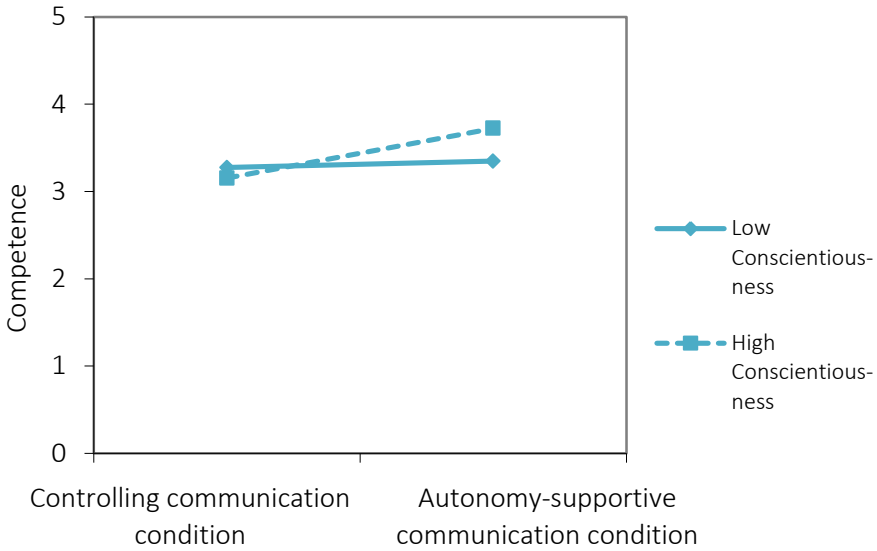


Figure 5. Significant interaction between style of feedback and Conscientiousness in the prediction of competence.

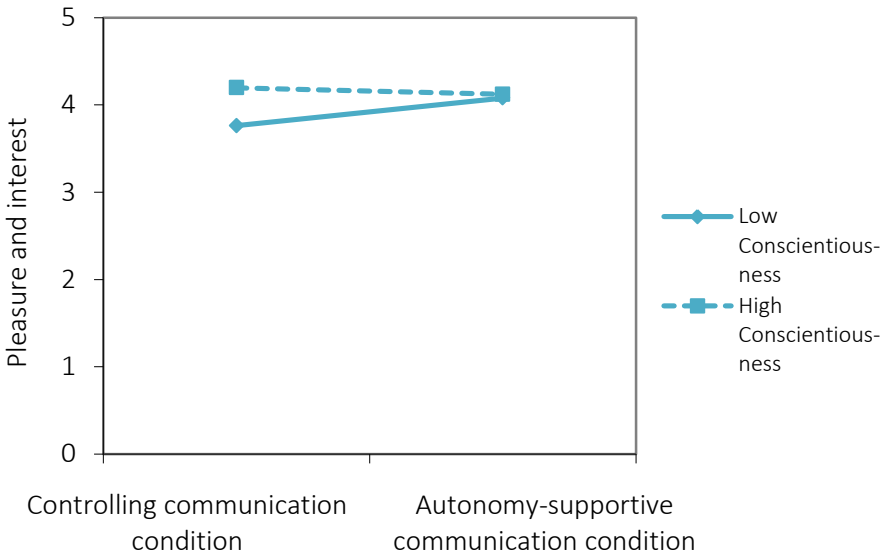


Figure 6. Significant interaction between style of feedback and Conscientiousness in the prediction of self-reported intrinsic motivation.

With respect to the main effects of perceived parenting, children who perceived their mother as autonomy-supportive reported more autonomy satisfaction ($\beta = .24, p = .001, CI = [.09, .39]$) and more competence satisfaction ($\beta = .12, p = .02, CI = [.02, .22]$). Perceived maternal psychological control did not yield any significant main effects. With perceived maternal autonomy support, there were interactions between perceived maternal autonomy support and feedback valence ($\beta = -.12, p = .02, CI = [-.22, -.02]$) and communication style ($\beta = -.10, p = .04, CI = [-.19, -.01]$) in the prediction of self-reported intrinsic motivation. A closer inspection of the slopes at both values of the moderator indicated, however, that none of them was significant, neither in the case of manipulated feedback style ($b = .09, t = .88, p = .38; b = -.07, t = -.57, p = .57$), nor in the case of feedback valence ($b = .02, t = .10, p = .92; b = -.18, t = -.80, p = .42$).

With perceived maternal control, there was an interaction (Figure 7) between perceived maternal control and communication style ($\beta = .24, p = .001, CI = [.10, .39], R^2\text{change} = .04$) in the prediction of persistence in the most challenging booklet. Children perceiving low maternal control persist less in the most challenging booklet after receiving feedback in an autonomy-supportive, relative to a controlling, way ($b = -31.51, t = -2.28, p = .02$), while for children high on experienced maternal control no difference between both conditions was found ($b = 13.11, t = 0.92, p = .36$).⁴

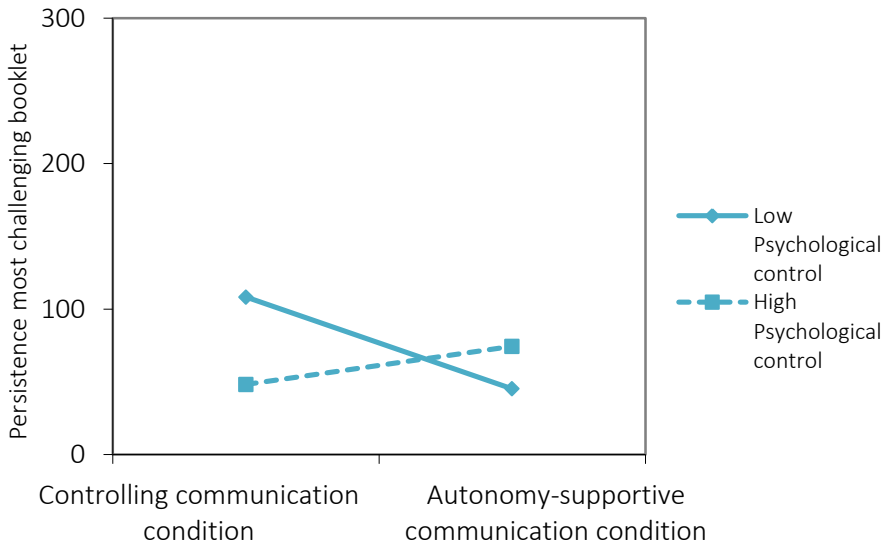


Figure 7. Significant interaction between style of feedback and perceived maternal control in the prediction of persistence in the most challenging booklet.

⁴ Applying a Bonferroni correction results in an adjusted alpha-level of .00089 (.05/56). When taking this adjusted alpha-level into account, none of the significant interactions remained significant.

DISCUSSION

Although previous research has addressed the motivational role of positive feedback (Deci, 1971; Deci et al., 1999; Mouratidis et al., 2008) and an autonomy-supportive communication style (Ryan, 1982; Vansteenkiste et al., 2004), few experimental studies on the independent and combined role of both contextual influences have been conducted among elementary school children. This is unfortunate because intrinsic motivation is a powerful resource for children's school engagement and performance in this crucial developmental period (Larson & Rusk, 2011). Also, little attention has been paid to the question whether individual differences alter these hypothesized contextual supports for intrinsic motivation.

THE MOTIVATING POWER OF POSITIVE FEEDBACK

Feedback valence yielded a fairly strong effect across a variety of outcomes. The size of these effects is similar to effect sizes obtained by De Muynck et al. (2017) in a study with a similar design but with an older sample. In the present study, we found a stronger effect of feedback valence on autonomy satisfaction. Compared with the results of the meta-analysis (Deci et al., 1999), in which positive feedback effects among children yielded a nonsignificant composite effect size ($d = .11$), this study yields a stronger effect. In the meta-analysis, the effects of positive feedback relative to a neutral control condition or a reward condition were compared and not to negative feedback, which may help to explain the discrepancy.

As hypothesized, children receiving positive feedback reported more intrinsic motivation for the task and were eager to continue engaging in challenging activities afterwards. Working on these more demanding puzzles can be seen as an expression of children's attempts to seek further challenge and of their desire to fully master the task at hand. Thus, persistence in the more challenging booklet serves as a proximal behavioral indicator of

intrinsic motivation, as also exemplified by the significant positive correlation with the child-reported measure of intrinsic motivation.

Mediational analyses indicated that children receiving positive feedback maintained their interest because their psychological needs for both competence and autonomy were met. These findings are consistent with past work among adolescents and (emerging) adults (e.g., Deci et al., 1999; Viciano et al., 2007). At the same time, the present study extends this body of work by demonstrating the explanatory role of multiple need-based experiences (not only competence) in the relation between positive, relative to negative, feedback and intrinsic motivation. The finding that children who receive negative feedback feel less competent is somewhat self-evident. Yet, the observation that the negative feedback also decreased children's sense of autonomy which, in turn, also forestalled their interest, is more novel. De Muyne et al. (2017) reported similar findings among adolescent tennis players, who also received standardized normative feedback. In both studies, the negative feedback was given halfway task execution, which may have elicited feelings of pressure to improve one's performance during the second half (see also Cianci et al., 2010).

Overall, the present findings hint to the possibility of a self-perpetuating positive cycle of motivation, with the experiences of competence emanating from positive feedback leading children to actively search for further competence-enhancing experiences through the choice of challenging activities. Future research may want to assess to what extent children derive a further sense of mastery and competence from engaging in these challenging activities, thereby actually testing the possibility of a positive spiral. As the provided feedback was normative in nature, future research may examine whether task-based ("You did not pay enough attention to X.") or self-referential ("You did worse than in the previous set of puzzles.") negative feedback comes with similar motivational deficits (see

Burgers et al., 2015; Pekrun et al., 2014). Possibly, task-based negative feedback may be more informational in nature as it contains specific hints how to change one's task-execution (Carpentier & Mageau, 2013; 2016). As a result, the demotivating impact of task-based negative feedback may be less strong, with the feedback style yielding a more pronounced effect compared to the effect observed in the present study.

THE MORE SUBTLE EFFECTS OF AN AUTONOMY-SUPPORTIVE COMMUNICATION STYLE

With respect to communication style, children receiving instructions and feedback in an autonomy-supportive, relative to a controlling, way reported being more interested in the task, although their increased intrinsic motivation did not manifest behaviorally via increased challenge seeking. At the same time, they experienced greater autonomy satisfaction, as we had hypothesized, and felt more competent, a finding that was not anticipated. The observed benefits for intrinsic motivation are in line with previous research among adolescents (Vansteenkiste et al., 2004) and young adults (Ryan, 1982) and underscore the beneficial motivational impact of an autonomy-supportive communication style among elementary school children (see also Vansteenkiste et al., 2005). Both the increased autonomy and competence satisfaction accounted for the positive impact of an autonomy-supportive communication style on children's self-reported intrinsic motivation.

Compared to other studies examining informational versus controlling feedback (Kast & Connor, 1988; Pittman, Davey, Alafat, Wetherill, & Kramer, 1980; Ryan, 1982; Ryan, Mims, & Koestner, 1983), with an average Cohen's *d* of 0.75, this study had a smaller effect size (Cohen's *d* ranging between 0.15 and 0.55). Overall, effects of communication style were less pronounced than those of feedback valence, as reflected (a) by the lower effect sizes for communication and (b) the observation that out of the

seven interactions obtained five involved communication style (to be discussed further). The more variable effect of style may be due to differences in the *salience* of the manipulation. While the manipulation of feedback valence in our study was quite clear and direct (with children being explicitly compared to peer-based norms), the difference between autonomy-supportive and controlling communication was manipulated in a subtler way (i.e., differences in verbal instructions and type of language used to convey feedback). Possibly, other manipulations of autonomy support (such as the provision versus denial of choice) may contribute more directly and strongly to motivational outcomes (Patall, Cooper, & Robinson, 2008).

Still, the effects of manipulated autonomy support should not be underestimated because they are in line with effects obtained in research with adolescents and adults (e.g., Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004) and because they occurred over and above the strong effects of the very salient feedback valence manipulation. Also, the manipulation of autonomy support qualified some of the effects of negative feedback, an issue that received little attention in prior work. Specifically, the obtained interaction effects indicate that the motivationally undermining effect of negative feedback on children's competence feelings and intrinsic motivation is dampened if the feedback is offered in an autonomy-supportive way. These results are consistent with previous correlational studies on the interplay between autonomy support and structure (Curran, Niemiec et al., 2013; Mouratidis et al., 2010; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). Also, while prior experimental work found individuals with a learning goal orientation to be more immune against the motivational costs associated with negative feedback (Dahling & Ruppel, 2016), the present findings suggest that also contextual features can play such a buffering role. In this respect, the current interactions have important practical implications as they suggest that the demotivating

impact of negative feedback can be attenuated when the feedback is delivered in an autonomy-supportive way.

While feedback style had an impact on self-reported intrinsic motivation, it only yielded an indirect association with behavioral challenge seeking via increased competence need satisfaction. As such, the findings obtained for the self-reported and behavioral indicator of intrinsic motivation were somewhat discrepant. Such discrepancies have also been observed in past work on the impact of monetary rewards on intrinsic motivation (see Deci, Koestner, & Ryan, 1999). In the present study, two different reasons may explain the lack of parallel effects for communication style. First, the fact that feedback valence (but not feedback style) produced a consistent effect across self-reported and behaviorally recorded indicators of intrinsic motivation may be due to the more powerful effect of feedback valence. Indeed, the effect size for self-reported intrinsic motivation was much larger for the feedback valence manipulation relative to the manipulation of communication style. The effect of feedback valence may have been so strong that it also extended to a behavioral indicator (i.e., challenge seeking), while the effect of feedback style was not strong to influence children's behavior but merely impacted their liking of and interest in the activity. Second, the type of persistence elicited under controlling circumstances may not have been purely intrinsically motivated, instead being also internally controlled in nature. That is, at least some children may have continued working on the puzzles to prove their worth and to demonstrate to themselves that they were capable of solving the puzzles (Ryan et al., 1991).

THE ROLE OF INDIVIDUAL DIFFERENCES

In addition to providing robust evidence for the unique and combined impact of feedback valence and communication style, this study

also examined whether these effects occur independent of children's personality and perceived quality of maternal parenting. On the basis of SDT, it was expected that effects of contextual support for competence and autonomy would generalize across individual differences in personality and perceived parenting because such contextual support appeals to universally important psychological needs. Still, SDT leaves open the option that some children are more sensitive to the benefits of contextual need support (Soenens et al., 2015). In particular, children who are generally prone to experience need satisfaction on the basis of either their personality or the supportive environment they find themselves in, might be more sensitive to the motivating effects of contextual need support. The issue of generalization also has practical implications because more work around motivational tailoring would be required if it turns out that some children are less sensitive to effects of contextual need supports.

Out of the 56 tested interactions seven turned out to be significant. Before considering these interactions in greater detail, the main effects of experienced parenting and personality deserve being discussed. Children who experience their mother as more autonomy-supportive in general reported more competence satisfaction and to experience more volition and autonomy during activity engagement. This finding provides indirect support for the trans-contextual model of motivation (Hagger et al., 2009) because mothers' motivational style in one context (i.e., at home) seems to forecast motivational advantages in a different context (i.e., at school). As for the personality traits, more adaptive personality traits (i.e., Agreeableness, Conscientiousness and Emotional Stability) related to more positive experiences during the experimental task. Such findings can be related to the trait-congruency hypothesis (Rusting & Larsen, 1998), which states that personality dimensions associated with positive moods (i.e., Extraversion) and negative moods (i.e. low Emotional Stability) predispose individuals to

process information that is congruent with those traits and, as such, affect selective processing of emotional information.

With regard to the seven significant moderation effects, three of them could not be interpreted meaningfully as the effects of the manipulation were non-significant at both low and high levels of the moderator. Because the shape of these interactions was unclear, we refrain from discussing these interactions, instead calling for replication work. As for the four remaining interactions, two different types emerged. One interaction was in line with the *sensitization* hypothesis (Moller et al., 2010). Specifically, children high on Conscientiousness were more sensitive to the benefits of an autonomy-supportive communication style, thereby deriving a greater sense of competence from the activity.

The three other interactions were indicative of *resilience*. A second interaction with Conscientiousness was found, this time in the interaction with communication style in the prediction of self-reported intrinsic motivation. Specifically, children high, relative to those low, in Conscientiousness did not report a decrease in self-reported intrinsic motivation when facing a controlling communication style. Further, children low on perceived maternal psychological control and high on Agreeableness persisted more at the challenging booklet after receiving controlling feedback, suggesting that these children are more resilient against the negative effects of a controlling communication style. Interestingly, these two interactions occurred with respect to the behavioral indicator of intrinsic motivation only. Perhaps, these children's challenge seeking was not entirely intrinsically motivated, instead also being undergirded by other motives, like the desire to restore their thwarted needs (Radel, Pelletier, Sarrazin, & Milyavskaya, 2011), the motive to please others, or an inclination to demonstrate their self-worth and value (Ryan et al., 1991; Van der Kaap-Deeder et al., 2016).

Overall, when comparing the actual with the potential number of interactions, we can conclude that personality and perceived maternal parenting play only a modest role in altering the effects of feedback valence and communication style. Similarly, the main effects of the personality and parenting variables assessed at baseline in the prediction of children's experiencing during the puzzle solving activity were rather modest in terms of effect size. Possibly, the experimental induction suppressed associations between the general, pre-experimental measures and the situation-specific, post-experimental measures. Indeed, while the experimental induction was orthogonal to the pre-experimental measures, it accounted for part of the variance in the post-experimental measures. Overall, future research is needed to replicate the current pattern of main effects and interactions before any firm conclusions can be drawn.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The present study had a number of methodological limitations that could be addressed in future work. First, due to the lack of a (neutral) control group, it remains unclear whether the provision of positive feedback in an autonomy-supportive way would really enhance positive motivational outcomes and whether negative feedback delivered in a controlling way would undermine motivational outcomes (see De Mynck et al., 2017). Second, we note that a number of scales had rather poor reliability. This was particularly the case for some of the pre-experimental measures. As a consequence of this modest reliability, the number of interactions between the pre-experimental measures and the experimental inductions may have been somewhat underestimated. Third, the explanatory mechanisms (i.e., autonomy and competence satisfaction) were assessed concurrently with the self-reported intrinsic motivation. As a consequence, the experienced enjoyment may have colored children's need-based experiences instead of

the other way around. In the ideal case, the assessment of presumed mediators precedes the assessment of the dependent variables. Future research could assess the mediating mechanisms during the task instead of after task completion.

Fourth, although effects for communication style might become more pronounced in case feedback would not have been normative but task-based in nature, it is also possible that repeated exposure to a certain communication style is needed to enhance its impact. In future research, it would be interesting for instance to manipulate a controlling style multiple times and to examine, through a longitudinal design, the cumulative effects of a controlling style on students' motivation (see Reeve & Tseng, 2001). Alternatively, the autonomy-supportive style used to introduce the task and to provide feedback could be differently operationalized as to strengthen the manipulation. For instance, participants could be given a meaningful rationale for their task engagement (Jang, 2008) and the feelings of disappointment that come along with negative feedback may be acknowledged (Savard, Joussemet, Pelletier, & Mageau, 2013).

Fifth, to gain insight in the specific aspects of communication style driving the effects, future research could disentangle effects of these different aspects (e.g., (a) the type of language being used, (b) the way how the task was presented and (c) the type of focus and involvement that was prompted) and investigate their unique contribution to motivational outcomes.

Finally, content-wise, perceived parenting was operationalized in terms of maternal autonomy-supportive and controlling parenting only. Future research could address the role of other dimensions of parenting (e.g., warmth and structure). Research could also include perceived paternal parenting and possibly include parent ratings or observations instead of solely relying on child reports. As we focused exclusively on maternal

parenting in the present study, it is important for future research to include ratings from both parents to obtain a more complete view of the role of parents. There is increasing evidence that mothers' and fathers' autonomy support and controllingness are related similarly to educational outcomes in children (Pinquart, 2016; Vasquez, Patall, Fong, Corrigan, & Pine, 2016). However, research has not yet addressed the unique role of mothers and fathers in the way children respond to feedback outside the home context. By doing so, it could also be examined whether one parent's style interacts with the other parent's style in the prediction of how children respond to experimentally manipulated feedback. For instance, children might be most resilient to negative and controlling feedback when both parents are simultaneously high on autonomy-support. In future research, parent ratings of personality traits may also be included.

PRACTICAL IMPLICATIONS

Our finding that contextual need support is largely effective across children's individual differences can be important to convince socializing agents (e.g., teachers and parents) to systematically adopt a need-supportive communication style when interacting with children. This is important because research shows that many adults, including parents and teachers, have reservations about the motivational effectiveness of a need-supportive style (Boggiano, Barrett, Weiher, McClelland, & Lusk, 1987). For instance, teachers tend to believe that an autonomy-supportive approach is effective only among students who are already optimally motivated for school (De Meyer et al., 2016). With such beliefs about the limited effectiveness of autonomy support, adults are less likely to support children's autonomy wholeheartedly. Findings from the current study could be used to inform adults about the relevance of contextual support for

autonomy and competence irrespective of children's personality or experiences of need support in other contexts (e.g., the family).

Although in this study positive normative feedback delivered in an autonomy-supportive way was associated with the most favorable outcomes, we do not advocate the provision of positive normative feedback as an ideal practice in educational settings. Even when its valence is positive, normative feedback may elicit social comparison processes, with such processes leading to ego-involvement in children and pressured attempts to demonstrate one's worth. While an autonomy-supportive communication style may offset some of the risks associated with normative feedback (and with negative normative feedback in particular), it can be recommended to rely on self-referential and task-based types of feedback instead. The informational value of the latter types of feedback is higher because they are more change-oriented (Carpentier & Mageau, 2013). Moreover, these informational types of feedback provide more opportunities for socializing agents to be truly autonomy-supportive, thereby attending to individual students' strengths and weaknesses (instead of making potentially stressful and ego-involving comparisons between students). Feedback can be provided in an autonomy-supportive way by providing a meaningful rationale for the given feedback, by eliciting the child's own perspective with respect to task execution and by refraining from the use of pressuring language and the expression of disappointment in the child's performance (Mouratidis et al., 2010; Carpentier & Mageau, 2013). Yet, inevitably in real-life classrooms, elementary school children are often confronted (either explicitly or implicitly) with between-student comparisons. The present results show that the demotivating impact of messages conveying normative negative feedback can be counteracted if presented in an autonomy-supportive manner. It is therefore important that socialization figures are

mindful of the language they use when providing instructions and when giving feedback.

This study also highlights the importance for children to experience parents as autonomy-supportive. Irrespective of the experimental induction, perceived autonomy-supportive parenting seems to help children to perceive situations in school in a more favorable way. Given these findings, intervention and prevention efforts could aim to increase parents' actual and perceived use of autonomy support. A number of intervention studies demonstrated that parents can indeed be taught to interact with children in a more autonomy-supportive fashion, with these increases in parents' use of autonomy support enhancing children's quality of motivation and psychosocial adjustment (Froiland, 2015; Joussemet, Mageau, & Koestner, 2014).

CONCLUSION

In this study we tested the effects of both feedback valence and communication style on elementary school children's intrinsic motivation. The findings suggest that especially positive feedback, but also a more inviting and autonomy-supportive communication style can help to explain why children get truly interested in the material at hand and choose to engage in more challenging activities, while others lose interest and give up. There was some room for variation in the effectiveness of these strategies depending on children's personality and the perceived parenting style, especially with regard to the type of communication style. At the same time, we note that the number of interactions is limited and that the nature of the interactions is fairly diverse, which calls for further research on these matters to avoid drawing premature conclusions. Overall, it seems that socializing agents do well to communicate feedback in a way that is supportive of the child's psychological needs for autonomy and competence.

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Appendix A: Instructions

Autonomy-supportive instructions

“You will be given an exercise in which you can have a go at trying to build the figures in this booklet (blue one). Different people use different strategies to solve puzzles. We would like to see how you do it. Please try and complete as many puzzles as you can in 6 minutes. Let’s see how you do the puzzles and how many puzzles you can make. I’m curious to see how you do it. Have fun!”

Controlling instructions

“You will be given a test, in which you will have to build the figures in this booklet (blue one). These puzzles reveal how much insight you have and measure how smart you are at these kinds of puzzles. You have to complete as many puzzles as possible in 6 minutes. After this task, I will judge how well you performed. It’s up to you now to prove yourself.”

Appendix B: Feedback manipulations

Positive feedback phase 1

<i>Autonomy-supportive communication style</i>	<i>Controlling communication style</i>
<p><i>“Let’s take a look at how you solved the puzzles. I brought some tables to help us do this. I see that you solved X puzzles. When I look at the table, this is better than most kids your age. That’s a good thing, because it means that you found your own strategy to solve the puzzles. I suggest we now go to the second booklet with exercises (the green one). The exercises in this booklet are more challenging than the exercises in the first booklet. Try to focus on how these puzzles are built.”</i></p>	<p><i>“Let’s see how well you did compared to other children who are the same age as you. I brought some tables to help see how well you performed. I see that you solved X puzzles. When I look at the table, that’s better than most kids your age. That’s good, because it shows that you are smart at these kinds of puzzles. If you continue this way, you can be proud of yourself. There is now a second test which is more difficult (the green one). If you want to feel proud of yourself again, then at the very least you have to perform as well as before.”</i></p>

Negative feedback phase 1

<i>Autonomy-supportive communication style</i>	<i>Controlling communication style</i>
<p><i>“Let’s take a look at how you solved the puzzles. I brought some tables to do this. I see that you solved X puzzles. When I look at the table, this is not as good as most kids your age. This means that you can continue to search for other ways to solve the puzzles. I suggest we now go to the second booklet with exercises (the green one). The exercises in this booklet are more challenging than the exercises in the first booklet. Try to focus on how these puzzles are built.”</i></p>	<p><i>“Let’s see how well you did compared to other children who are the same age as you. I have tables with me to help me see how well you performed. I see that you solved X puzzles. When I look at the table, this is worse than most kids your age. That’s not good because it shows that you’re not so smart at these puzzles. Basically, this is quite disappointing. There is now a second test which is more difficult (the green one). If you don’t want to disappoint again, then perform better. It’s up to you to prove yourself.”</i></p>

Positive feedback phase 2

<i>Autonomy-supportive communication style</i>	<i>Controlling communication style</i>
<p><i>“Let’s look at how you solved the puzzles. I see that you solved X puzzles. Also this time you did much better than most kids your age! This confirms once again that you came up with a good strategy to solve the puzzles.”</i></p>	<p><i>“Let’s see how you managed to solve the puzzles in comparison to other children of your age. I see that you have solved X puzzles. When I look at the table, this is the same as the last time, better than most kids of your age. This confirms once again that you are smart at these kinds of puzzles and that you can be proud of yourself.”</i></p>

Negative feedback phase 2

<i>Autonomy-supportive communication style</i>	<i>Controlling communication style</i>
<p><i>“Let us look at how you solved the puzzles. I see that you solved X puzzles. This is not as good as most kids your age. It is definitely not easy to find a good strategy to solve these puzzles.”</i></p>	<p><i>“Let’s see how you managed to do the puzzles compared to other children of your age. I see that you solved X puzzles. When I look at the table this is worse than most kids your age. This reaffirms that you are not as smart at these kinds of tasks and that these are disappointing results.”</i></p>

DAY-TO-DAY VARIATION IN AUTONOMY-SUPPORTIVE AND PSYCHOLOGICALLY CONTROLLING PARENTING: THE ROLE OF PARENTS' DAILY EXPERIENCES OF NEED SATISFACTION AND NEED FRUSTRATION¹

Autonomy-supportive and psychologically controlling parenting have been shown to relate to positive and negative developmental outcomes, respectively. Most research that addresses antecedents of these parenting constructs has focused on the predictive role of between-parent differences (e.g., personality). To gain insight in dynamics of within-parent changes in reported parenting, this study focused on daily fluctuations in reported autonomy-supportive and psychologically controlling parenting and examined the role of parents' need satisfaction and need frustration in accounting for those fluctuations. Mothers (M age = 45.14 years) and fathers (M age = 46.79 years) of 194 adolescents (M age = 14.89 years) participated in a 7-day diary study. Multilevel modeling provided evidence for significant day-to-day variability in both parenting dimensions. Daily fluctuations in need satisfaction were related to daily fluctuations in reported autonomy-supportive parenting and daily fluctuations in need frustration were related to daily fluctuations in reported psychologically controlling parenting. These associations were not moderated by between-parent differences in those parenting dimensions. The findings provide evidence for the role of parents'

¹ Mabbe, E., Soenens, B., Vansteenkiste, M., Van der Kaap-Deeder, J., & Mouratidis, A. (in press). Day-to-day variation in autonomy-supportive and psychologically controlling parenting: The role of parents' daily experiences of need satisfaction and frustration. *Parenting: Science and Practice*.

own needs-related experiences in their daily display of autonomy-supportive and psychologically controlling parenting.

INTRODUCTION

The benefits of autonomy-supportive parenting for children's development are abundant and include improved personal and relational well-being (Grolnick, 2003; Joussemet, Landry, & Koestner, 2008). In contrast, controlling parenting, and psychologically controlling parenting in particular, has been found to relate to problem behavior and even psychopathology (Soenens & Vansteenkiste, 2010). Increasingly, research has begun to unravel the sources of autonomy-supportive and psychologically controlling parenting, thereby examining, for instance, the roles of between-parent differences in personality (e.g., Soenens, Vansteenkiste, Duriez, & Goossens, 2006), perceived threat in the environment (Gurland & Grolnick, 2005), parental achievement goals (Mageau, Bureau, Ranger, Allen, & Soenens, 2016), contingent self-esteem (Ng, Pomerantz, & Deng, 2014), and socialization goals (Wang, Chan, & Lin, 2012). These studies are informative, but they focus on relatively stable between-parent differences, at the expense of more variable sources of influence. This one-sided focus on between-parent differences is unfortunate because parental behavior varies on a day-to-day basis (Aunola, Tolvanen, Viljaranta, & Nurmi, 2013).

To draw a more complete picture of the antecedents of autonomy-supportive and psychologically controlling parenting, important goals for research are to identify sources of this short-term variation in parenting practices, and more specifically, to examine how such variation may be explained by determinants that are also subject to day-to-day changes. Research that identifies determinants of daily parenting behavior may ultimately help strengthen intervention strategies to promote effective day-to-day parenting behaviors. Inspired by Self-Determination Theory (SDT; Ryan & Deci, 2000; Soenens & Vansteenkiste, 2010), the overall aim of this study was to examine whether daily variation in parents' satisfaction and

frustration of the basic psychological needs for autonomy, competence, and relatedness represents such a source of daily variation in reported parenting.

AUTONOMY-SUPPORTIVE AND PSYCHOLOGICALLY CONTROLLING PARENTING

According to SDT, essential to children's development is the satisfaction of their psychological needs for autonomy (i.e., experiencing ownership), competence (i.e., feeling effective), and relatedness (i.e., experiencing a sense of intimacy). Numerous studies have shown that need satisfaction is associated with more favorable developmental outcomes (Deci & Ryan, 2000). Also, research increasingly shows that frustration of these needs renders individuals vulnerable to ill-being and even psychopathology (Bartholomew, Ntoumanis, Ryan, & Thogersen-Ntoumani, 2011; Vansteenkiste & Ryan, 2013). Such findings have been obtained at the level of between-person differences and at the level of within-individual (daily) variation (Ryan, Bernstein, & Brown, 2010; Verstuyf, Vansteenkiste, Soenens, Boone, & Mouratidis, 2013). Experiences of need satisfaction and need frustration are said to be somewhat distinct (rather than perfectly opposite), as an absence of need satisfaction does not by definition denote the presence of need frustration. To illustrate, individuals who do not feel effective in carrying out an activity may not necessarily feel like a failure. Yet, an experience of need frustration does imply low need satisfaction, indicating that the relation between need satisfaction and need frustration is asymmetrical (Vansteenkiste & Ryan, 2013). Because it is assumed that dynamics of need frustration are to some extent different from the dynamics of need satisfaction, each deserves being studied in its own right.

Autonomy-supportive and controlling parenting represent important developmental antecedents of children's experiences of need satisfaction and need frustration (Joussemet et al., 2008). Within SDT, parental autonomy support refers to parents' encouragement of volitional

functioning in children (Grolnick & Pomerantz, 2009; Soenens et al., 2007). Autonomy-supportive parents take the child's frame of reference, provide choice whenever possible, encourage initiative and personal exploration, and provide a meaningful rationale when choice is constrained. According to SDT, autonomy-supportive parenting is beneficial for children's development because it nurtures children's basic psychological needs for autonomy, competence, and relatedness (Grolnick, Deci, & Ryan, 1997).

In SDT, autonomy-supportive parenting is contrasted with controlling parenting, which is characteristic of parents who pressure their children to act, think, and feel in certain ways (Grolnick et al., 1997). Numerous studies have focused on the concept of psychologically controlling parenting, which refers to the use of intrusive and manipulative strategies such as guilt-induction and shaming (Barber, 1996; Barber & Xia, 2013). According to SDT, psychologically controlling parenting is detrimental to children's development, not simply because it fails to nurture children's basic psychological needs, but because it actively thwarts those needs (Joussemet et al., 2008; Soenens & Vansteenkiste, 2010). Parallel to the recognition that the absence of need satisfaction does not simply equate the frustration of the psychological needs (Bartholomew et al., 2011), the presence of controlling parenting does not simply involve an absence of autonomy-supportive parenting (Silk, Morris, Kanaya, & Steinberg, 2003). Compared to a mere absence of autonomy support, controlling parenting has a more active and undermining effect on children's needs, resulting not only in feelings of low need satisfaction but also in feelings of need frustration. Research generally confirms that psychologically controlling parenting is related to a plethora of maladaptive developmental outcomes (including internalizing and externalizing problems; see Barber & Xia, 2013), with need frustration playing an intervening role in these associations

(Ahmad, Vansteenkiste, & Soenens, 2013; Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016).

DAILY VARIATIONS IN AUTONOMY-SUPPORTIVE AND CONTROLLING PARENTING

Increasingly, research has begun to examine daily variations in autonomy-supportive and controlling parenting and effects of these daily variations for children's and adolescents' well-being. This research is inspired by dynamic models of family processes, according to which parents' and children's behaviors and experiences are constantly in flux (Dix, 1991; Holden & Miller, 1999; Repetti, Reynolds, & Sears, 2015). On the basis of these models it can be predicted that parenting practices do not only vary between parents but likely also oscillate within the parents themselves. As such, parental behavior may be characterized by considerable ups and downs on a day-to-day basis. Diary studies are ideally suited to capture these short-term fluctuations in family members' behaviors (Laurenceau & Bolger, 2005). Consistent with these models, constructive (e.g., emotionally supportive) parent-child interaction patterns are related to daily positive emotional experiences in children and negative (e.g., conflicted) patterns are related to daily emotional distress (e.g., Chung, Flook, & Fuligni, 2009; Fuligni & Masten, 2010).

Only a handful of diary studies has investigated the adjustment correlates of day-to-day fluctuations in autonomy-supportive and controlling parenting in particular. Ng, Kenney-Benson, and Pomerantz (2004) found that parents' controlling and autonomy-supportive responses to children's failure predicted children's performance at school on a challenging cognitive task the next day. Aunola et al. (2013) found daily fluctuations in psychologically controlling parenting predict daily fluctuations in parental reports of children's negative emotions. Van der Kaap-Deeder, Vansteenkiste, Soenens, and Mabbe (2017) found that child-perceived daily

variation in autonomy-supportive and psychologically controlling parenting was related positively to daily variation in children's well-being and ill-being, respectively.

SOURCES OF DAILY VARIATION IN AUTONOMY-SUPPORTIVE AND PSYCHOLOGICALLY CONTROLLING PARENTING

Although an increasing number of studies has shown quite consistently that daily variations in autonomy-supportive and controlling parenting relate to daily variation in children's and adolescents' adaptive and maladaptive emotions and behaviors, respectively, few studies have identified sources of this daily variation. This is because most studies of antecedents of autonomy-supportive and psychologically controlling parenting have focused on the role of relatively stable, between-family or between-parent differences. For instance, based on well-established models of antecedents of parenting (Belsky, 1984; Grolnick, 2003) several important antecedents of controlling parenting have been identified, including features of parental personality such as parental perfectionism (Soenens et al., 2006), parents' perception of the social context and the world as threatening (Gurland & Grolnick, 2005), and child characteristics such as difficult temperament (Laukkanen, Ojansuu, Tolvanen, Alatupa, & Aunola, 2014).

Given the observation that autonomy-supportive and controlling parenting vary on a daily basis, there is a need to understand the roots of these daily variations. To date, we are aware of only one study examining antecedents of daily variations in controlling parenting. Aunola, Viljaranta, and Tolvanen (2017) showed that parents' negative emotions covaried positively on a daily basis with psychologically controlling parenting practices. Building on this study, we aimed to examine on the basis of SDT whether daily parental experiences of need satisfaction and need frustration play roles in daily variation in parenting.

DAILY PARENTAL NEEDS EXPERIENCES AND DAILY PARENTING

Much like the satisfaction and frustration of children's psychological needs play a key role in explaining effects of parenting on children's functioning, these psychological needs may play an important role for parents as well. Given that autonomy-supportive parenting requires considerable psychological availability from parents (Grolnick, Gurland, DeCoursey, & Jacob, 2002), the satisfaction of their three psychological needs is vital for parents to have sufficient psychological resources or "mental space" available to make use of autonomy-supportive practices. That is, autonomy support requires psychological availability, energy, and openness, resources that are fueled by the satisfaction of the psychological needs. On the basis of SDT, we argue that need satisfaction promotes parents' energy level. This argument follows from the overall assumption in SDT that need satisfaction enhances energy available to the self (Ryan & Deci, 2008), an assumption that received empirical support in studies showing positive associations between need satisfaction and experiences of vitality (which involve feelings of energy and liveliness; e.g., Chen et al., 2015; Ryan & Frederick, 1997). In turn, this energy is needed for parents to listen carefully and with attention to what is going on in the child's life, that is to be psychologically available (Mageau, Sherman, Grusec, Koestner, & Bureau, 2016). Conversely, research shows that, when parents lack energy (e.g., because of fatigue), they are less able to be responsive to children's feelings and thoughts (e.g., Cooklin, Giallo, & Rose, 2012; White, Bradley, Neverve, Stirewalt, & Summers, 2015). Also, being autonomy-supportive involves that parents are creative and flexible in finding ways to set rules and organize activities that match the child's interests and preferences (Joussemet et al., 2008). Such creativity and flexibility also require sufficient parental energy.

Along similar lines, active frustration of psychological needs would increase the odds of parents relying on psychologically controlling practices because need frustration engenders a more self-centered parental orientation. Theory and research suggest that when people experience frustration of the psychological needs, they become more concerned about their self-esteem and engage in attempts to demonstrate their worth as a person (Hodgins, 2008; Hodgins & Knee, 2002). Such attempts can manifest in a tendency to get their own ideas across even if other people do not like them and without much room for negotiation (Weinstein, Hodgins, & Ryan, 2010). Thus, need frustration may elicit tunnel vision where parents bypass the child's perspective and impose their own agenda.

A few studies provide indirect evidence for this hypothesis. A diary study by Danner-Vlaardingerbroek, Kluwer, Van Steenbergen, and Van der Lippe (2013) showed that mothers of preschoolers were more behaviorally and emotionally withdrawn on days when they experienced more job stressors. Presumably, those job stressors related to less need satisfaction (Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008), thereby depleting parents' energy required to be receptive for their children's daily whereabouts and activities. Other studies provide a more direct examination of the role of parents' need-based experiences in their parenting behavior, albeit at the level of between-parent differences in parental behavior. de Haan, Soenens, Dekovic, and Prinzie (2013) documented in a long-term longitudinal study evidence for an association between low parental need satisfaction and controlling parenting (overreactive discipline and psychological control). Van der Kaap-Deeder, Vansteenkiste, Soenens, Loeys, Mabbe, and Gargurevich (2015) showed that a composite score of mothers' need frustration, relative to their need satisfaction, was related positively to child-perceived general autonomy support, at least in younger siblings. However, these studies examined the role of parental needs at the level of

between-parent differences, not at the level of within-parent, daily variation. Also, none of these studies made a clear separation between daily need satisfaction and need frustration as differential predictors of daily parental autonomy support and psychological control.

THE PRESENT STUDY

The general aim of the present study was to examine sources of day-to-day variation in reported autonomy-supportive and controlling parenting, thereby focusing on the role of daily variation in parents' experiences of need satisfaction and need frustration. Because to date only a handful of studies demonstrated variability in autonomy-supportive and psychologically controlling parenting from day to day (e.g., Aunola et al., 2013; Mushquash & Sherry, 2013; Ng et al., 2004; Van der Kaap-Deeder et al., 2017), a preliminary aim was to further document the degree of daily fluctuations in reported autonomy-supportive and psychologically controlling parenting (Aim 1). In doing so, we chose to sample parents of adolescents because adolescence is considered a developmental period characterized by profound and rapid transformations in the parent-child relationship (Steinberg & Silk, 2002). Parents of adolescents are faced with many quickly evolving changes and challenges in the parent-child relationship, including adolescents' tendency to take emotional distance from parents and adolescents' increased tendency to have a say in family decisions. This renegotiation of parent-child relationships is known to give rise to at least temporary increases in conflicts between parents and adolescents (Arnett, 1999). Thus, adolescence was considered a particularly relevant developmental period to examine short-term (daily) variations in parental experiences and reported behaviors.

The central aim of this study was to investigate whether day-to-day variability in need satisfaction and need frustration would account for

variability in reported parenting (Aim 2). We hypothesized that, although parental need satisfaction contributes to parental autonomy support, parental need frustration is related negatively to autonomy support. Need satisfaction would foster energy needed to be autonomy-supportive while need frustration depletes such energy. We also anticipate that need frustration relates more strongly to controlling parenting than (an absence of) need satisfaction. For parents to become controlling and to actively thwart their children's psychological needs, a stronger threat to their needs would be needed than a mere absence of parental need satisfaction (e.g., with parents having experienced few opportunities for personal initiative during the day). Parents' own psychological needs would need to be actively frustrated (e.g., with parents having experienced high levels of pressure during the day) for them to adopt a controlling and need-thwarting style towards the child. This reasoning is consistent with the assumption that need frustration entails more than the experience that one's needs are unmet; need frustration arises from the experience that the psychological needs are actively blocked, an experience that is more threatening and negative than a mere absence of need satisfaction (Vansteenkiste & Ryan, 2013).

An ancillary aim was to examine, in a more exploratory way, whether general individual differences in autonomy-supportive and psychologically controlling parenting (assessed prior to the diary study) would affect the strength of the relation between daily parental need experiences and daily reported parenting (i.e., moderation) (Aim 3). That is, we sought to explore whether autonomy-supportive (or controlling) practices are triggered more easily among parents for whom these practices are more readily available in parents' repertoire of interpersonal behaviors. When experiencing a need satisfying (or need frustrating) day, parents generally high on autonomy support (or control) may more easily display autonomy-supportive (or

controlling) behaviors because the behaviors corresponding with these experiences are more accessible to them. An alternative hypothesis would be that parents with a general tendency to act in an autonomy-supportive way would be less susceptible to daily experiences of need satisfaction. Because they are used to engage in an autonomy-supportive style, they would not need daily experiences of need satisfaction to a similar extent as parents less inclined to use an autonomy-supportive style. To test this aim, we included more general measures of autonomy-supportive and controlling parenting in addition to the daily measures of parenting.

METHOD

PARTICIPANTS

The sample consisted of 194 families living in the Dutch-speaking part of Belgium. In each family, both the mother (M age = 45.14 years, SD = 3.20, range = 37-53) and the father (M age = 46.79 years, SD = 3.86, range = 39-57) participated. They filled out questionnaires regarding their adolescent child (51% female, M age = 14.89 years, SD = 0.88, range = 13-17). Regarding marital status, the large majority of the parents (95.4%) were married, and 4.6% were living together without being married. Regarding educational level, 32.3% of the mothers and 35.0% of the fathers completed secondary school, 48.5% of the mothers and 35.0% of the fathers had a bachelor's degree, and 19.2% of the mothers and 30.0% of the fathers attained a master's degree. Parents were relatively highly educated when compared to the general population (Statistics Belgium, 2014). Although initially 198 mothers and fathers participated, 4 fathers and 3 mothers who did not fill out the diary were removed from the dataset. The analyses were done on the families of which both mothers and fathers participated (N = 194).

PROCEDURE

Mothers and fathers filled out questionnaires independently at their homes. About one month later, on a second home visit the researchers explained the diaries that were to be filled out by both parents during seven consecutive evenings, before going to bed. They took about five to ten minutes to complete. After the seven days, the diaries were put in sealed envelopes and picked up by the researcher.

MEASURES

All instruments were adapted to fit within a diary format. Cronbach's alphas of the scales are reported in Table 1. One alpha for each day was calculated, separately for mothers and fathers. In Table 1 we present the range of alphas across days and across parental gender. Likert scales, ranging from 1 (*completely not true*) to 5 (*completely true*), were used for all scales. With regards to the parenting measures, both in the questionnaires and the diary, parents were asked to report on their autonomy-supportive and psychologically controlling parenting behavior towards one of their (adolescent) children in the age range of 14-16 years. When having two children in this age range, parents could decide for themselves about which child they filled out the questionnaires (M number of children = 2.40). In such cases, both parents (mothers and fathers) were asked to report on the same child.

PERSON-LEVEL MEASURES

Autonomy-supportive parenting. Mothers and fathers were administered a 5-item version of the Autonomy Support Scale of the Perceptions of Parents Scale (POPS; Grolnick, Ryan, & Deci, 1991; e.g., "I am usually willing to consider things from my child's point of view"). Two items of the original 7-item scale were not included in the analysis, because both

items tap into controlling parenting rather than into autonomy-supportive parenting (“I insist to do everything my way.” and “I’m not really sensitive to what’s important for my son/daughter.”). Those two items have to be reverse-scored according to the scoring instructions of the original POPS. There is increasing evidence for a distinction between a bright pathway (in which autonomy-supportive parenting is related to adaptive outcomes through the satisfaction of the needs) and a dark pathway (in which psychologically controlling parenting is associated with maladaptive outcomes through the frustration of the needs). To clearly differentiate autonomy-supportive from controlling parenting and to study their unique antecedents on a day-to-day basis, we eliminated the items of both the general and daily autonomy support scale that needed to be reverse scored. In this way, we ended up with “pure” measures of autonomy-supportive and controlling parenting.

Psychologically controlling parenting. Both mothers and fathers were administered the well-validated and frequently used Psychological Control Scale (PCS; Barber, 1996), which includes 8 items (e.g., “I am always trying to change how my child feels or thinks about things.”). Items tapped into several key features of psychologically controlling parenting, including intrusiveness (e.g., “I try to change how my child feels or thinks about things.”), guilt-induction (e.g., “I blame my child for other family members’ problems.”), and love withdrawal (e.g., “I am less friendly with my child when s/he did not see things my way.”).

DAILY DIARY MEASURES

Autonomy-supportive parenting. Participants were administered 4 items selected from the Autonomy Support Scale of the POPS (Grolnick, Ryan, & Deci, 1991). The items were slightly reformulated to fit the format of a daily assessment (e.g., “Today, I allowed my child to decide certain things

for himself/herself"). One item from the scale for general autonomy support was not administered ("I allow my son/daughter to choose his/her own direction in life."). Because this is a more general item about the child's overall direction in life, it was deemed less relevant in the diary context.

Psychologically controlling parenting. Both mothers and fathers were administered 7 items, based on the items of the PCS-YSR (Barber, 1996). Again items were reformulated to fit the format of a daily assessment.

Need satisfaction and frustration. Mothers and fathers filled out 12 items tapping into their daily experiences of need satisfaction and need frustration. Items were taken from the Basic Psychological Need Satisfaction and Need Frustration scale (Chen et al., 2015) and slightly adapted to make them amenable to a diary assessment. Although the original scale consists of 24 items, for reasons of brevity, only 12 items were included, with satisfaction and frustration of each of the three needs being measured with 2 items: autonomy satisfaction (e.g., "Today, I felt a sense of choice and freedom in the things I undertook.") and frustration (e.g., "Today, I felt forced to do many things I wouldn't choose to do."), competence satisfaction (e.g., "Today, I felt confident that I could do things well.") and frustration (e.g., "Today, I felt insecure about my abilities."), and relatedness satisfaction (e.g., "Today, I felt connected with people who care for me, and for whom I care.") and frustration (e.g., "Today, I felt excluded from the group I want to belong to."). A multilevel confirmatory factor analysis was conducted on the items of need satisfaction and frustration to examine whether the two constructs can be empirically separated. We estimated a 2-factor and 1-factor solution. The chi-square difference test showed that the 2-factor solution better fitted the data, $\Delta\chi^2 = 74.35$; $df = 2$; $p < .001$.

Table 1

Descriptive Statistics and Internal Consistencies between Dispositional and Daily Variables

	<i>M</i>	<i>SD</i>	α
Daily level measures			
1. Need satisfaction	3.82	0.59	.80-.83
2. Need frustration	1.78	0.61	.74-.81
3. Autonomy-supportive parenting	3.13	0.74	.57-.70
4. Psychologically controlling parenting	1.56	0.55	.71-.82
Person level measures			
5. Autonomy-supportive parenting	3.82	0.47	.72
6. Psychologically controlling parenting	2.28	0.44	.68

PLAN OF ANALYSIS

This diary study consisted of repeated measurements on seven consecutive days (i.e., Level 1), nested within 194 mothers and fathers (i.e., Level 2), nested within 194 families (i.e., Level 3). To take into account between- and within-person differences, multilevel analyses were conducted with the statistical software package MLwiN 2.32 (Rasbash, Browne, Healy, Cameron, & Charlton, 2015). Predictor variables at Level 1 were group-mean centered (i.e., centered around the person's mean), whereas predictors at Level 2 and 3 were centered around the grand mean. In total, there were 5.1% missing values. By default, these missing values are treated as structural missing values by MLwiN.

To examine whether there was significant variability in reported autonomy-supportive and psychologically controlling parenting from day-to-day (Aim 1), an intercept-only model was estimated. This model does not explain any variance, but decomposes the variance into three components, namely variation at the between-family level, at the between-parents level, and at the between-days level. Intraclass correlations (ICCs) shed light on the proportion of the total variance in the observed variables that is due to variation at the family level, the proportion of the total variance that is due

to between-parent variation, and the proportion of the total variance that is due to between-days variation.

Next, daily need satisfaction and need frustration (i.e., Level 1) and general individual differences in autonomy-supportive and psychologically controlling parenting (i.e., Level 2) were entered simultaneously in the models as predictors of, respectively, daily and mean-levels of reported autonomy-supportive and psychologically controlling parenting (Aim 2). With general individual differences in reported parenting we refer to the measures of general autonomy-supportive and controlling style assessed prior to the onset of the diary study. Next, cross-level interactions between need satisfaction and frustration and general individual differences in autonomy-supportive and psychologically controlling parenting were examined (Aim 3). Cross-level interactions were only added when there was significant parent-level variation around the slopes of the individual-level explanatory variables need satisfaction and need frustration (Hox, 2010). Therefore, before investigating potential moderation, the random slopes for need satisfaction and need frustration were investigated simultaneously.

In all the models tested, the following background variables were included (not shown in the tables for reasons of parsimony): number of children in the family; age and gender of the adolescent; age, educational level, and gender of the parent; and a categorical variable representing weekend versus weekdays.

The basic equations for the multilevel analyses are presented below.

Day-level equation:

$$\text{Daily reported autonomy support/psychological control} = \beta_0 + \beta_1 \\ \text{Daily need satisfaction} + \beta_2 \text{ Daily need frustration} + e$$

Parent-level equation:

$$\beta_0 = \gamma_{00} + \gamma_{01} \text{ General autonomy support} + \gamma_{02} \text{ General psychological} \\ \text{control} + u_0$$

$$\beta_1 = \gamma_{10} + \gamma_{11} \text{ General autonomy support} + \gamma_{12} \text{ General psychological} \\ \text{control} + u_1$$

$$\beta_2 = \gamma_{20} + \gamma_{21} \text{ General autonomy support} + \gamma_{22} \text{ General psychological} \\ \text{control} + u_2$$

Family-level equation:

$$\gamma_{00} = \nu_{00} + \nu_0$$

$$\gamma_{10} = \nu_{10} + \nu_1$$

$$\gamma_{20} = \nu_{20} + \nu_2$$

RESULTS

DESCRIPTIVE STATISTICS AND PRELIMINARY ANALYSES

Tables 1 and 2 show reliability estimates, correlations, means, and standard deviations of the diary variables and person level variables. Table 2 shows the correlations between the study variables at the between-days, between-parent, and between-family level. To determine whether there were associations between the background variables (gender and age of the adolescent, parental age and gender, educational level and number of children in the family) and the study variables, a MANOVA was conducted with adolescent and parent gender and educational level (the categorical background variables) as fixed factors, with the other (continuous) background variables as covariates, and with all study variables as dependent variables. There were no overall multivariate effects for

adolescents' age (*Wilks's* $\lambda = .99$, $F(6, 357) = 0.87$, $p = ns$), parent age (*Wilks's* $\lambda = .98$, $F(6, 357) = 1.05$, $p = ns$), adolescents' gender (*Wilks's* $\lambda = .98$, $F(6, 357) = 1.00$, $p = ns$), parent gender (*Wilks's* $\lambda = .97$, $F(6, 357) = 1.67$, $p = ns$), number of children in the family (*Wilks's* $\lambda = .99$, $F(6, 357) = 0.93$, $p = ns$), and parent educational level (*Wilks's* $\lambda = .92$, $F(6, 357) = 1.35$, $p = ns$). Although none of these background variables had a multivariate effect on the study variables, we still controlled for their effects in the main analyses to test our hypotheses as conservatively as possible.

Table 2

Correlations between Dispositional and Daily Variables at between Days, between Parent and between Family Level

	Between-Days Level					Between-Parent Level					Between-Family Level				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Daily level measures															
1. Need satisfaction															
2. Need frustration	-.57**					-.69**					-.86**				
3. Autonomy-supportive parenting	.15*	-.15*				.40**	-.12				.35**	-.15*			
4. Psychologically controlling parenting	-.14*	.17*	.05			-.16*	.41**	.05			-.31**	.59**	.08		
Person level measures															
5. Autonomy-supportive parenting	-	-	-	-		.22*	-.21*	.20*	-.17*		.16*	-.16*	.08	-.36**	
6. Psychologically controlling parenting	-	-	-	-		-.11	.20**	-.11	.38**	-.36**	-.24**	.26**	.07	.30**	-.52**

* $p < .05$. ** $p < .01$.

AIM 1: DAY-TO-DAY VARIABILITY IN REPORTED PARENTING

The ICC reflects the percentage of variance located at Level 2 (i.e., the between-parents level). ICC values indicate that, respectively, 19% and 32% of the variance in reported psychologically controlling and autonomy-supportive parenting reflect between-parent differences. At the between-family level, there is 26% and 15% of the variance in reported psychologically controlling and autonomy-supportive parenting. As a corollary implication, these between-parents and between-family percentages suggest that most of the variance (i.e., more than 50%) is situated at the between-days level. Specifically, respectively 55% and 53% of the variance in reported psychologically controlling parenting and autonomy-supportive parenting is situated at the between-days level. It should be noted that this variance at the between-days level also includes error variance. Still, these percentages suggest that a substantial and significant part of the variance in reported parental behavior is situated at the level of daily variation within parents' functioning.

To examine whether the frequency of reported autonomy-supportive and controlling parental behavior differed between weekdays and the weekend, we estimated models including the effect of weekend as a predictor of both types of parental behavior. The variable representing the distinction between week and weekend days positively predicts psychologically controlling parenting ($b = .07$, $SE = 0.02$, $p < .001$) and autonomy-supportive parenting ($b = .11$, $SE = 0.02$, $p < .001$), meaning that the occurrence of both types of reported parenting behaviors is elevated during the weekend. This is probably due to the higher frequency and intensity of parent-adolescent interactions during the weekend. Because of this finding, we also included the contrast between weekend and weekdays as a control variable in the main analyses.

AIM 2: ANTECEDENTS OF DAY-TO-DAY VARIABILITY IN PARENTING

Both in the prediction of reported autonomy-supportive parenting and in the prediction of reported psychologically controlling parenting, we simultaneously included effects of daily parental need satisfaction and need frustration. Table 3 presents the findings for daily reported autonomy-supportive parenting. As regards the day-level predictors (presented in the top half of the tables), only daily need satisfaction (not daily need frustration) was significantly and positively related to daily reported autonomy-supportive parenting (see Model 1 in Table 3). As for the parent-level predictors (presented in the lower panel of the tables), there was a marginally significant positive association between general individual differences in autonomy-supportive parenting and daily autonomy-supportive parenting.

Table 4 presents the findings for daily reported psychologically controlling parenting. As regards the day-level predictors of psychologically controlling parenting (presented in the top half of the tables), daily need frustration was related positively to daily reported psychologically controlling parenting (see Model 1 in Table 4). As for the parent-level predictors (presented in the lower panel of the tables), general individual differences in psychologically controlling parenting positively predicted mean levels of daily reported psychologically controlling parenting (see Model 1 in Table 4).

To perform an even more conservative test of the association between daily needs experiences and daily reported parental behavior, in a next set of analyses we controlled for autonomy-supportive and psychologically controlling parenting the day before. This analysis was performed to examine whether need satisfaction and need frustration in the day would contribute to a change in daily reported parenting not only relative to parents' mean level of parenting but also relative to parents' use

of a certain parenting style the day before. These analyses were conducted on a truncated dataset because the first measurement point (i.e., day 1) has no previous day. Daily need satisfaction contributed to daily autonomy-supportive parenting ($b = 0.16$, $SE = 0.05$, $p < .01$) when autonomy-supportive parenting of the day before was controlled for. Similarly, the association between daily need frustration and daily psychologically controlling parenting held after taking into account psychologically controlling parenting on the previous day ($b = 0.11$, $SE = 0.03$, $p < .001$). These models are presented in Tables 3 and 4 (Model 3).

Table 3

Daily Autonomy-Supportive Parenting as a Function of Daily Need satisfaction, Need Frustration and Interindividual Differences in Parenting

	Null model	Model 1	Model 2	Model 3
Fixed effects				
Intercept	2.99 (0.05)**	2.99 (0.05)**	2.99 (0.06)**	3.00 (0.05)**
Day level predictors				
Daily need satisfaction (NS)		0.13 (0.04)**	0.13 (0.05)**	0.16 (0.05)**
Daily need frustration (NF)		-0.07 (0.04)	-0.07 (0.04)	-0.04 (0.04)
Autonomy support day before				-0.01 (0.02)
Psychological control day before				0.04 (0.03)
Person level predictors				
Autonomy support (AS)		0.16 (0.09)†	0.17 (0.09)†	
Psychological control (PC)		-0.05 (0.09)	-0.04(0.09)	
Day- X person-level interaction				
Daily PC X Need satisfaction			0.13 (0.10)	
Daily AS X Need satisfaction			0.09 (0.11)	
Random effects				
Parent-level variance of				
intercept, u_0	0.17 (0.02)**	0.17 (0.02)**	0.17 (0.02)**	0.18 (0.02)
need satisfaction slope, u_1		0.09 (0.05)†	0.08 (0.05)	0.05 (0.06)
need frustration slope, u_2		0.06 (0.05)	0.06 (0.05)	0.01 (0.05)
Family-level variance of				
intercept, v_0	0.08 (.02)**	0.08 (0.02)**	0.08 (0.02)**	0.07 (0.02)
need satisfaction slope, v_1		0.08 (0.05)	0.09 (0.05)	0.12 (0.05)
need frustration slope, v_2		0.03 (0.04)	0.04 (0.04)	0.08 (0.04)
Level-1 residual e_0	0.28 (0.01)***	0.25 (0.01)**	0.25 (0.01)**	0.23 (0.01)
-2*loglikelihood	4719.68	4588.76	4586.99	3728.25
$\Delta\chi^2(df)$		130.92(1)**	1.763(1)	

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

Table 4

Daily Psychologically Controlling Parenting as a Function of Daily Need satisfaction, Need Frustration and Interindividual Differences in Parenting

	Null model	Model 1	Model 2	Model 3
Fixed effects				
Intercept	1.55 (0.04)***	1.53 (0.04)***	1.53 (0.04)***	1.54 (0.04)***
Day level predictors				
Daily need satisfaction (NS)		-.05 (0.03)	-0.05 (0.03)	-0.06 (0.03)
Daily need frustration (NF)		.12 (0.03)***	0.12 (0.03)***	0.11 (0.03)***
Autonomy support day before				-0.01 (0.02)
Psychological control day before				-0.08 (0.02)***
Person level predictors				
Autonomy support (AS)		-0.01 (0.06)	-0.01 (0.06)	
Psychological control (PC)		0.23 (0.05)***	0.23 (0.05)***	
Day- X person-level interaction				
Daily PC X Need frustration			-0.01 (0.10)	
Daily AS X Need frustration			0.02 (0.10)	
Random effects				
Parent-level variance of				
intercept, u_0	0.06 (0.01)***	0.05 (0.01)***	0.05 (0.01)***	0.07 (0.01)***
need satisfaction slope, u_1		0.04 (0.03)	0.04 (0.03)	0.00 (0.00)
need frustration slope, u_2		0.06 (0.03)*	0.06 (0.03)*	0.06 (0.03)*
Family-level variance of				
intercept, v_0	0.08 (0.01)***	0.08 (0.01)***	0.08 (0.01)***	0.07 (0.01)***
need satisfaction slope, v_1		0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
need frustration slope, v_2		0.02 (0.02)	0.02 (0.02)	0.03 (0.03)
Level-1 residual e_0	0.17 (0.01)***	0.16 (0.01)***	0.14 (0.01)***	0.14 (0.01)***
-2*loglikelihood	3364.190	3159.506	3159.456	2642.151
$\Delta\chi^2(df)$		204.684(1)***	0.05(1)	

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

AIM 3: GENERAL REPORTED PARENTING AS A MODERATOR

To examine whether the daily associations between parents' needs and reported parenting would be more pronounced among parents reporting to have a generally more autonomy-supportive or controlling parenting style, cross-level interactions were inspected. This was done only in cases where there was significant variation around the slopes of the individual-level explanatory variables need satisfaction and frustration (Hox, 2010). In Model 1 (displayed in Tables 3 and 4), the slopes of need satisfaction (u_1) and need frustration (u_2) were included simultaneously to investigate whether there was significant random slope variance. When looking at daily reported autonomy-supportive parenting as the outcome variable, Model 1 in Table 3 shows that only the slope variance around need satisfaction is significant. Therefore, the moderation analyses were only conducted with daily need satisfaction. When looking at daily reported psychologically controlling parenting as the outcome variable, Model 1 in Table 4 shows that only the slope variance around need frustration is significant. Therefore, the moderation analyses were only conducted with daily need frustration. As shown in Model 2 in both Tables 3 and 4, general levels of parenting did not moderate the daily associations between parental needs and reported parenting behavior. This means that the observed positive association between daily need satisfaction and daily autonomy-supportive parenting, and between daily need frustration and daily psychologically controlling parenting, held regardless of parents' general tendencies to be either autonomy-supportive or psychologically controlling.

SUPPLEMENTARY ANALYSES

Differences between fathers and mothers. Analyses were conducted with gender of the parent as a possible moderator in the association between the needs and reported parenting by adding two interaction terms

in the models, one with parent gender and need frustration and one with parent gender and need satisfaction. In the model with psychologically controlling parenting as an outcome, the interaction terms between need satisfaction and parent gender ($b = .00, SE = 0.06, p > .05$) and between need frustration and parent gender ($b = .03, SE = 0.06, p > .05$) were not significant. In the model with autonomy-supportive parenting as an outcome, the interactions between need satisfaction and parent gender ($b = .04, SE = 0.08, p > .05$) and between need frustration and parent gender ($b = .06, SE = 0.07, p > .05$) were also not significant. Overall, these results suggest that associations between needs experiences and reported parenting are similar for mothers and fathers.

Reversed causality. In addition to need satisfaction/frustration “leading to” reported autonomy-supportive and controlling parenting, it might be the case that parenting “elicits” experiences of need satisfaction/frustration. Research from outside the domain of parenting suggests that giving autonomy support to someone else contributes to experiences of need satisfaction in the person giving autonomy support (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). Most likely, psychological needs experiences and parental behaviors are related in a reciprocal and mutually reinforcing fashion. Therefore, additional analyses were performed in which need satisfaction and frustration were the dependent variables and reported autonomy-supportive and psychologically controlling parenting were the predictors. Results showed that autonomy-supportive and controlling parenting were significantly associated with need satisfaction ($b = .10, SE = 0.02, p < .001$; $b = -.14, SE = 0.03, p < .001$) and need frustration ($b = -.11, SE = 0.02, p < .001$; $b = .18, SE = 0.03, p < .001$). Another set of analyses was performed controlling for need satisfaction and frustration the day before. These analyses were conducted on a truncated dataset because the first measurement point (i.e., day 1) has no previous day. Daily

autonomy-supportive parenting and psychologically controlling parenting contributed to daily need satisfaction ($b = 0.12$, $SE = 0.02$, $p < .001$; $b = -0.15$, $SE = 0.03$, $p < .001$) when need satisfaction and need frustration of the day before were controlled for. Similarly, daily autonomy-supportive parenting and psychologically controlling parenting contributed to daily need frustration ($b = -0.10$, $SE = 0.02$, $p < .001$; $b = 0.17$, $SE = 0.03$, $p < .001$) when need satisfaction and need frustration of the day before were controlled for. Overall, these findings suggest that the opposite direction of effects is equally plausible as the order of effects assumed in our initial hypothesis. Most likely, psychological needs experiences and parent behaviors are related in a reciprocal and mutually reinforcing fashion.

DISCUSSION

Many studies have provided evidence for the benefits of autonomy-supportive parenting and for the multiple adverse effects of psychologically controlling parenting for children's development (Grolnick & Pomerantz, 2009; Joussemet et al., 2008; Soenens & Vansteenkiste, 2010). Although various studies provide evidence for the existence of relatively stable between-parent differences in autonomy-supportive and psychologically controlling parenting, most parents would probably testify that on some days they find it easier to take the child's perspective, to be patient, and to offer choices, but they are lacking the energy to do so on other days because they are fed up with bargaining about various issues or explaining the relevance of their requests. On such days, parents may be more likely to ignore, minimize, or even deny the child's perspective and to engage in psychologically controlling practices to enforce obedience. However, not much is known about sources of this daily variation in parent behavior. In this study we examined daily variation in parents' needs experiences as one such potential source.

DAY-TO-DAY VARIABILITY IN REPORTED PARENTING AND ITS SOURCES

The multilevel analyses showed that there is significant variability in parent-reported autonomy-supportive and psychologically controlling parenting from day-to-day, with a substantial part of the variance in reported parenting practices being situated at the between-days level. Although considerable interindividual differences between parents exist and also between families, parents report considerable variability in their ways of interacting with their children around their own average approach. Our findings are consistent with the few previous studies that examined daily variation in autonomy-supportive and controlling parenting (Aunola et al., 2013, 2017; Van der Kaap-Deeder et al., 2017).

The present study identified predictors of both the potential to be autonomy-supportive and the vulnerability to engage in psychologically controlling practices. Parental variability in daily need satisfaction was related uniquely to daily reported autonomy support, but daily need frustration was related uniquely to daily reported psychologically controlling parenting. These associations held equally for both mothers and fathers. On days that parents felt related to others, effective in carrying out their daily activities, and free to act on their own interests and values, they reported being more autonomy-supportive. Possibly, the satisfaction of these psychological needs provides essential nutrients and energy to be receptive and curious for what is going on in the life of their children, thereby enabling parents to adopt a more autonomy-supportive approach. This explanation for the association between parent experiences of need satisfaction and autonomy-supportive parenting could be tested in future research.

The absence of daily satisfaction of these needs did not relate to daily reported psychologically controlling parenting. To engage in psychologically controlling parenting, a stronger threat to parents' needs is needed than a mere lack of psychological need satisfaction: parents need to

feel actively excluded by others, to experience failure, and to engage in activities against their will. Presumably, such need frustrating experiences erode parents' psychological availability and energy levels, thereby leading parents to become more self-centered and less attuned to what is going on for their children.

Moderation analyses indicated that the associations between daily needs experiences and daily parenting emerged regardless of individual differences in generally autonomy-supportive and psychologically controlling parenting. The lack of moderation by parents' general style is encouraging because it suggests that even parents who report having fewer autonomy-supportive practices readily available in their parenting repertoire nevertheless report engaging more in autonomy-supportive parenting on days their needs get satisfied. This is promising news for interventions targeting parents' needs on a daily basis. Alternatively, the lack of moderation suggests that a need frustrating day also relates to psychologically controlling parenting among those parents who report at the dispositional level being autonomy-supportive.

Three additional findings need to be mentioned. First, to provide a more conservative test of the association between daily need experiences and parental behavior, we examined whether need experiences would still yield a significant association when controlling for reported parenting on the previous day, which was generally the case. These findings provide a preliminary indication that elevated levels of need satisfaction on a given day may result in an immediate gain relative to the previous day, with parents being capable of increasing their autonomy-supportive approach compared to the previous day. Similarly, need frustration as experienced on a given day may yield a cost, as indexed by the elevated control compared to the previous day. These findings suggest that need-based experiences relate to

fairly quick changes in parenting, a hypothesis that could further be tested in diary studies and experimental work.

Second, surprisingly there was only a moderate association between parents' general parenting style and their daily engagement in corresponding styles. The association between general and daily autonomy support was only marginally significant. Possibly parents' daily behavior is affected quite strongly by situational constraints (e.g., the amount of time available to interact with the child, the degree of difficult behavior displayed by the child, or the style used by one's partner on that day). These constraints may set limits to the expression of parents' more general parenting style in daily situations. Another possibility is that parents' responses to general parenting measures reflect at least partly their attitude towards a certain parenting style rather than their actual engagement in this parenting style. Instead, daily reports of parental behavior may provide a more accurate indication of parents' actual behavior. It should be noted that this is the first study to investigate associations between general and daily parenting. Future research is needed to replicate these findings and to address these possible explanations. It can be interesting in this regard to examine the role of the order in which the questionnaires are presented to parents. Possibly, the order of administering the general parenting behavior scale – that is, either prior to or following the daily assessment – impacts on the strength of the association between the general and daily measures. After rating their daily parenting behavior during several consecutive days, parents may have a better insight in their general parenting style. Such increased awareness, and possibly even reflection about their own parenting behavior may increase the observed association between daily and general parenting. Alternatively, one could argue that such an increased convergence is merely an artifact of parents' attention being selectively oriented towards their parenting practices of the past few days.

Third, supplementary analyses testing an alternative direction of effects showed that parents' daily parenting behaviors also predicted parents' psychological needs experiences. These findings suggest that psychological needs and parenting likely affect one another in a mutually reinforcing fashion, with satisfaction of the psychological needs not only contributing to more frequent engagement in autonomy-supportive practices but with these practices also giving rise to more experiences of need satisfaction. These findings are in line with emerging evidence that the provision of autonomy support is beneficial to the receiver of autonomy support and to the person who provides autonomy support. Such findings have been reported in the context of friendships (Deci et al., 2006) and in the context of teaching (Cheon, Reeve, Yu, & Jang, 2014). To the best of our knowledge, the present study is among the first to document this phenomenon in the context of parenting. Also, psychological need frustration appears to elicit a more controlling parental stance towards children and to result from parents' engagement in controlling practices. The latter effect is consistent with experimental findings showing that people who were instructed to thwart other people's needs reported increased personal need frustration (Legate, DeHaan, Weinstein, & Ryan, 2013). Similarly, by thwarting their child's psychological needs (through the use of a controlling style) parents seem to suffer themselves in terms of psychological need frustration; they experience more pressure (e.g., because a controlling style often elicits resistance in children, such that parents feel compelled to further increase their use of a controlling style in an attempt to enforce compliance), more incompetence (e.g., because parents experience that the use of a controlling style is not a very effective way of dealing with problems in the parent-child relationship), and more interpersonal distance (e.g., because parents notice how the use of a controlling style creates alienation in the parent-child relationship). Further research is needed to

replicate the bidirectional nature of associations between parental needs experiences and parenting behavior and to test explanations for effects of parenting behavior on needs experiences in particular.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The current study was limited by the sole reliance on parent reports. As such, part of the association between parents' need experiences and parenting reported behavior may be due to shared method variance. A recent diary study by Van der Kaap-Deeder et al. (2017) showed that children also report substantial daily variation in autonomy-supportive and controlling parental behavior. Another important step for future research is to include both parent and child reports in a diary study. Among other things, such research would allow one to examine discrepancy versus convergence in parent-reported and child-reported daily variation in parenting behavior. A few scales in our study also displayed modest reliability. Future research could rely on psychometrically improved versions of these scales. In addition, future diary studies with parents could rely on an electronic format rather than on paper-and-pencil diaries. Although paper-and-pencil diaries have the advantage that they are physically available for the participants, there is no guarantee that the diaries were completed each day. In future research, it would be interesting to work with electronic diary formats, so that the time of completion can be checked more rigorously.

Another limitation is that parents rated their parenting behavior and their needs experiences at the same time in the day. Hence, we do not know whether parents' experiences of need satisfaction and need frustration actually preceded parental behavior. Although supplementary analyses suggested that associations between the psychological needs and parenting are bidirectional in nature, more conclusive evidence regarding direction of effects can be obtained by separating the assessment of the psychological

needs and parenting in the day. For example, future diary studies could have parents reporting on their needs immediately after work and reporting on their parenting behavior at the end of the day. Such a design could help to further shed light on the direction of effects and to examine how parental experiences in one context (at work) translate into experiences and behaviors in another context (at home; Repetti et al., 2009). Alternatively, in an experimental study, parents could be asked to select either need-satisfying or neutral activities during the day (see Weinstein, Khabbaz, & Legate, 2016) to examine whether type of assigned activities impacts on their autonomy-supportive and controlling interaction with children.

Further, our sample was rather homogeneous. Probably due to the selection procedure used to recruit participants, parents were relatively highly educated compared to the national population (Statistics Belgium, 2014). Furthermore, only intact families took part in the studies. In future research, it will be important to investigate the daily variability in parenting in more heterogeneous samples, including families with adolescents at risk for problem behavior. There may be more room for daily variations in parenting behavior as the risk for problem behavior increases. Relatedly, future research could examine these daily dynamics in other cultural contexts. It has been shown for instance that controlling parenting is more prevalent (and perhaps more normative) in collectivist countries such as China (e.g., Wang, Pomerantz, & Chen, 2007). Possibly, when parenting practices are more normative in a given cultural context, they may be used in a more systematic fashion, resulting in decreased daily variation.

An important goal for future research is to unravel the origins of parental needs experiences. We have shown that these experiences are related to parents' daily reported parenting behaviors, but these experiences themselves can be influenced by several factors. In the literature, several theories about variable antecedents of parenting exist

(e.g. Belsky, 1984; Dix, 1991; Grolnick et al., 2002) and these models could be applied to research on the antecedents of parental needs experiences. Children's behavior, parental traits, and situational characteristics influence parents' needs in a dynamic fashion. For instance, when parents have had an argument with their partner or another family member, their needs are likely to be frustrated and, in turn, they may engage more readily in controlling behavior that day. Similarly, a child's repeated rule-breaking or daily work-related hassles are likely to affect parenting behavior through experiences of parental need frustration.

Future research can also focus on the processes explaining associations between parental needs experiences and parenting. Parental energy and psychological availability may represent important resources explaining associations between psychological need satisfaction and autonomy-supportive parenting. To better understand the mechanisms behind the association between parental need frustration and controlling parenting, future research could look into the role of parental stress. Theory and research indeed suggest that stress is an important consequence of need frustration (Weinstein & Ryan, 2011) and that stress can affect parenting (Conger, Patterson, & Ge, 1995). In future research, it would also be interesting to demonstrate the unique and additive roles of the needs in parenting above and beyond effects of mood. Mood (e.g., irritation) may play an explanatory role, with need frustration for instance eliciting irritation which, in turn, provokes a more controlling parental approach. It would be interesting to investigate whether needs have a unique effect or whether their effect is carried by mood.

The present findings underscore the fact that parenting is characterized by considerable day-to-day variation. Further, parents' psychological needs experiences appear to play a meaningful role in parents' daily capacity to be autonomy-supportive or inclination to be more

controlling. To the extent that parents manage to feel effective in their daily activities (competence), engage in them willingly (autonomy), and are capable of connecting to others (relatedness), they are more attuned to the child's perspective and able to support the child's autonomy. Presumably, experiences of psychological need satisfaction furnish parents with the necessary energy and create the mental space to be truly receptive to the child rather than being self-centered and preoccupied with their own concerns and agenda.

IMPLICATIONS FOR PRACTICE, APPLICATION, THEORY, AND POLICY

Knowledge about the degree of day-to-day variability in parents' rearing style is relevant both theoretically and practically. Theoretically, the observation that parental behavior changes substantially on a day-to-day basis indicates that parental behavior is in flux and, hence, susceptible to change. As such, our findings are in line with dynamic models of parental behavior (e.g., Laurenceau & Bolger, 2005) emphasizing that parenting style should not be conceived as a stable trait. Parental behaviors are susceptible to change from time to time and from situation to situation (Repetti et al., 2015).

The present findings may also help to inform prevention and intervention efforts about the size and the limits of parents' potential to change their interaction style with children. Indeed, the present findings warrant some optimism because parenting behavior is not "carved in stone" and because there is room for change around parents' own baseline-level. Consistent with this observation, studies have begun to show that parents can be trained to adopt a more autonomy-supportive parenting approach, with resulting benefits for children's motivation and behavioral adjustment (Froiland, 2011; Joussemet, Mageau, & Koestner, 2014). Also at the practical level, the observation of considerable within-person variation in parenting

may reduce the possibility of parent blaming in intervention programs or individual counseling. For instance, self-help books on parenting may create the impression that there exist good and bad parents because some of these books highlight inter-individual differences in parenting practices. The recommended parenting practices in such self-help books may elicit guilt among some parents (although the degree to which feelings of guilt are elicited depends also on how recommendations are communicated), with parents blaming themselves for not being effective in their parenting role. The observation of substantial day-to-day variation in parenting practices suggests that it is unwarranted to classify parents as being good or bad, as every parent seems to have the potential to be autonomy-supportive but also the vulnerability to become more controlling.

In addition, the identification of daily need satisfaction and daily need frustration as predictors of daily parenting opens up new possibilities to strengthen intervention and prevention programs for parents. In addition to informing parents about the benefits of autonomy-supportive parenting and the risks of psychologically controlling parenting, parents could be advised to organize their daily life as much as possible around need satisfying experiences and to be aware of need frustrating experiences. To the extent that parents are capable of selecting themselves into daily need-satisfying activities (e.g., spending sufficient time on their hobbies; see Weinstein et al., 2016) or to derive greater need satisfaction from ongoing activities, they are more likely to adopt an autonomy-supportive approach towards their children. Of course, this advice is easier said than done. In particular when parents are overburdened with the challenges of work and family, it may be very difficult for them to seek more need satisfaction in life. These parents may require more active coaching or even counseling to change their life. Parents may also become increasingly aware of their daily need frustrating experiences. Such increased awareness, which can be

obtained, for instance, through a more mindful approach (Coatsworth et al., 2015), may be critical to avoid that daily need frustrating experiences translate into a psychologically controlling approach towards children. The inclusion of advice regarding parents' own need experiences in intervention and prevention programs is important because changes in parental behavior may be short-lived as long as the sources of parental behavior are not targeted.

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CHAPTER 8

GENERAL DISCUSSION

In this concluding chapter, I discuss and integrate the research findings of the presented empirical studies, thereby formulating answers on the questions raised in the Introduction. I will also point out limitations of the studies in this dissertation, discuss implications of obtained findings, and provide some directions for future research.

TABLE OF CONTENTS

1. GENERAL OVERVIEW OF THE RESEARCH FINDINGS

- 1.1. A GENERAL NOTE ABOUT THE MAIN EFFECTS OF PSYCHOLOGICALLY CONTROLLING AND AUTONOMY-SUPPORTIVE PARENTING
- 1.2. GOAL 1: THE MODERATING ROLE OF INDIVIDUAL DIFFERENCES
- 1.3. GOAL 2: THE ANTECEDENT ROLE OF PARENTAL NEEDS EXPERIENCES IN AUTONOMY-SUPPORTIVE AND CONTROLLING PARENTING

2. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

- 2.1. SAMPLING
- 2.2. MEASUREMENT
 - 2.2.1. GENERIC MEASURES OF PARENTING
 - 2.2.2. SOCIAL DESIRABILITY
- 2.3. INTERPLAY BETWEEN CHILD PERSONALITY AND PARENTING
 - 2.3.1. INVESTIGATING NEED-SUPPORTIVE AND NEED-THWARTING PARENTING SIMULTANEOUSLY
 - 2.3.2. TOWARDS A MORE FINE-GRAINED UNDERSTANDING OF THE ROLE OF PERSONALITY
 - 2.3.3. ADOPTING A MORE DYNAMIC VIEW ON PERSONALITY
- 2.4. ANTECEDENTS OF PARENTING AND THEIR MECHANISMS

3. IMPLICATIONS FOR PRACTICE

- 3.1. INTERVENTIONS FOR PARENTS
- 3.2. SELF-CARE
- 3.3. INTERVENTIONS FOR CHILDREN AND ADOLESCENTS

4. GENERAL CONCLUSION

5. REFERENCES

6. APPENDIX

1. GENERAL OVERVIEW OF THE RESEARCH FINDINGS

All studies in this dissertation addressed, in one way or the other, the role of individual differences in autonomy-supportive and psychologically controlling parenting. While most studies dealt with the question whether and how individual differences in personality and parenting history moderate the effects of such parenting, one study aimed to determine the degree to which variance in autonomy-supportive and controlling parenting itself reflects inter-individual differences between parents or, instead, is more reflective of intra-individual fluctuations from day to day. In the Introduction of this dissertation, we identified two overarching aims, which were addressed throughout the six empirical chapters. In what follows, these goals are readdressed and discussed in terms of the findings obtained.

1.1. A GENERAL NOTE ABOUT THE MAIN EFFECTS OF PSYCHOLOGICALLY CONTROLLING AND AUTONOMY-SUPPORTIVE PARENTING

Before addressing each of the research goals, I would like to highlight that, consistent with previous research (Grolnick & Pomerantz, 2009; Joussemet, Landry, & Koestner, 2008; Ryan & Deci, 2017; Soenens & Vansteenkiste, 2010; Vansteenkiste & Ryan, 2013), the controlling and autonomy-supportive socialization styles displayed robust and systematic associations with children's and adolescents' motivational and developmental outcomes. Psychologically controlling parenting was related to both internalizing and externalizing problems, with these associations emerging across different informants and both at the level of interindividual differences and at the level of intra-individual change. In the cross-sectional study in Chapter 2, both adolescent and mother-reported maternal psychologically controlling parenting was significantly related to internalizing and externalizing problems. The diary study in Chapter 3 showed that fluctuations in maternal and paternal psychologically controlling parenting

covaried with fluctuations in internalizing and externalizing problems. This was the case for both parent-reported and child-reported psychologically controlling parenting (although there was one exception, with child-reported psychological control being unrelated to internalizing problems). These results show that if a parent is more psychologically controlling on one day compared to another day, the child will show more internalizing/externalizing problems on that specific day. The longitudinal study in Chapter 4 showed that changes in maternal and paternal psychologically controlling parenting over a longer period (approximately 1 year) were related to changes in internalizing and externalizing problems. The only exception was that father-reported psychologically controlling parenting was unrelated to a change in internalizing problems.

While the psychological control – maladjustment link has been demonstrated avidly in research focusing on interindividual differences (Barber & Xia, 2013), the studies in the current dissertation (in particular the diary study in Chapter 3 and the longitudinal study in Chapter 4) were among the first to examine this association at the level of intra-individual change. While it may seem self-evident that the positive association between psychological control and problem behaviors emerges at both levels of analysis, this is not necessarily the case as illustrated by the *Simpson's paradox* (Keijsers, 2016). This paradox refers to the occurrence of opposing findings at the within and the between level unit of analysis (Kievit, Frankenhuis, Waldorp, & Borsboom, 2013, see also Dietvorst, Hiemstra, Hillegers, & Keijsers, 2017). It is possible for example that two variables are correlated positively across a population of individuals, but negatively within each individual over time (see Figure 1 for an example).

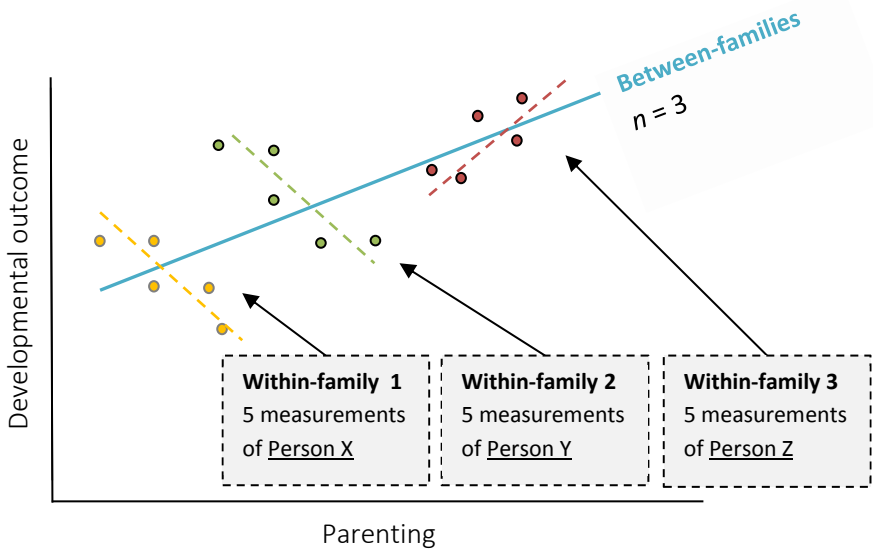


Figure 1. Illustration of the Simpson's paradox (figure adapted from Keijsers et al., 2016).

Illustrating this principle, Dietvorst and colleagues (2017) found that, whereas privacy invasion by the parents predicted increased adolescents' secrecy at the inter-individual level, at the intra-individual level, adolescent secrecy reduced privacy invasion. At the between-person level, children who experience more privacy invasion are more likely to keep secrets for themselves. The opposite pattern of findings at the within-person level suggests that following periods of secrecy, parents are perceived as less privacy invasive. Presumably, a period of secrecy helps adolescents to regulate the negative effects of privacy invasive parenting. Such findings underscore the importance of disentangling between- and within-person dynamics as both are not necessarily parallel.

Translated to the concept of psychologically controlling parenting, the Simpson's paradox would suggest that, while the association between psychologically controlling parenting and maladjustment is positive at the between-person level, this association may turn out to be negative at the

within-person level. In more substantive terms, such a pattern of findings would indicate that adolescents are only at risk for maladjustment when they experience more psychological control relative to their peers, which likely indicates a more *chronic* exposure to such parenting. However, a more temporary increase in psychological control relative to their own baseline of experienced psychological control would not be related to additional risk and would even protect against maladjustment (with a daily increase in psychological control for instance inhibiting externalizing problems or vice versa). Although such a pattern of findings would have been possible in principle, the findings in this dissertation showed otherwise. Psychologically controlling parenting was positively related to maladjustment both at the level of interindividual differences and at the level of within-person variation.

In contrast to the robust associations between psychologically controlling parenting and indicators of children's and adolescents' maladjustment, autonomy-supportive parenting was found to relate positively to adolescents' well-being. Again, findings from the longitudinal study in Chapter 5 showed that this association emerged across different informants and at the level of both interindividual differences and at the level of intra-individual change across time. Adolescent-reported autonomy-supportive parenting was associated positively with well-being, both at the between-person and within-person level. Mother-reported autonomy-supportive parenting was also associated positively with well-being at the between-person level, yet not at the within-person level. As will be discussed below, mother-reported autonomy support did relate indirectly to adolescents' well-being at the within-person level (i.e., via experienced goodness of fit). These associations are consistent with a plethora of findings from previous studies documenting the benefits of autonomy-supportive parenting for children's and adolescents' well-being (Ryan & Deci, 2017;

Soenens, Vansteenkiste, & Van Petegem, 2018; Vasquez, Patall, Fong, Corrigan, & Pine, 2016).

Although the associations between socialization style and children's and adolescents' outcomes obtained in this dissertation were quite robust and consistent with previous studies, their correlational nature precludes one from drawing causal conclusions. To examine the causal role of socialization style in children's motivation, Chapter 6 used an experimental design, where children were assigned either to a condition with autonomy-supportive instructions and feedback or to a condition with more controlling instructions and feedback. Results from this chapter showed that communication style (i.e., autonomy-supportive versus controlling) had a significant effect on autonomy satisfaction, competence satisfaction and self-reported intrinsic motivation, with these effects in some cases occurring over and above and in some cases in conjunction with the powerful effects of an experimental manipulation of feedback valence (i.e., positive versus negative feedback). Together with other experimental studies (e.g., De Muyne et al., 2017; Ryan, 1982; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005), these findings point to a possible causal effect of an autonomy-relevant socialization style on children's motivation and adjustment.

The robustness of associations between psychologically controlling and autonomy-supportive socialization and children's and adolescents' outcomes raises the question how these associations can be explained. According to SDT, these different socialization styles appeal differentially to children's basic psychological needs for autonomy, competence, and relatedness. While psychologically controlling parenting is said to thwart those needs (Soenens & Vansteenkiste, 2010), an autonomy-supportive style is said to nurture those needs (Grolnick, 2003; Joussemet et al., 2008; Soenens, Vansteenkiste, Van Petegem, Beyers, & Ryan, 2018). Consistent

with these predictions, results from the cross-sectional study in Chapter 2 showed that need frustration mediates the association between maternal psychologically controlling parenting and internalizing and externalizing problems. In Sample 2 from that chapter, we also administered questionnaires tapping into autonomy-supportive parenting, psychological need satisfaction, and adolescents' well-being. Although not reported in Chapter 2 (because this chapter focused specifically on psychological control), we analyzed these additional data and found, consistent with predictions, that psychological need satisfaction indeed played an intervening role in associations between autonomy support and well-being (see Figure 2). The indirect association was significant ($\beta = .51, p = .00$). As such, evidence was found for a dual pathway model (Bartholomew et al., 2011; Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015; Vansteenkiste & Ryan, 2013), with controlling socialization relating to problem behavior via need frustration and with autonomy-supportive socialization relating to well-being via need satisfaction.

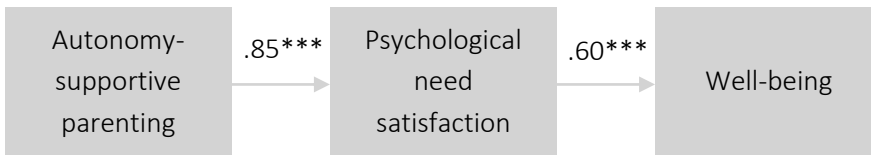


Figure 2. Mediating role of the needs (Chapter 2, Sample 2).

In Chapter 2, the mediating role of the needs was investigated in the context of the more general parenting climate, which probably affects children's psychological needs in the long run. In a complementary way, it is also interesting to examine how specific contexts affect children's need-based functioning in a more immediate way. In the experimental study in Chapter 6, the mediating role of the needs was investigated in the context of

feedback provision. Consistent with our hypotheses, these results showed that an experimentally induced autonomy-supportive (relative to controlling) style gave rise to feelings of need satisfaction which, in turn, predicted motivational outcomes.

In sum, these findings are largely consistent with the claim in SDT that psychologically controlling and autonomy-supportive socialization have differential associations with children's and adolescents' outcomes because of their differential associations with the basic and universal needs for autonomy, competence, and relatedness (Vansteenkiste & Ryan, 2013). At first sight, these findings and the accompanying conclusion may suggest that the effects obtained in this dissertation are strictly universal. Said differently, all children would be equally sensitive to effects of controlling and autonomy-supportive socialization. When interpreted in such an extreme way, SDT can indeed be considered as a radical universalistic perspective, which leaves little, if any, room for individual differences in effects of autonomy-relevant socialization. However, upon closer scrutiny, SDT does provide a nuanced perspective on the role of individual differences in autonomy-relevant socialization (Soenens, Vansteenkiste, & Van Petegem, 2015). Specifically, individual differences may determine the strength of the association between socialization and developmental outcomes (i.e., gradation); they may influence the way how need-supportive and need-thwarting contexts are interpreted (i.e., interpretation) and they may also have an impact on how the effects of socialization surface (i.e., manifestation). The main aim of this dissertation was to examine these nuanced ways in which individual differences may affect the outcomes of autonomy-relevant socialization.

1.2. GOAL 1: THE MODERATING ROLE OF INDIVIDUAL DIFFERENCES

In this dissertation, individual differences are conceptualized in terms of three different moderators, that is, Big Five personality traits (Chapters 2, 3, 4 and 6), causality orientations (Chapter 5) and developmental history of parenting (Chapter 6). Below, the main results from the moderation analyses will be discussed.

Research Question 1: Are some children and adolescents more susceptible to effects of psychologically controlling parenting depending on their personality traits? Before looking at the moderating role of child and adolescent personality, it is important to look first at the main effects of this moderator. In Chapters 2-4 we found robust associations of personality with internalizing and externalizing problems, above and beyond the effects of psychologically controlling parenting. Extraversion was negatively related to internalizing problems in Chapters 2, 3 and 4. In Chapter 2 (Sample 1) and 3, Agreeableness was negatively related with internalizing and externalizing problems. In Chapter 4, this negative association was only found for externalizing problems. Conscientiousness was negatively related to externalizing problems in Chapter 2 (Sample 1) and to both externalizing and internalizing problems in Chapter 4. These associations were not significant in Chapter 3. Emotional Stability was negatively related to both internalizing and externalizing problems in Chapter 2 (Sample 1 and 2) and only negatively related to internalizing problems in Chapter 3 and 4. Finally, Openness to Experience was unrelated to problem behavior in Chapter 2 and 3 and positively related to externalizing problems in Chapter 4. These associations are largely consistent with previous research (Asendorpf, 2003; Van Leeuwen, Mervielde, De Clercq, & De Fruyt, 2007) showing that low Agreeableness and Conscientiousness (undercontrolled traits) are primarily related to externalizing problems and that low Emotional Stability and low

Extraversion (overcontrolled traits) are primarily related to internalizing problems. These findings are also in line with the vulnerability model of personality (Caspi & Shiner, 2006), stating that certain personality characteristics may put adolescents at risk to develop problem behavior.

The developmental-contextual model (Lerner, Rothbaum, Boulos, & Castellino, 2002) states that an individual's development is influenced by a complex interplay between both dispositional factors and contexts. The parenting context is especially relevant due to the key role of parents in children's and adolescents' development (Bornstein, 2015; Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). As such, according to this model and according to related models such as the diathesis-stress framework (Kiff, Lengua, & Zalewski, 2001) and the differential susceptibility hypothesis (Belsky, 1997), it is plausible to assume interactions between personality and (psychologically controlling) parenting.

Across the three chapters in which the moderating role of personality in the effects of psychologically controlling parenting was investigated, 11 out of 90 possible interactions (i.e., 12%) turned out to be significant. Five interactions emerged in the prediction of internalizing problems and six in the prediction of externalizing problems. An overview of these interactions can be found in Table 1, which provides a deeper insight in the interactions found as a function of (a) the type of interaction obtained, (b) the personality dimension involved, (c) the informant of parenting, (d) the level of analysis and (e) the type of outcome.

Table 1
Overview of the Interactions between Personality Traits and Psychologically Controlling Parenting Across Chapters 2, 3 and 4

Type of interaction	Number of significant interactions by category	% of significant interactions (out of the 11 interactions)
Gradation (both slopes significant)	0	0%
One slope non-significant	11	100%
Cross-over	0	0%
Personality		
Extraversion	1	18%
Agreeableness	5	36%
Conscientiousness	0	0%
Emotional Stability	2	18%
Openness to Experience	3	28%
Informant parenting		
Child/Adolescent	7 (13% of tested interactions with child-report)	64%
Mother	4 (16% of tested interactions with mother-report)	26%
Father	0	0%
Level of analysis		
Within	6 (10% of tested interactions at within-level)	54%
Between	5 (17% of tested interactions at between-level)	46%
Type of problems		
Internalizing problems	5	45%
Externalizing problems	6	55%

Type of Interaction. In Table 1, a distinction has been made between three types of interactions: (a) an interaction in which both slopes remain significant, (b) an interaction in which one of the slopes is non-significant, and (c) a cross-over interaction. If interactions would be cross-over in nature, this would clearly contradict SDT, since for some children, psychologically controlling parenting would then have a positive effect. If interactions would be a matter of gradation, in which both slopes are significant but one less strong compared to the other, this would be consistent with SDT because psychologically controlling parenting would be detrimental for all children, but to different degrees. However, all interactions found were interactions in which one of the slopes is non-significant. With this type of interactions, it is less clear whether SDT gets contradicted or not. If one of the slopes is non-significant, this means that for some children, there is no association between psychologically controlling parenting and internalizing or externalizing problems, which would be, at first sight, in contrast with SDT's claim about the universally maladaptive role of psychological need thwarting. However, it is also important to consider whether the interactions found are outcome-specific or not. The SDT perspective would be disconfirmed when psychologically controlling parenting would be systematically unrelated to any type of problem behavior in some adolescents. In almost all cases (with one exception), if there was an interaction with a personality trait, this was only in the prediction of one of the two problem behaviors (i.e., internalizing or externalizing problems). This means that, although a certain personality trait may buffer the effects of psychologically controlling parenting by preventing the manifestation of one type of problem behavior (e.g., externalizing problems), this same personality trait does not play a moderating role in the prediction of the other type of problem behaviors (e.g., internalizing problems), and vice versa. In other words, although psychologically

controlling parenting does not manifest in externalizing problems for some children, they do pay a cost in terms of internalizing problems, or vice versa. Overall then, all children seemed to pay a cost for being exposed to psychologically controlling parenting in one way or the other, with personality mainly affecting the manifestation of the type of maladjustment associated with such parenting.

Most Prominent Personality Dimensions in the Interactions. When taking a closer look at the interactions (see an overview in Figure 3) as a function of involved personality dimensions, Agreeableness was the most consistent moderator of effects of psychologically controlling parenting. This personality dimension buffered four times the positive contribution of psychologically controlling parenting in the prediction of externalizing problems (cross-sectional study in Chapter 2 and diary study in Chapter 3), and in one case also in the prediction of internalizing problems (diary study in Chapter 3). Such findings converge with past work focusing on external types of controlling parenting such as overreactivity and harshness (e.g., de Haan, Prinzie, & Dekovic, 2010; Van Leeuwen, Mervielde, Braet, & Bosmans, 2004).

Emotional Stability (cross-sectional study in Chapter 2 and longitudinal study in Chapter 4) and Extraversion (cross-sectional study in Chapter 2) buffered the effects of psychologically controlling parenting in the prediction of internalizing problems. These interactions are in line with both a vulnerability and resilience model (Caspi & Shiner, 2006). While low Agreeableness and Emotional Stability seem to indicate vulnerability and heightened sensitivity to effects of psychologically controlling parenting in adolescents, high Agreeableness and Emotional Stability serve as resilience factors against parental psychological control in the prediction of externalizing and internalizing problems respectively.

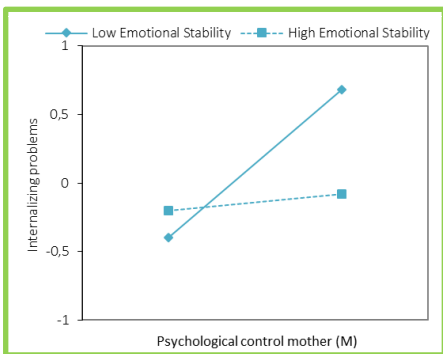
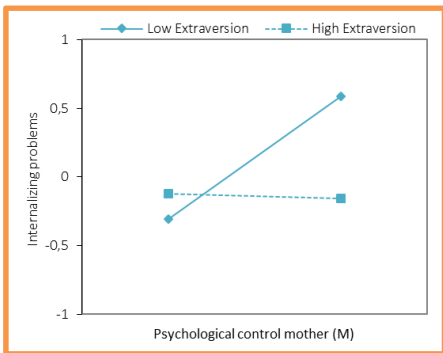
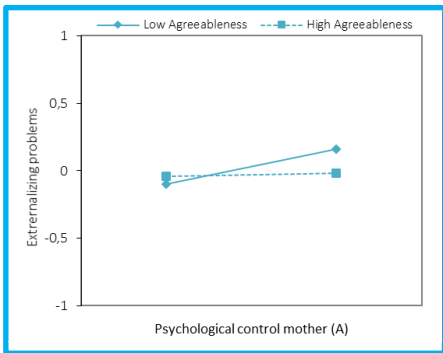
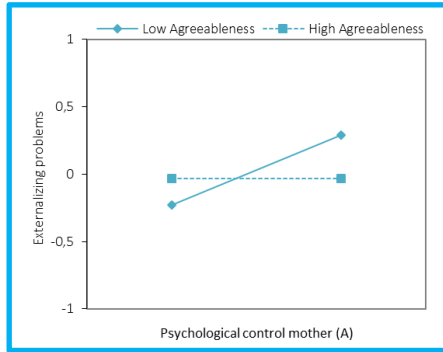
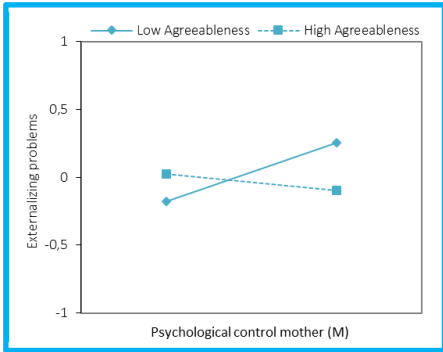
The interactions with Openness to Experience (diary study in Chapter 3 and longitudinal study in Chapter 4) were more inconsistent and, therefore, more difficult to interpret. In the diary study (Chapter 3), Openness to Experience seemed to play a buffering role in the prediction of externalizing problems, whereas in the longitudinal study (Chapter 4), it seemed to be a vulnerability factor in the prediction of externalizing problems. In the longitudinal study in Chapter 4, Openness to Experience was also a vulnerability factor in the prediction of internalizing problems. The current results suggest that Openness to Experience plays a different role depending on whether adolescents' exposure to parental psychological control is short-lived or more enduring. Adolescents scoring high on Openness to Experience appear to cope better with a brief, daily exposure to psychologically controlling parenting, yet to suffer more from a more long-term increase in such parenting across a 1-year interval. Possibly, these adolescents' capacity for creativity and fantasy helps them to reappraise a brief event of psychological control. This same capacity for creativity may be suppressed more severely when these adolescents face a longer period of psychologically controlling parenting, such that these adolescents feel alienated from who they are and become more sensitive to the detrimental outcomes associated with parental psychological control. This is a highly speculative interpretation of an inconsistent pattern of interactions, which needs replication in future research before firm conclusions can be drawn.

OVERVIEW OF THE INTERACTIONS

Chapter 2

Sample 1

Sample 2



Chapter 3

Chapter 4

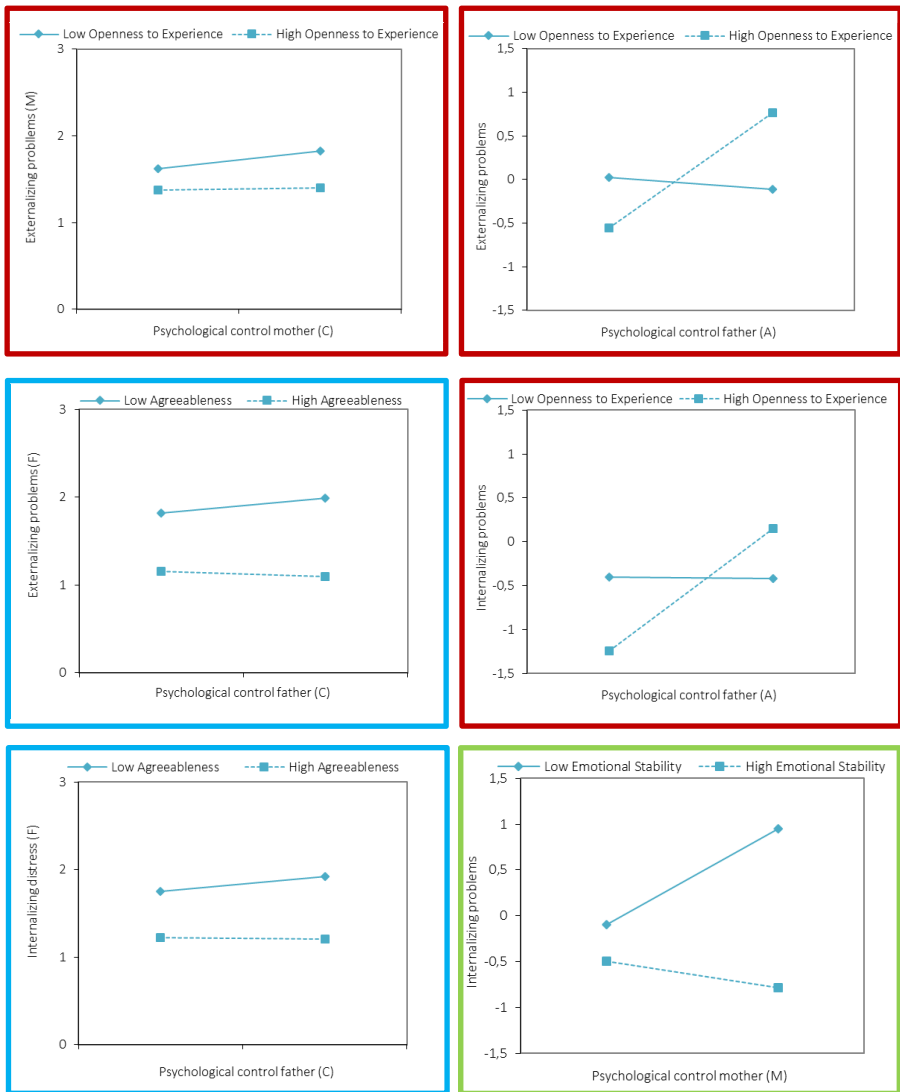


Figure 3. Overview of the interactions in Chapters 2, 3 and 4.

Overall, Agreeableness seemed to play mainly a role in the effects of psychologically controlling parenting on externalizing problems (cross-sectional study in Chapter 2 and diary study in Chapter 3), whereas Emotional Stability seemed to play mainly a role in the effects of psychologically controlling parenting on internalizing problems (cross-sectional study in Chapter 2 and longitudinal study in Chapter 4). Although the obtained pattern of interactions is in need of replication in future research, the content of both personality traits may be considered to understand their (seemingly) differential role. With respect to Agreeableness, it is important to note that this personality dimension is differently measured in adults relative to children (e.g., HiPIC; Mervielde & De Fruyt, 1999, 2002; Mervielde, De Fruyt, & De Clercq, 2009). Agreeableness measured in children (i.e., Benevolence) is linked to the concept of difficult temperament (especially the facets irritability, compliance and dominance) and thus indirectly speaks to the manageability of a child (De Pauw, 2017). That is, Agreeableness, as measured in children, primarily denotes differences in children's capacity for self-regulation in relation to significant others, thereby reflecting children's capacity to inhibit hostile and aggressive impulses (Shiner & De Young, 2013). Children and adolescents scoring low on Agreeableness sometimes dare to take an aggressive approach towards others when they do not get their way or do not feel heard (Shiner & De Young, 2013). They approach social situations more easily from their own perspective, thereby considering others' interests as subordinate to their own interests. Psychologically controlling parenting may trigger the aggressive, norm-breaking, and egocentric tendencies inherent in low Agreeableness. In contrast, children and adolescents scoring high on Agreeableness are rather easygoing, presumably because they more easily take into account the wishes and ideas of others.

When facing a psychologically controlling parenting, they probably do not exhibit externalizing problems because of their friendly nature.

Children and adolescents scoring low on Emotional Stability often doubt their own abilities and tend to feel anxious and tense. They more easily question their capacity to handle problems, respond more easily in a helpless way to a setback and have difficulty making independent decisions (Shiner & De Young, 2013). Much like psychological control may awaken aggressive urges in children scoring low on Agreeableness, it may awaken the affective distress to which children low on Emotional Stability are more susceptible. In contrast, children and adolescents scoring high on Emotional Stability are often self-confident and they recover quickly from a setback or a failure (Shiner & De Young, 2013). When facing a psychologically controlling parenting context, they less easily display internalizing problems because of their internal sense of security and resilience (De Pauw, 2017).

In sum, when considering the most consistent interactions obtained in this dissertation, it appears as if psychologically controlling parenting triggers specific problems in children and adolescents with specific vulnerabilities. While adolescents scoring high on undercontrolled traits (and low Agreeableness in particular) respond more strongly to psychologically controlling parenting with externalizing problems, adolescents scoring high on overcontrolled traits (and low Emotional Stability in particular) respond more strongly to psychologically controlling parenting with internalizing problems. These findings suggest that personality affects not only the degree to which children are sensitive to effects of psychological control (i.e., the gradation of the effect) but also the type of problems surfacing in response to psychologically controlling parenting (i.e., the manifestation of the effect). This being said, it should be reiterated that the number of significant interactions was fairly limited given the total number of

interactions tested. As such, the moderating role of personality should not be overstated.

Child versus Parent Reports. As mentioned in the Introduction, we used parental reports of parenting next to self-reports of adolescents and children because we hypothesized that there would be somewhat less room for moderation in case children reported on parenting behaviors. We assumed that, as soon as children and adolescents have the perception that their autonomy is supported or undermined, there would be relatively less room for personality to change the effects of the environment (Soenens et al., 2015). However, in Table 1, it can be noticed that the percentage of significant interactions when using children or adolescents as informants of parenting is somewhat higher than the percentage of interactions when relying on parent reports.

Apparently then, personality does affect (to some extent) children's sensitivity to perceived autonomy-relevant parenting and plays a more minimal role in effects of parent-reported parenting. One explanation for these findings may be that parent reports are less accurate (e.g., determined more strongly by social desirability) than child reports and that children's own perceptions of parenting have more direct relevance to their own personal functioning than parents' view on their rearing style (Lamborn, Mounts, Steinberg, & Dornbusch, 1991). Consistent with this reasoning and in line with a recent meta-analysis (Korelitz & Garber, 2016), we found that associations between child-reported and parent-reported parenting were small to moderate (averaging around $r = .30$). Also in line with many previous studies (e.g., Sessa, Avenevoli, Steinberg, & Morris, 2001), we found that child reports of parenting were related more robustly to child outcomes than parent reports. Given these considerations, personality may play a somewhat more prominent moderating role in effects of child-perceived

(relative to parent-reported) parenting because it is more accurate and also more relevant to children's psychosocial functioning.

Between- and Within-Person Levels of Analysis. In this dissertation, we aimed to investigate the effects of psychologically controlling parenting and the moderating role of personality herein at both the between and within level of analysis. Doing so was deemed critical from a substantive (instead of merely a methodological) perspective as these two angles differ in their point of reference. From a between-person perspective, the focus is on the question whether children with certain personality traits are more susceptible to a more pronounced exposure to psychologically controlling parenting relative to other children. From a within-person perspective, the focus is on children's own average or typical exposure to parenting, thereby considering deviations from a given adolescents' own average. The moderating role of child and adolescent personality in the effects of psychologically controlling parenting is investigated from both angles, being the between-person level in a cross-sectional study (Chapter 2) and the within-person level in both a diary-based (Chapter 3) and longitudinal (Chapter 4) study.

At the between-person level, investigating moderation means that one is looking for whom the associations are stronger, weaker or even none existent. In the cross-sectional study (Chapter 2), for example, we found that in both samples, psychologically controlling parenting was not related to externalizing problems for children scoring high on Agreeableness. This finding indicates that children scoring high on Agreeableness report relatively more externalizing problems compared to other children when they are exposed to more psychological control than other children. In contrast to the between-person analyses (which focus on interindividual differences between children), analyses at the within-person level address the question whether personality affects children's susceptibility to changes

in psychologically controlling parenting within their own family. In some of the within-person analyses, Agreeableness again played a role, but the interpretation of the moderation is slightly different. The moderating effect in the diary study (Chapter 3), for instance, indicated that children scoring lower on Agreeableness were more susceptible to a daily increase in psychological control relative to the average level of psychological control experienced during the week.

The number of moderation effects was distributed almost equally across the between-person and within-person levels of analysis (see Table 1). As such, personality appears to play a potential role both in children's exposure to psychological control relative to other children and in children's exposure to psychological control relative to their usual experiences of parenting.

Summary. Overall, the moderating role of personality in associations between psychologically controlling parenting and children's and adolescents' problem behaviors was modest. Most interactions indicated that at least some personality dimensions may differentially affect the manifestation of problems associated with parental psychological control. In this dissertation, Agreeableness and Emotional Stability mainly affected this manifestation. Other interactions (particularly those with Openness to Experience) were more inconsistent and differed depending on the time frame examined (i.e., daily versus long-term change in parenting).

Because an absence of psychologically controlling parenting cannot be equated with the presence of autonomy-supportive parenting (Costa, Cuzzocrea, Gugliandolo, & Larcán, 2016; Vansteenkiste & Ryan, 2013), it was deemed important to also look into the moderating role of personality in effects of autonomy-supportive parenting. In doing so, the focus was more on positive developmental outcomes because autonomy-supportive

parenting is more strongly predictive of such outcomes (e.g., Soenens et al., 2007).

Research Question 2: Do associations between perceived maternal autonomy-supportive parenting and adolescents' well-being depend on adolescents' dispositional motivational orientations? With respect to autonomy-supportive parenting, we chose to investigate the moderating role of the causality orientations (instead of the Big Five traits). This choice was based on the fact that these causality orientations, and the autonomous orientation in particular, have a more proximal link with autonomy support and thus allow for a more adequate testing of the notion of a match between parenting and individual differences. That is, based on a literal interpretation of the goodness-of-fit principle, only adolescents who score high on an autonomous causality orientation would benefit from parental autonomy support. Up till now, only studies that focused on teacher autonomy support examined whether an autonomy-supportive teaching approach is beneficial to all students or whether, instead, this approach yields greater motivational benefits for students who already have high-quality (i.e., autonomous) motivation (De Meyer et al., 2016; Mouratidis, Vansteenkiste, Lens, & Sideridis, 2011). Whereas Mouratidis et al. (2011) found that pupils with a high autonomous motivation benefitted more from a need-supportive class, the moderating role of student motivation in the effect of teaching style was limited in the study of De Meyer et al. (2016). In that study, even students with a controlled motivation benefitted from an autonomy-supportive approach and suffered from a controlling approach.

When transferring this idea to the parenting context, some parents may believe that acting in an autonomy-supportive way is only beneficial and, hence, recommended if the child already has an inclination to act upon its interests, personal values, and preferences. Some parents may even hold

the belief that some children are ‘in need’ of a more controlling approach because a pressuring approach is the only way to motivate the child and to prompt desirable behavior. In contrast to such beliefs, however, the results in Chapter 5 showed that the effects of maternal autonomy-supportive parenting on adolescents’ well-being did not depend on adolescents’ motivational orientations. Said differently, even adolescents scoring low on the autonomous orientation and those scoring high on the controlled orientation reported greater well-being in response to an autonomy-supportive parenting climate.

While we deliberately chose to focus on the moderating role of causality orientations in effects of autonomy-supportive parenting in Chapter 5 (because these orientations are conceptually linked to autonomy-supportive parenting and allow for an examination of a proximal match between parenting and individual differences), it is also informative to look into the moderating role of Big Five personality dimensions in effects of autonomy-supportive parenting. While the latter personality dimensions have a less clear-cut link with autonomy-supportive parenting than the causality orientations, they yield a more comprehensive picture of adolescents’ individual differences. Therefore, I performed an additional set of analyses (using the data from Chapter 5), thereby using the Big Five personality dimensions as potential moderators of effects of autonomy-supportive parenting. Results of these additional analyses can be found in the Appendix. While there was some evidence for a moderating role of Big Five traits in effects of autonomy-supportive parenting at the level of between-person differences, no evidence was obtained for a moderating role at the level of within-person associations across time.

In Chapter 5, we also made a distinction between goodness-of-fit as an objective match between parental practices and child and adolescents’ personalities and a more subjective experience at the side of the child

involving the feeling that parents understand and take into account their personalities. Based on SDT, we hypothesized that autonomy-supportive parenting would be associated with a subjective experience of fit, which, in turn, would relate to adjustment. Because autonomy-supportive parents are receptive for the child's frame of reference, they will be better able to attune their parenting to the child's perspective, and probably also to the personality of the child, thereby promoting a sense of fit. Results showed that the perception that the mother knows the personality of the adolescent and takes it into account in interaction with the adolescent indeed mediated the association between autonomy-supportive parenting and well-being. More specifically, this means that the association between autonomy-supportive parenting and well-being is driven by the experience of the child that the mother knows his/her personality and takes it into account when interacting with the child.

Summary. In Chapter 5, there was no evidence that the causality orientations play a moderating role in associations between autonomy-supportive parenting and well-being. Autonomy-supportive parenting did appear to go hand in hand with adolescents' subjective experience that parents understand and take into account their personality, with this experience of goodness-of-fit relating positively to adolescents' well-being.

The limited moderating role of personality in overall associations between autonomy-relevant parenting and adolescent outcomes observed in Chapters 2-5 does not preclude the possibility that personality plays a role in more specific micro-processes involved in parenting. One such micro-process is children's appraisal of potentially autonomy-supportive (versus controlling) contexts in terms of perceived need satisfaction. To address the role of personality (as well as developmental history of parenting) in children's appraisal of and reaction to such contexts, Chapter 6 involved an

experimental design with a manipulation of autonomy support (versus control).

Research Question 3: Are the effects of experimentally induced autonomy-supportive and controlling positive and negative feedback the same regardless differences in personality traits and parenting history? While in the first chapters of this dissertation, all constructs have been measured using self-reports, in Chapter 6, an experimental study is conducted in order to better disentangle the actual behavior of an autonomy-supportive or controlling socialization figure from how such behavior is interpreted and experienced by children. The main question in this chapter was to what extent individual differences would affect an experimental manipulation of autonomy and control. Moreover, Chapter 6 extends previous work in this dissertation by investigating, in addition to personality, the role of generally perceived parenting as a moderator in the effects of socialization.

Child Personality. As for the personality traits, more adaptive personality traits (i.e., Agreeableness, Conscientiousness and Emotional Stability) related to more positive experiences during the experimental task. These effects were obtained across conditions and thus represented main effects of personality independent of the experimental manipulations. Such findings can be related to the trait-congruency hypothesis (Rusting & Larsen, 1998), which states that personality dimensions associated with positive moods (i.e., Extraversion) and negative moods (i.e., low Emotional Stability) predispose individuals to process information that is congruent with those traits and, as such, affect selective processing of emotional information.

With respect to interactions, three significant interactions were found. One interaction emerged with Agreeableness, the other two with Conscientiousness. All of these interactions emerged in the associations between communication style and the outcomes. With respect to

Conscientiousness, children scoring high on Conscientiousness benefited more from an autonomy-supportive communication style in terms of experienced competence compared to those scoring low on Conscientiousness. This finding is in line with the sensitization hypothesis (Moller, Deci, & Elliot, 2010), stating that children high on Conscientiousness are more sensitive to the benefits of an autonomy-supportive style of communicating in the sense that they interpret autonomy-supportive feedback as more competence enhancing. For children scoring low on Agreeableness, there was no difference in challenge seeking depending on the communication style. For children scoring high on Agreeableness, more challenge seeking was found in the controlling condition, which may refer to a more adaptive behavioral response to controlling feedback. Children scoring low on Conscientiousness also reported a marginally significant decrease in self-reported intrinsic motivation in the controlling condition compared to the autonomy-supportive condition, while such a difference was not found among children high on Conscientiousness. This finding highlights a resilient role of Conscientiousness in the face of controlling communication.

Parenting History. Two contrasting hypotheses may be articulated with respect to parenting history. Children with a history of need-supporting parenting may be more sensitive for new need-supporting experiences, including the autonomy-supportive feedback manipulated in Chapter 6. An alternative hypothesis is that these children may already be habituated to need-supporting experiences, leading to less beneficial outcomes when they are exposed to new need-supportive conditions. Children with a history of need-thwarting parenting on the other hand may be more sensitive for new need-thwarting experiences, such as for example controlling feedback in the study in Chapter 6. It is also possible that they became habituated to these new need-thwarting experiences, resulting in less detrimental effects.

Results in Chapter 6 showed that children who experience their mother as more autonomy-supportive in general reported more competence satisfaction and more volition and autonomy during activity engagement across conditions. The motivational style of a parent in one context (i.e., at home) may thus have an impact on motivational outcomes in another context (i.e., at school), a finding in line with the trans-contextual model of motivation (Hagger et al., 2009). While general perceived parenting had a number of main effects, there was only one interaction with the situational manipulation of autonomy (versus control). Children low on general perceived maternal psychological control persisted more at the challenging booklet after receiving controlling feedback, suggesting that these children are more resilient against the negative effects of a controlling communication style.

Summary. As in the correlational studies, the moderating role of individual differences in experimentally manipulated autonomy support (versus control) was fairly limited. The few moderating effects were rather diverse and dealt with specific outcomes (rather than replicating across outcomes). Individual differences in personality and general perceived parenting did relate to some of the motivational outcomes directly (i.e., in terms of main effects). As such, the (experimentally manipulated) context and the individual differences seemed to be relatively unique and separate (rather than strongly intertwined and interactive) sources of influence on children's motivational outcomes.

1.3. GOAL 2: THE ANTECEDENT ROLE OF PARENTAL NEEDS EXPERIENCES IN AUTONOMY-SUPPORTIVE AND CONTROLLING PARENTING

Chapters 2-6 focused on the question to what extent and how individual differences in children and adolescents serve as moderator in the effects of the socialization context (parenting in particular). Chapter 7 deals

with the question to what extent parenting behavior in itself is an individual difference variable. Parenting styles are often used as labels to describe the interaction style used by parents in interaction with their children, which, at least implicitly, suggests that parenting is a trait-like disposition. The question is then whether parenting possibly varies from day-to-day and, if so, what daily sources of this variation may be.

As autonomy-supportive and controlling parenting have been shown to be related to a plethora of adaptive and maladaptive developmental outcomes, respectively (e.g., Pinquart 2016, 2017; Vasquez et al., 2016), it is important to look at possible antecedents of these parenting practices. Since research is recently focusing on day-to-day fluctuations in parenting and its correlates (e.g., Aunola, Tolvanen, Viljaranta, & Nurmi, 2013), it is also interesting to look at possible sources that can explain these daily fluctuations. Although a recent study already demonstrated that parents' negative emotions on a day-to-day basis covaried with psychologically controlling parenting (Aunola, Viljaranta, & Tolvanen, 2017), up till now, no studies look at day-to-day sources of autonomy-supportive parenting. Investigating sources of fluctuations in parenting may have important practical implications, since parents can be more reflective on how these sources may impact their parenting practices and dealing with them more adequately. In that way, we also aimed to explore the relevance of parents' own psychological need-based functioning. In Chapter 7, we therefore looked at whether daily fluctuations in parents' own need satisfaction and frustration were related to daily fluctuations in parents' provision of autonomy-supportive and controlling parenting, respectively.

Research Question 4: Do autonomy-supportive and controlling parenting fluctuate on a day-to-day basis? Consistent with our hypothesis and with previous research (Aunola, Ruusunen, Viljaranta, & Nurmi, 2015;

Mushquash & Sherry, 2013; Van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017), results from the diary study in Chapter 3 showed that there are substantial fluctuations in parent- and child-reported maternal and paternal psychologically controlling parenting. Results from the diary study in Chapter 7 similarly showed that autonomy-supportive and controlling parenting displayed substantial day-to-day level variability (about 50%). On some days, parents behave in an autonomy-supportive way, while on other days, they are less autonomy-supportive or even controlling. This finding warrants some optimism, in the sense that every parent has the potential to be more autonomy-supportive on a given day. Every day is a new opportunity to be more autonomy-supportive, so to speak. On the other hand, this finding also suggests that parents are also vulnerable to display less autonomy-supportive or even more controlling behavior on a daily basis.

Research Question 5: Do fluctuations in parental need satisfaction and frustration account for the daily fluctuations in autonomy-supportive and controlling parenting? Consistent with our hypothesis, in the diary study in Chapter 7, we found that daily fluctuations in mother's and father's own need satisfaction and frustration were related to fluctuations in their autonomy-supportive and controlling parenting practices respectively. On days where parents own needs are met they are more capable of being autonomy-supportive compared to days on which their needs are frustrated. These findings thus point at a bright and dark pathway at the side of the parents as well.

Summary. The two diary studies included in this dissertation revealed that parenting is a surprisingly dynamic phenomenon characterized by substantial daily fluctuations. As such, it would be inaccurate to describe autonomy-relevant parenting mainly in terms of stable inter-individual differences between parents. When it comes to parental support for

children's autonomy, one day clearly is not the other. An important source of these fleeting displays of autonomy support and control is parents' own psychological need satisfaction and frustration. While daily experiences of need satisfaction can be considered as fuel and energy for parents to support children's autonomy, daily experiences of need frustration seem to deplete parents' energy and resources to be attuned to their children's needs.

2. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

In this section, we would like to formulate future directions in research. Several of these future directions will overcome limitations of studies in this dissertation.

2.1. SAMPLING

In this dissertation, relatively homogeneous samples were recruited. Thus, we should be careful when generalizing the results to the broader population of parents and children. In almost all studies, parents were relatively highly educated compared to the national population (Statistics Belgium, 2014), which was probably due to the selection procedure used to recruit participants. Furthermore, only intact families took part in the studies. In future research, it will be important to investigate the moderating role of individual differences in the effects of autonomy-supportive and controlling parenting in more heterogeneous samples. Personality perhaps plays a stronger moderating role when a broader spectrum of personality traits (with even including clinical samples with adolescents with personality disorders) is examined, together with more variation in quality of parenting and psychosocial adaptation.

2.2. MEASUREMENT

2.2.1. GENERIC MEASURES OF PARENTING

The self-report measures for autonomy-supportive and psychologically controlling parenting used in this dissertation were rather generic and general. The risk of using generic measures is that they can be coloured quite strongly by the personality of the child and perhaps also by the parent's personality. By using more situational or behavior-specific measures, this contamination might play a less pronounced role because parents are asked to rate more specific behaviors in concrete situations.

In our research group, we started to develop more situation-specific questionnaires in different domains (i.e., parenting, education, sport) to measure autonomy support and psychological control. Because parental behavior is assessed at a more situational and behavior-specific level, the ecological validity of the scale is higher compared to more generic measures. Also, these questionnaires aim to tap into the different building blocks of autonomy support and psychological control in a more detailed fashion (Reeve, 2009; Vansteenkiste & Soenens, 2015). Two example situations of the questionnaire developed in the parenting context with toddlers can be found in Table 2. While the first response to each situation reflects autonomy-supportive parenting, the second response reflects controlling parenting.

Table 2

Examples from The Situations in Toddlers Questionnaire

Your toddler went to an activity (e.g., birthday party, playground...) and had a lot of fun. Afterwards s/he refuses to go home with you.

1. After having shown an interest in which activity your child found the most fun, you recognize that it is hard to stop doing something that was so much fun.	1	2	3	4	5
2. You say to your child that, if s/he does not come with you now, s/he won't be allowed to attend this activity next time.	1	2	3	4	5

You have been repeating the same rule for some time now but your toddler persists in breaking the rule, although he/she knows what the consequences are.

1. You are interested/curious about what's going on for your child.	1	2	3	4	5
2. You complain that this has happened too many times now and that you are tired of repeating the same rule.	1	2	3	4	5

Parents have to score the extent to which they would behave in a prescribed way encountering this specific situation. Results from multidimensional scaling analysis on a comparable questionnaire in the educational context (Aelterman et al., 2018) and in the sport context (Delrue et al., 2018) have shown that several subareas can be distinguished within the autonomy-supportive and controlling styles. With respect to autonomy support, a distinction has been made between practices that are participative (e.g., providing choice and encouraging initiative) and practices that are attuning (e.g., empathy and showing an interest in the child's perspective). With respect to control, a distinction has been made between

demanding practices (e.g., pointing out children's duties using threats of sanctions) and more domineering practices (e.g., using explicitly pressuring language and strategies). Future research may investigate the moderating role of personality using such a more situation-specific measure of parenting and socialization. Doing so might have a two-fold advantage. First, parents may report more accurately on their parenting style using a situation-specific measure. Second, a situation-specific measure allows for a more fine-grained analysis of the moderating role of personality in specific facets of autonomy-relevant socialization.

2.2.2. SOCIAL DESIRABILITY

Social desirability may be a potential problem, in particular when using parental self-reports (Sessa et al., 2001). It can be assumed that parents will underreport psychological control and overreport autonomy support (Korelitz & Garber, 2016). Overall, in this dissertation, the average score for psychologically controlling parenting was quite low (always around 2 on a scale from 1 to 5).

In addition to suggesting that social desirability affected parents' responses, this low mean score raises the question whether psychologically controlling parenting is only problematic at higher levels of occurrence. In this respect, Kins, Soenens and Beyers (2012) tested for curvilinear associations between psychologically controlling parenting and maladjustment to detect whether there is a cut-off point at which psychological control becomes problematic. They found no evidence for curvilinearity, suggesting that even low to moderate levels of psychologically controlling parenting are detrimental. If anything, effects of psychologically controlling parenting were even driven mainly by differences between low and moderate levels of psychological control (rather than by differences between moderate and high levels). This finding is in line with the 'bad is

stronger than good' phenomenon (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), referring to the fact that negatively valenced events have a strong impact even if their frequency of occurrence is low.

To overcome the problem of social desirability, observational studies (e.g., Wuyts, Vansteenkiste, Mabbe, & Soenens, 2017) may offer a solution. The role of personality may then be investigated in the associations between observed parenting behavior and child reactions on parental behavior. As will be discussed below, such research would also help to more clearly disentangle effects of what parents actually do and say from effects of how children interpret and perceive parental behaviors.

2.3. INTERPLAY BETWEEN CHILD PERSONALITY AND PARENTING

As the studies in this dissertation are among the first to address the role of individual differences (and personality in particular) in the effects of autonomy-supportive and psychologically controlling socialization, this dissertation can be seen as a starting point from which the role of individual differences in effects of autonomy-relevant socialization can be investigated from a Self-Determination Theory perspective. Future studies will be extremely important to replicate the interaction findings and the potential important role of Agreeableness in particular. Such future studies would do well to rely on larger samples, especially because statistical interactions are notoriously difficult to find for simple statistical reasons related to effect and sample size. The ideal scenario would be that within several years, a meta-analysis could be conducted about the moderating role of personality in the effects of autonomy-supportive and psychologically controlling parenting. Apart from these replication efforts, the current studies could also be extended content-wise, by (a) simultaneously examining autonomy-supportive and controlling socialization and the role of personality in an integrated dual pathway model, (b) pursuing a more fine-grained insight in

the exact mechanisms underlying the moderating role of personality and (c) adopting a more dynamic approach towards the assessment of personality.

2.3.1. INVESTIGATING NEED-SUPPORTIVE AND NEED-THWARTING PARENTING SIMULTANEOUSLY

In previous research and also in this dissertation, the role of child personality has typically been examined separately for controlling parenting and for autonomy-supportive parenting. Moreover, when investigating controlling parenting, the outcome variables are almost always referring to maladjustment. When investigating autonomy-supportive parenting, the outcome variables are almost always referring to positive adjustment.

Future research would do well to investigate need-supportive and need-thwarting parenting as well as well-being and problem behavior simultaneously, so as to provide a more comprehensive picture of the moderating role of personality in the dual pathways involved in parenting (with need-supportive parenting eliciting a bright pathway and with need-thwarting parenting eliciting a dark pathway). By doing so, research would also be better able to contrast the diatheses-stress hypothesis (Monroe & Simons, 1991; Sameroff, 2009; Zuckerman, 1999) with the differential susceptibility hypothesis (Belsky, 1997). Since the differential susceptibility hypothesis states that children may be more susceptible to both negative and positive aspects of parenting, it is important that both positive and negative sides of parenting as well as positive and negative outcomes are investigated simultaneously.

2.3.2. TOWARDS A MORE FINE-GRAINED UNDERSTANDING OF THE ROLE OF PERSONALITY

While the studies in this dissertation revealed a number of moderating effects of personality in parenting – adjustment associations, it is still unclear exactly why or how personality dimensions play such a

moderating role. To the extent that future research confirms a moderating role of personality in the association between parenting and outcomes, it will be important to better understand the microprocesses underlying these interactions. In this respect, it would be interesting in future research to investigate how children may interpret the same environment differently and cope with it differently (i.e., through a reactive mechanism) and how they may evoke different responses from others (i.e., through an evocative mechanism; Caspi & Roberts, 2001).

Children may indeed differ in how they perceive their parents, but they may also differ in how they cope with the stress that is related to a psychologically controlling parenting context (Soenens et al., 2015), with differences in interpretation and coping both referring to reactive mechanisms. Individual differences in Agreeableness and Emotional Stability, and personality in general, may in the first place have an influence on how environmental experiences are interpreted and dealt with (Crick & Dodge, 1994). Recently, Fleenor and Jayawickreme (2015, p.82) formulated the whole trait theory in which they plea for personality researchers to *“modify models of traits as such that they include mechanisms of differential perception and reaction to situations”*.

Interpretation. In the literature, there are several hypotheses regarding how individual characteristics may affect how situations are perceived and interpreted. The trait-congruency hypothesis (Rusting & Larsen, 1998) asserts that personality dimensions that are associated with positive moods (i.e., Extraversion) and negative moods (i.e., low Emotional Stability) predispose individuals to process information that is congruent with those traits and, as such, affect selective processing of emotional information. Extraverts have been shown to display greater emotional responsivity to positive mood inductions than did introverts, whereas individuals low on Emotional Stability were more emotionally responsive to

negative mood inductions. Similarly, the process-based view on personality (Robinson, 2007) asserts that Extraversion is related to the affective priming of positive thoughts, whereas low Emotional Stability is related to the affective priming of negative thoughts. This suggests that extraverted individuals have stronger interconnections between positive thoughts, such that these thoughts are more readily available. Individuals scoring low on Emotional Stability, in contrast, have stronger interconnections between negative thoughts, through which these are more readily available. Agreeableness may be particularly involved in the processing of emotional information. Agreeable individuals are better able to control their own hostile thoughts by activating prosocial thoughts. They do not have less hostile thoughts but they are better able to counteract them with positive, or prosocial thoughts. Based on these hypotheses, it can be derived that children and adolescents scoring low on Emotional Stability might be more emotionally responsive to psychologically controlling parenting, because they perceive such parenting in a more negative light. With respect to Agreeableness, it is possible that children and adolescents scoring low on Agreeableness have the tendency to assume hostile intentions when parents rely on controlling practices (Caspi & Shiner, 2006). Because of this more hostile interpretation, psychologically controlling parenting might have a more detrimental effect for them.

Coping. Personality traits may also affect how people cope with situations and with psychologically controlling parents in particular. The motivational view on personality (Denissen & Penke, 2008) argues that personality traits motivate people to respond in a certain way to environmental circumstances. Agreeableness for example has been regarded as fostering intimate relationships and has been related to individuals' tendencies for reciprocity and altruism in social relationships. Agreeableness has also been related to a lack of antagonism against others

(McCrae & Costa, 1996, 1997). Emotional Stability had been related to individual differences in affect regulation and differences in the ability to handle stress. Some conceptualizations see this trait as especially activated in situations in which individuals' social relationships are threatened. Based on the motivational view of personality, it can be predicted that higher scores on more mature personality traits are associated with more constructive ways to respond to controlling parenting.

Skinner and Edge (2002) proposed one useful model to operationalize ways of coping with parental control. In this model a distinction is made between more constructive attempts to cope with controlling parenting (such as negotiation) and more dysfunctional coping responses (such as submissive compliance or oppositional defiance). Future research may investigate the associations between personality and these styles of coping with parental control. Such research may provide some insight into the question of the multifinality of controlling parenting. Possibly, more overcontrolled personality traits are associated with more submissive compliance, so that children with these characteristics will react primarily with internalizing problems in response to controlling parenting. More undercontrolled traits will be associated with defiance, so that there will be a stronger connection between controlling parenting and externalizing problems among children with such traits.

Future research on reactive mechanisms. Investigating the processes of interpretation and coping in future research can be done on the basis of vignette-based research (e.g., Chen, Soenens, Vansteenkiste, Van Petegem, & Beyers, 2016; Kakihara & Tilton-Weaver, 2009; Rote & Smetana, 2017) in which children receive standardized descriptions of potentially controlling parenting behavior. They then assess their perceptions, interpretations, and attributions of this behavior. Furthermore, they can also indicate how they would cope with this hypothetical situation. Future studies may also use

observations of parental behavior (see, for example, Cheung, Pomerantz, Wang, & Qu, 2016; Sessa et al., 2001; Wuyts et al., 2017). Afterwards, children could watch the videotapes of the interaction with their parents and give their interpretation of the parental behavior. The videotapes can also be coded in terms of the coping mechanisms used by children.

2.3.3. ADOPTING A MORE DYNAMIC VIEW ON PERSONALITY

Fluctuations in personality. In this dissertation personality has been measured at the between person level, reflecting a relatively stable variable. Recent research, however, shows that personality changes throughout adolescence (Klimstra, Beyers, & Besevegis, 2014) and even fluctuates on a day-to-day basis (Debusscher, Hofmans, & De Fruyt, 2016; Judge, Simon, Hurst, & Kelley, 2014). An important avenue for future research is to examine whether changes in personality (rather than dispositional interindividual differences in personality) moderate associations between parenting and child outcomes. In future studies, it would also be interesting to investigate (a) whether day-to-day variability in personality would alter the contribution of day-to-day variability in autonomy-supportive and psychologically controlling parenting in the prediction of respectively well-being and problem behavior (i.e., moderation) and (b) whether day-to-day variation in autonomy-supportive and psychologically controlling parenting predicts the type of personality traits that surface and get expressed on a given day (i.e., main effect).

In this regard, the set-point theory model of traits (Fleeson & Gallagher, 2009; Fleeson & Jayawickreme, 2015; Fraley & Roberts, 2005; Ormel, Riese, & Rosmalen, 2012; Luhmann et al., 2014) may be an interesting perspective. This model assumes that personality traits have a person-specific set-point. In response to life experiences, however, people may fluctuate around these set-points. A particular situation may for

example make a relatively introverted person more extraverted, after which s/he then returns back to the set-point. Enduring changes in the environment, however, may also change the set-point of personality traits. In this respect, it would also be interesting to look at the role of need-supportive and need-thwarting parenting in children's personality development. Is it possible for example that a child that is relatively emotionally unstable becomes more emotionally stable when being reared in a need-supportive parenting climate? In this respect, La Guardia and Ryan (2007) argued and found that more optimal trait expressions (i.e., being more extraverted, agreeable, conscientious, emotional stable and open to experience) will manifest in contexts in which one experiences autonomy satisfaction. With respect to the contribution of temperament to personality for example, research has shown that, when training mothers to have responsive interactions with their irritable infants, this reduces irritable affect (Landry et al., 2006; van den Boom, 1994, 1995).

Evocative mechanisms. In addition to moderating effects of parenting (with children scoring low on Agreeableness and Emotional Stability suffering most from psychologically controlling parenting), personality may also evoke parenting responses (with low scores on Agreeableness and Emotional Stability also evoking more psychologically controlling parenting). It might thus be the case that especially children with certain traits (e.g., low Agreeableness) evoke more psychologically controlling parenting and at the same time display most sensitivity to the detrimental effects of such parenting. Also with respect to the causality orientations, such evocative mechanisms may come into play. Children and adolescents with an autonomous orientation for example are better in touch with their personal preferences, which they probably also communicate more clearly to their parents. This in turn makes it easier for parents to take into account adolescents' personal interests. Future research could test this

possibility that adolescents' causality orientations and personality traits elicit more autonomy-supportive versus controlling parenting with a longitudinal research design (see also Jang, Kim, & Reeve, 2016).

Apart from personality traits and causality orientations evoking certain parenting behaviors, children's maladjustment may also elicit more psychologically controlling parenting, with individual differences also playing a role in this association. In the diary study in Chapter 3 for example, it is equally plausible that externalizing problems on a given day may evoke parental psychological control (see also Aunola et al., 2017). This association may also be stronger when the child additionally is perceived as a 'difficult' child. If the child is for example displaying aggressive behavior on a given day and is in general perceived as having a difficult personality, this may evoke more controlling parenting. Most likely, parenting and child (mal)adjustment, especially on a day-to-day basis are related reciprocally and in a mutually reinforcing way, with child maladjustment giving rise to more psychologically controlling parenting and with such parenting further increasing children's proneness to problem behaviors and distress (Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008; Wang, Pomerantz, & Chen, 2007). Future research needs to consider the possibility that the child's personality and problem behavior (or at least parents' perceptions of it) could affect not only children's susceptibility to parenting but also parents' responses to child behavior in terms of autonomy-supportive and psychologically controlling parenting.

2.4. ANTECEDENTS OF PARENTING AND THEIR MECHANISMS

Results of the diary study in Chapter 7 showed that parents' needs were related to autonomy-supportive and controlling parenting. These results may raise the question whether these needs experiences are the only determinants of autonomy-relevant parenting or whether, conversely, other

determinants, as specified for instance in Belsky's (1984) famous model, also play a role. The model of Belsky (1984), referring to three sources of parenting determinants, and the role of need satisfaction and frustration as defined within SDT can be seen as complementary to one another. More specifically, need satisfaction and frustration can be seen as mechanisms through which the more general determinants forwarded by Belsky (1984) play a role. In that way, SDT may provide an answer to the question how these characteristics may exert their influence on parenting through the satisfaction or frustration of parents' needs for autonomy, competence and relatedness. To give an example: having a child with a difficult temperament (i.e., a child characteristic in Belsky's model) can evoke more controlling parenting, because this child characteristic may evoke feelings of parental competence frustration, in the sense that the parent does not feel capable of handling the child in an appropriate way. These feelings of frustration may in turn make the parent more prone to use controlling practices. In the same way, aggressive behavior may relate to feelings of relatedness frustration in the parent-child relationship, in turn leading to more controlling parenting (see de Haan, Soenens, Prinzie, & Dekovic, 2013; Dieleman, De Pauw, Soenens, Mabbe, Campbell, & Prinzie, 2018). de Haan et al. (2013) showed that aggression in children was related to decreased satisfaction of parents' needs for competence, relatedness, and autonomy, which in turn affected parenting. In a recent study of Dieleman and colleagues (2018) in a sample of adolescents with autism spectrum disorder, results indicated that the association between externalizing problems of the child and controlling parenting was partially mediated by need frustration, meaning that need frustration could partially explain the effects of a child characteristic on parenting practices.

Future research can further link several of Belsky's (1984) antecedents with parental need satisfaction and frustration, thereby

differentiating between the three needs for autonomy, competence and relatedness. Whereas some antecedents will be primarily a threat to the satisfaction of the need for autonomy (e.g., different beliefs about parenting compared to one's partner) other antecedents may have a detrimental impact on competence satisfaction (e.g., a child with a difficult temperament) or relatedness satisfaction (e.g., marital problems).

In addition to unraveling associations between certain determinants of parenting and parental needs experiences, it can be interesting to look at possible moderating variables in these associations. It can be the case for example that two parents encountering the same need frustrating situation perceive this situation differently in terms of need frustration which, in turn, differentially impacts their parenting. Factors such as parents' attributional style, their personality, but also their own parenting history may impact this perception.

In the diary study in Chapter 7, the associations between parental needs experiences and autonomy-relevant parenting displayed heterogeneity in some of the tested models, indicating that these associations were weaker or stronger in some parents. In future studies, possible sources for this heterogeneity between families may be investigated. It would be interesting to look at characteristics that can dampen the effects of need frustration, so that need frustration in the day does not necessarily translate into more controlling parenting. Finding variables (e.g., mindfulness or adequate emotion regulation) that can weaken the association between for example need frustration and controlling parenting may help parents to deal adequately with feelings of need frustration and to prevent them from acting upon their need frustration by communicating with children in an autonomy-suppressive fashion.

Future research can also extend this model by further looking at more specific mechanisms through which need satisfaction and frustration obtain their effects. A recent study by Van der Kaap-Deeder and colleagues (2018) investigated whether psychological availability and stress could account for the associations between need frustration and psychologically controlling parenting and between need satisfaction and autonomy-supportive parenting respectively. They found that parents' daily need satisfaction was related to an increase in psychological availability and to a reduction in stress in the parent-child relationship, whereas parental need frustration was related to a decrease in psychological availability and an increase in stress in the parent-child relationship. Psychological availability and stress were in turn related to autonomy-supportive and psychologically controlling parenting respectively.

3. IMPLICATIONS FOR PRACTICE

The main goal of this dissertation was to gain insight into the role of individual differences in the effects of autonomy-supportive and psychologically controlling socialization. In the following paragraphs, we will discuss the implications of our results for practice.

3.1. INTERVENTIONS FOR PARENTS

The advantage of looking at parenting from a Self-Determination Theory perspective is that this perspective attends equally to the bright (i.e., need-supportive) and the dark (i.e., need-thwarting) sides of parenting. Specifically with regards to autonomy-relevant parenting, autonomy support is forwarded as a positive alternative for controlling parenting (Soenens et al., 2018). Given that autonomy-supportive parenting involves more than an absence of controlling parenting (Vansteenkiste & Ryan, 2013), parents can be advised not only to decrease their engagement in psychologically

controlling practices, but also to invest in autonomy-supportive parenting. As the results in Chapter 3 and 7 show, about half of the variation in autonomy-supportive and psychologically controlling parenting is situated at the within-person level, that is, at the level of day-to-day variation. This means that parents, from day to day deviate from their own average of autonomy-supportive and controlling parenting. Giving this message to parents can stimulate parents' optimism and their belief in the possibility of change, because this variability means that one can improve. In this respect, several studies already demonstrated that parents can actually 'learn' to become more autonomy-supportive, with these intervention-based improvements in autonomy-supportive parenting going hand in hand with children's improved psychosocial adjustment (Froiland, 2011, 2015; Joussemet, Mageau, & Koestner, 2014).

A central message that can be added in the future development of improved interventions is that it is important to take into account the personality of the child and to align parenting to the personality of the child. In this dissertation, results showed that children scoring low on Agreeableness are most at risk for psychologically controlling parenting (Chapter 2 and 3). This finding suggests that it is particularly important for parents to be aware of elements of low Agreeableness in their child's personality and to find ways they can attune to these elements in interacting with the child.

Developmental scholars have formulated some specific suggestions for parents to adapt their parenting to their child's dispositions (e.g., Rettew, 2013). For instance, parents of inhibited/anxious children are encouraged to slightly push the children's boundaries and to not give in to their anxieties in a loving, accepting, yet consistent manner. Parents of children with low self-regulation are encouraged to increase their monitoring and provide more structured environments. Parents of children with high anger proneness are

encouraged to attend to their children's hostile attributions, and to teach better emotion regulation skills.

Still, more intervention-based research is needed to investigate exactly how parents can attune their parenting style to their children's personality. A possible interesting perspective on this is looking at the different facets of a child's personality and think about how parents may support adaptive trait expressions or deal with more 'maladaptive' trait expressions. To give an example, if a child is shy (facet of Extraversion) and does not want to give a kiss to say goodbye, autonomy-supportive parents may acknowledge this and they also may give the child alternatives (e.g., throwing a kiss, waving, ...). For a child scoring low on Emotional Stability, being need-supportive will especially mean that parent's acknowledge the child's frequent negative emotions and learn them to cope adequately with it.

3.2. SELF-CARE

As results in Chapter 7 demonstrated, parental need satisfaction was an important source for autonomy-supportive parenting whereas parental need frustration increased the vulnerability to act in a psychologically controlling way towards children. In working with parents, it is therefore important not only to 'teach' parents to be autonomy-supportive, but also to attend to their own psychological needs, that is, to engage in needs-based self-care. Parents ideally properly monitor their own needs and ensure that they have sufficient fuel and psychological energy themselves. In intervention studies or workshops, parents may thus not only learn about ways to satisfy the needs of their children, they may also learn to pay attention to their own needs. Such needs-based self-care entails that parents are aware of their need frustrating experiences during the day and find ways to regulate these experiences adequately. By being mindful to

need frustrating events and by perhaps even diminishing these experiences through effective emotion regulation, parents are less likely to translate need frustrating experiences into need-thwarting parenting behaviors. Future intervention studies may even try to stimulate parents to look for ways to satisfy their own needs (both during the day in the workplace and during the interaction with children themselves) in order to investigate the impact on their parenting behavior. In a study by Mouton and Roskam (2015), the self-efficacy of mothers of four to five year-old children was manipulated and found to elicit more positive parenting. This study shows indirectly that satisfaction of the need for competence (here in relation to their parenting) relates to better parenting practices.

3.3. INTERVENTIONS FOR CHILDREN AND ADOLESCENTS

To the extent that future research shows that children with specific personality traits are more sensitive to the consequences of controlling parenting because they are less well equipped to cope with such parenting adequately, children themselves could also be taught to deal with controlling parenting in a more constructive manner (e.g., on the basis of negotiation). Possibly, when children learn about the risks associated with dysfunctional coping (with oppositional defiance for instance typically backfiring and eliciting further parental control) and learn to negotiate and communicate with parents more constructively, the negative vicious cycle of parental pressure and problematic child behavior can be broken. Still, it seems likely that interventions targeting children's own resilience will need to be complemented with interventions targeting parents' own skills to communicate in more autonomy-supportive ways. Effects of interventions teaching children to negotiate more constructively with parents may be short-lived or even non-existent if parents persist in their use of a controlling communication style. This is because children experience very little room to

negotiate in an autonomy-suppressing parenting climate. Conversely, parents with a controlling parenting attitude may feel that their children's attempts to negotiate are inappropriate or even threatening attempts to undermine parents' authority. Thus, I advocate an approach where both parents and children are taught to communicate in new and more constructive ways with each other.

4. GENERAL CONCLUSION

In this dissertation, we found fairly systematic associations between autonomy-supportive and psychologically controlling socialization (and parenting in particular) and outcomes in children and adolescents, with autonomy-supportive parenting being associated with well-being and with psychologically controlling parenting being associated with problem behaviors and maladjustment. The moderating role of individual differences was rather limited and seemed primarily a matter of manifestation, whereby controlling parenting for example mainly relates to externalizing problems in children low on Agreeableness and mainly relates to internalizing problems in children who score low on Emotional Stability. In none of the chapters there was evidence that some children would benefit from a controlling approach or suffer from an autonomy-supportive approach. These findings do not preclude the possibility, however, that there can be differences between children in the way they perceive autonomy-supportive and controlling parenting and how they deal with it, an issue that needs to be explored further in future research. In the meantime, research and prevention programs would do well to continue to focus on promoting an autonomy-supportive parenting style because such a parenting style seems to foster need satisfaction, happiness, and resilience in children.

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6. APPENDIX

Results of the interaction analyses with autonomy-supportive parenting and the Big Five dimensions are shown in Table 3. At each wave, the interactions between autonomy-supportive parenting and the Big Five dimensions (measured at Wave 1) were investigated. Results showed that at the between-person level, out of the 30 interactions tested, five were significant. Three interactions emerged with Openness to Experience, one with Conscientiousness and one with Emotional Stability. The interactions with Conscientiousness and Emotional Stability at Wave 3, displayed in Figures 4 and 5, indicate that only adolescents scoring low on these traits suffered from low autonomy support ($b = .20, t = 2.60, p = .01$; $b = .21, t = 2.71, p = .01$), while those who scored high on these characteristics did not ($b = -.05, t = -0.68, p = .50$; $b = .01, t = 0.08, p = .94$). At Wave 1, those scoring high on Openness to Experience ($b = .20, t = 4.58, p = .00$) seemed to be sensitive to the positive effects of autonomy support whereas those scoring low ($b = .04, t = 0.85, p = .40$) on this trait were not (see Figure 6). The two other interactions at Wave 2 (Figure 7 and 8) show that adolescents scoring low on Openness to Experience ($b = .35, t = 6.34, p = .00$; $b = .28, t = 4.45, p = .00$) seem to suffer more from low autonomy support compared to those scoring high on this trait ($b = .08, t = 0.94, p = .35$; $b = -.10, t = -1.76, p = .08$). Thus, the interactions with Openness to Experience indicate that adolescents are more sensitive to both the benefits of the presence of autonomy support and to the costs of the absence of autonomy-support.

Table 3
Beta Coefficients and Standard Errors of the Main and Interaction Effects of Autonomy-Supportive Parenting and the Causality Orientations on the Well-being

	Adolescent reported parenting			Mother reported parenting		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Autonomy-supportive parenting	.20(0.08)**	.40(0.07)***	.37(0.08)***	.16(0.07)*	.16(0.08)*	.17(0.11)
Extraversion	.39(0.06)***	.30(0.06)***	.07(0.09)	.42(0.06)***	.34(0.07)***	.09(0.09)
Interaction	-.02(0.08)	.00(0.06)	-.11(0.08)	-.01(0.08)	-.04(0.07)	-.07(0.09)
Autonomy-supportive parenting	.22(0.08)**	.39(0.06)***	.37(0.08)***	.13(0.06)*	.16(0.07)*	.14(0.09)
Conscientiousness	.25(0.07)***	.20(0.08)*	.22(0.09)*	.26(0.07)***	.22(0.08)**	.19(0.09)†
Interaction	-.01(0.07)	.08(0.07)	.07(0.09)	.05(0.06)	-.13(0.08)	-.21(0.09)*
Autonomy-supportive parenting	.18(0.08)*	.36(0.07)***	.35(0.09)***	.12(0.07)†	.10(0.07)	.15(0.09)
Agreeableness	.25(0.07)***	.18(0.08)*	.13(0.09)	.27(0.06)***	.27(0.08)***	.19(0.08)*
Interaction	.06(0.07)	-.03(0.06)	-.02(0.07)	-.03(0.06)	-.04(0.08)	-.09(0.10)
Autonomy-supportive parenting	.13(0.06)*	.38(0.07)***	.39(0.08)***	.21(0.06)**	.17(0.08)*	.18(0.09)*
Emotional Stability	.48(0.06)***	.24(0.08)**	.30(0.09)***	.58(0.05)***	.28(0.09)**	.32(0.08)***
Interaction	-.04(0.03)	-.00(0.06)	-.09(0.08)	-.08(0.06)	-.11(0.08)	-.18(0.08)*
Autonomy-supportive parenting	.22(0.08)**	.36(0.06)***	.66(0.14)***	.14(0.07)*	.12(0.07)†	.18(0.10)†
Openness to Experience	.12(0.07)†	.06(0.08)	-.05(0.19)	.13(0.09)	.19(0.08)*	-.03(0.10)
Interaction	.18(0.09)*	-.19(0.07)**	.02(0.09)	.02(0.08)	-.35(0.08)***	-.03(0.10)

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

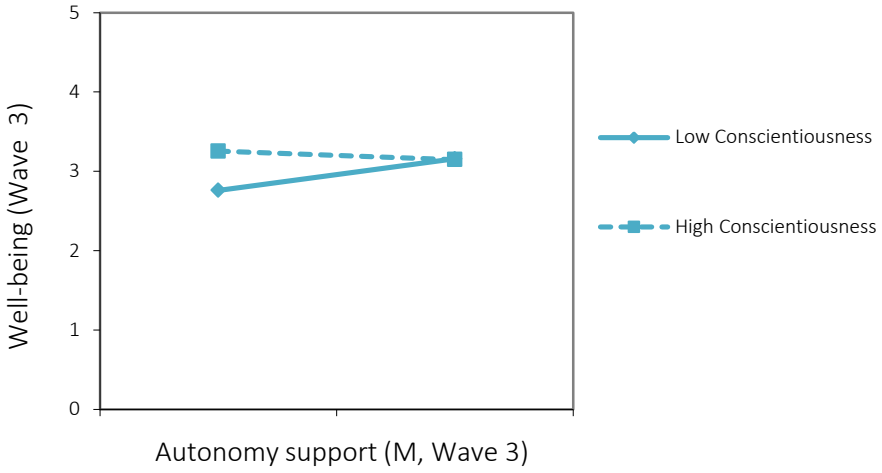


Figure 4. Significant interaction between mother-reported autonomy support and Conscientiousness in the prediction of well-being at Wave 3.

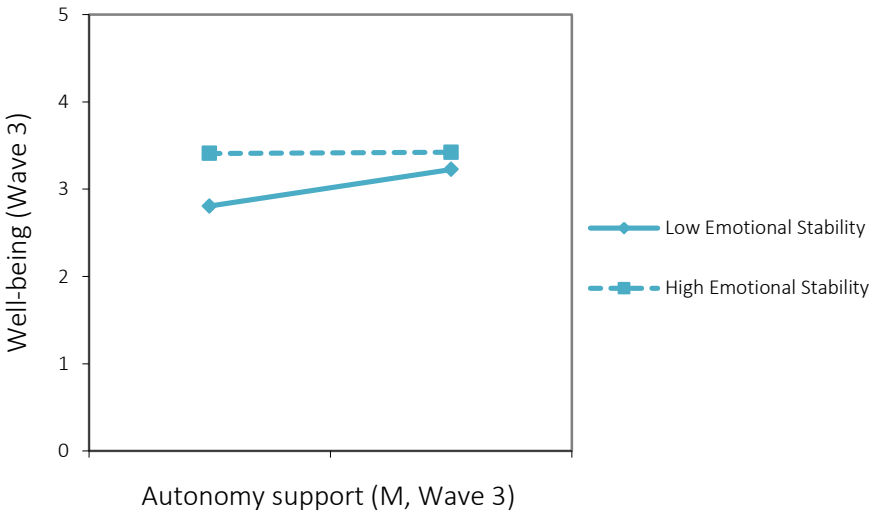


Figure 5. Significant interaction between mother-reported autonomy support and Emotional Stability in the prediction of well-being at Wave 3.

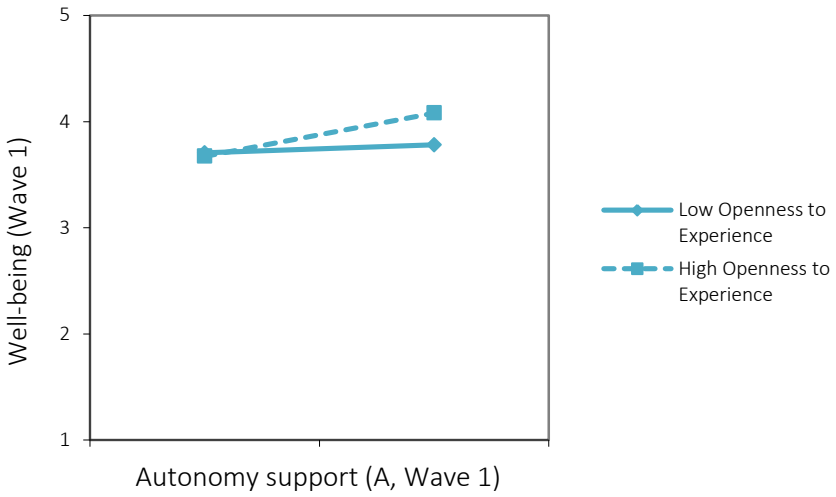


Figure 6. Significant interaction between adolescent-reported autonomy support and Openness to Experience in the prediction of well-being at Wave 1.

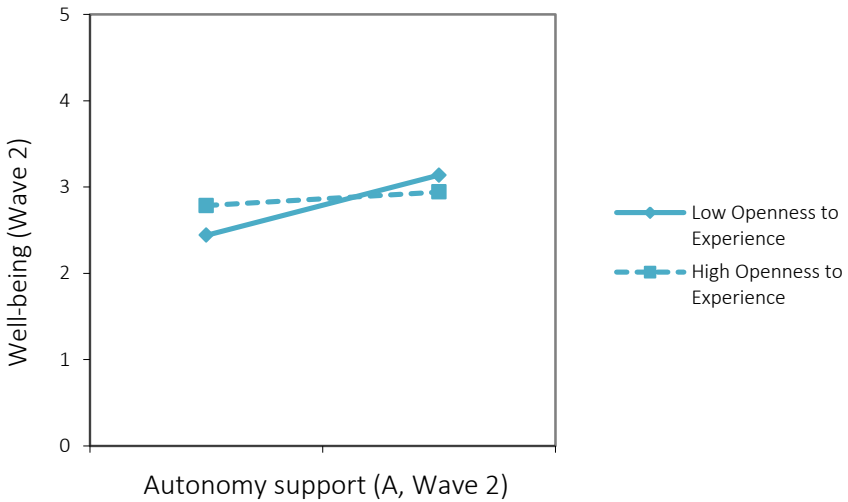


Figure 7. Significant interaction between adolescent-reported autonomy support and Openness to Experience in the prediction of well-being at Wave 2.

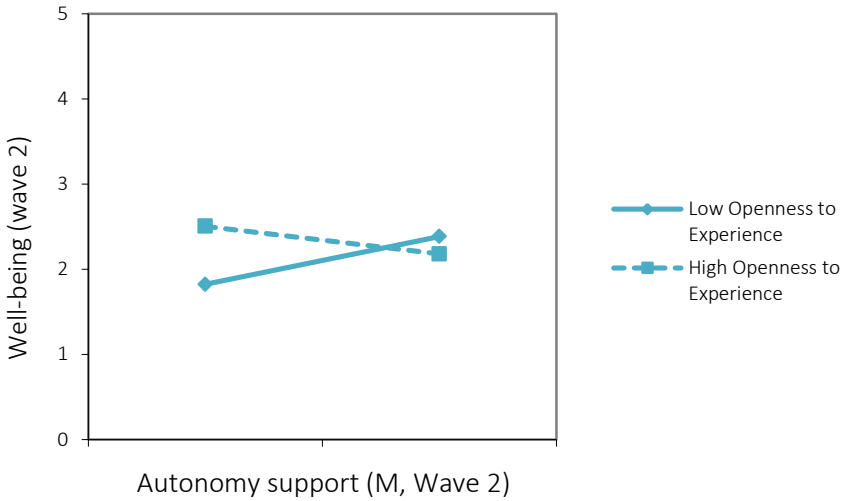


Figure 8. Significant interaction between mother-reported autonomy support and Openness to Experience in the prediction of well-being at Wave 2.

To examine whether the personality traits would moderate associations between autonomy-supportive parenting and well-being at the within-person level, we tested cross-level interactions in a multilevel framework. The potential moderating role of adolescents' personality was investigated only with respect to adolescent reports of parenting, since there was only random slope variance in this model. Results showed that none of the cross-level interactions were significant; Extraversion ($b = -.22$, $SE = 0.19$, $p = .24$), Agreeableness ($b = -.19$, $SE = 0.29$, $p = .52$), Conscientiousness ($b = -.16$, $SE = 0.16$, $p = .32$), Emotional Stability ($b = -.15$, $SE = 0.11$, $p = .17$) and Openness to Experience ($b = .08$, $SE = 0.18$, $p = .65$). In sum, while there was some evidence for a moderating role of Big Five traits in effects of autonomy-supportive parenting at the level of between-person differences, no evidence was obtained for a moderating role at the level of within-person associations across time.

NEDERLANDSTALIGE SAMENVATTING

DE ROL VAN INDIVIDUELE VERSCHILLEN IN EFFECTEN VAN AUTONOMIE-
ONDERSTEUNENDE EN CONTROLERENDE SOCIALISATIE IN DE KINDERTIJD EN
ADOLESCENTIE: EEN LONGITUDINALE, DAGBOEK-GEBASEERDE, EN
EXPERIMENTELE BENADERING

ALGEMENE INLEIDING

In de laatste 30 jaar vond er in de literatuur een exponentiële toename in onderzoek naar opvoeding plaats (Holden, 2010). Alhoewel de opvattingen over wat een optimale opvoeding precies is nogal variëren, zijn onderzoekers het er wel over eens dat ouders een belangrijke rol spelen in het functioneren van kinderen op verschillende vlakken. Alhoewel er tal van opvoedingsdimensies en praktijken bestaan (Skinner, Johnson, & Snyder, 2005), is er meer en meer consensus dat er drie dimensies zijn die de kerndimensies van opvoeding uitmaken (Barber, 1997; Barber, Stolz, & Olsen, 2005; Smetana, 2017; Soenens, Vansteenkiste, & Beyers, in druk): relationele steun (d.w.z., warmte, affectie, responsiviteit), regulatie (d.w.z., regels bepalen en erop toezien dat deze worden nageleefd), en autonomie-ondersteuning (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Maccoby, 1992).

In het huidige doctoraatsproefschrift zal de focus liggen op contexten die de autonomie van kinderen en adolescenten ondersteunen, dan wel ondermijnen. Aangezien autonomie een centraal concept is in de Zelf-Determinatie Theorie (ZDT; Deci & Ryan, 1985a, 2000; Ryan & Deci, 2017), zullen we ons in dit doctoraatsproefschrift op deze theorie baseren. Onderzoek toont in toenemende mate aan dat kinderen die hun ouders als autonomie-ondersteunend ervaren optimaal ontwikkelen op tal van vlakken (Grolnick, 2003; Ryan, Deci, & Vansteenkiste, 2016; Soenens, Vansteenkiste, Van Petegem, Beyers, & Ryan, 2018). Kinderen en adolescenten die hun ouders ervaren als autonomie-ondermijnend (d.w.z., controlerend) vertonen meer problemen in hun ontwikkeling (Pinquart, 2016; 2017).

De robuustheid van deze bevindingen roept echter de vraag op of alle kinderen even gevoelig zijn voor de effecten van een autonomie-ondersteunende en psychologisch controlerende opvoeding. Het hoofddoel van dit doctoraatsproefschrift is dan ook om te onderzoeken of en hoe de

persoonlijkheid van kinderen en adolescenten een rol speelt in de effecten van autonomie-ondersteunende en controlerende contexten op welzijn en probleemgedrag (Doel 1). Daarbij worden effecten van autonomie-ondersteunende en controlerende contexten bestudeerd op zowel het niveau van stabiele, interindividuele verschillen als op het niveau van intra-individuele verandering over korte (d.w.z., dagelijkse) en langere (d.w.z., jaarlijkse) tijdsperiodes. Gezien de focus op de effecten van opvoeding op twee verschillende niveaus van analyse (d.w.z., het tussen- en binnenpersoonsniveau), is een bijkomende doelstelling van dit proefschrift om te onderzoeken in hoeverre autonomie-ondersteunend en psychologisch controlerend opvoeden zelf stabiele kenmerken zijn van de socialisatiestijl van ouders, en dus verschillen tussen ouders weerspiegelen dan wel van dag tot dag variëren, en dus verschillen binnen een ouder weerspiegelen (Doel 2). Om de rol van autonomie-ondersteunende en psychologisch controlerende socialisatie in de aanpassing van kinderen en adolescenten te onderzoeken, alsook de rol van individuele verschillen hierin, wordt een verscheidenheid aan onderzoeksdesigns (meer bepaald cross-sectionele, dagboek-gebaseerde, longitudinale en experimentele) gebruikt.

THEORETISCH KADER

1. EEN ZELF-DETERMINATIE THEORIE PERSPECTIEF OP OPVOEDING

De Zelf-Determinatie Theorie (ZDT; Deci & Ryan, 1985a, 2000; Ryan & Deci, 2017) is een theorie over motivatie, ontwikkeling, gezondheid, persoonlijkheid, en socialisatie. Deze theorie werd reeds toegepast in verschillende domeinen, alsook in het domein van opvoeding (Joussemet, Landry, & Koestner, 2008; Soenens, Deci, & Vansteenkiste, 2017; Soenens & Vansteenkiste, 2010; Vansteenkiste & Soenens, 2015).

Drie Psychologische Basisbehoeften. De ZDT gaat ervan uit dat mensen drie psychologische basisbehoeften hebben, die essentiële

voedingsstoffen zijn voor welzijn (Ryan & Deci, 2000). De behoefte aan autonomie refereert naar gevoelens van vrij functioneren en psychologische vrijheid. De behoefte aan competentie verwijst naar het gevoel om capabel te zijn om doelen te bereiken. De behoefte aan verbondenheid verwijst naar de ervaring van wederzijdse zorg en liefde van belangrijke anderen. Bevrediging van deze psychologische behoeften wordt gezien als een noodzakelijke voorwaarde voor effectief functioneren en psychologisch welzijn. Frustratie van deze behoeften daarentegen staat een positieve ontwikkeling in de weg en is zelfs geassocieerd met een verhoogd risico voor psychopathologie (Ryan, Deci, & Vansteenkiste, 2016).

Autonomie-Ondersteunende en Controlerende Opvoeding. Gezien de centrale plaats van de behoefte aan autonomie in de psychosociale aanpassing van kinderen en adolescenten, benadrukt ZDT de rol van ouders bij het bevredigen of frustreren van deze behoefte, daarbij onderscheid makend tussen een autonomie-ondersteunende en controlerende opvoeding (Grolnick, 2003; Joussemet et al., 2008; Soenens et al., 2010, 2018). Wanneer ouders op een autonomie-ondersteunende manier handelen, nemen ze het referentiekader van hun kind als uitgangspunt, waardoor ze nieuwsgierig zijn voor en geïnteresseerd in het perspectief van hun kind (Grolnick, 2003; Soenens et al., 2017; Mageau, Sherman, Grusec, Koestner, & Bureau, 2017). Autonomie-ondersteunende ouders accepteren het kind ook onvoorwaardelijk zoals hij/zij is (Roth, Kanat-Maymon, & Assor, 2016).

Een autonomie-ondersteunende opvoeding kan worden gecontrasteerd met een psychologisch controlerende opvoeding. Psychologisch controlerend opvoeden (Barber, 1996) verwijst naar pogingen om de psychologische en emotionele leefwereld van het kind binnen te dringen. Psychologisch controlerende ouders zetten hun kinderen onder druk om te gehoorzamen aan ouderlijke verzoeken zonder uitleg, gebruiken

controlerende taal in de communicatie met hun kinderen en maken ook gebruik van voorwaardelijke aandacht (Kanat-Maymon, Roth, Assor, & Raizer, 2016), schuld-inductie (Rote & Smetana, 2017) en schaamte-inductie (Yu, Cheah, Hart, Sun, & Olsen, 2015) om het kind onder druk te zetten om te doen wat ze willen.

Correlaten van Een Autonomie-Ondersteunende en Psychologisch Controlerende Opvoeding. Onderzoek toont in toenemende mate aan dat autonomie-ondersteunend opvoeden geassocieerd is met positieve ontwikkelingsuitkomsten, terwijl controlerend opvoeden gerelateerd is aan relatief meer schadelijke ontwikkelingsuitkomsten. Opvallend is dat deze effecten gevonden worden bij kinderen van verschillende leeftijden (Joussemet et al., 2008), in verschillende socialisatiecontexten zoals de thuiscontext en op school (bijv., Soenens & Vansteenkiste, 2005; Vansteenkiste, Zhou, Lens, & Soenens, 2005), en in verschillende culturen (bijv., Lekes, Gingras, Philippe, Koestner, & Fang, 2010; Vansteenkiste, Zhou et al., 2005).

Verklarende Mechanismen. Binnen ZDT wordt ervan uitgegaan dat een autonomie-ondersteunende opvoedingsstijl de psychologische basisbehoeften van kinderen en de behoefte aan autonomie in het bijzonder voedt (Grolnick, Ryan, & Deci, 1991; Soenens et al., 2007). De bevrediging van deze behoeften zal op zijn beurt aanleiding geven tot psychologische groei en de daaropvolgende positieve ontwikkelingsuitkomsten. Een controlerende opvoedingsstijl daarentegen zou de bevrediging van de behoeften ondermijnen, met negatieve ontwikkelingsuitkomsten tot gevolg (Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010).

2. DE ROL VAN INDIVIDUELE VERSCHILLEN IN DE EFFECTEN VAN SOCIALISATIE

Het Belang van het Bestuderen van Individuele Verschillen. De assumptie dat effecten van autonomie-ondersteunende en controlerende

socialisatie worden gemedieerd door universeel geachte psychologische basisbehoeften, lijkt misschien heel sterk. Deze claim doet namelijk de vraag rijzen of alle kinderen even gevoelig zijn voor effecten van autonomie-ondersteunende en controlerende socialisatie. Zouden de effecten van deze opvoedingsstijlen afhangen van individuele verschillen tussen kinderen? Binnen ZDT heeft zeer weinig onderzoek de interactie tussen deze twee dimensies van socialisatie en individuele verschillen tussen kinderen onderzocht. In dit proefschrift bekijken we de rol van zowel individuele verschillen in causaliteitsoriëntaties (Hoofdstuk 5), persoonlijkheid (Hoofdstukken 2, 3, 4 en 6) en opvoedingsgeschiedenis (Hoofdstuk 6). Een belangrijke vraag is of de effecten van autonomie-ondersteunend en controlerend opvoeden (en breder: socialisatie) stand houden ongeacht individuele verschillen in deze moderatoren. Het onderzoeken van de modererende rol van individuele verschillen levert een nieuwe en uitdagende manier om de universaliteitsclaim binnen ZDT te onderzoeken. Dergelijk onderzoek kan ook praktische implicaties hebben, omdat het helpt kinderen te identificeren die minder gevoelig zijn voor de voordelen van autonomie-ondersteunend opvoeden alsook kinderen die gevoeliger zijn voor de kosten van controlerend opvoeden. Preventie- en interventieprogramma's gericht op opvoeding kunnen dan sterker inspelen op individuele kenmerken die kwetsbaarheid voor behoefte-ondermijnend opvoeden in zich dragen.

Hoewel relatief weinig aandacht is besteed aan de rol van individuele verschillen in effecten van opvoeding binnen de ZDT-literatuur, bestaat er een rijke traditie in het onderzoeken van dergelijke individuele verschillen in de bredere socialisatieliteratuur. Deze literatuur heeft zich vooral gericht op de rol van het temperament en de persoonlijkheid van kinderen in de effecten van opvoeding.

In dit proefschrift zal vooral het kader van de Big Five dimensies worden gebruikt om de rol van individuele verschillen bij kinderen te onderzoeken (Caspi & Shiner, 2006). De Big Five-kenmerken zijn de volgende: Extraversie, Vriendelijkheid (soms ook Welwillendheid genoemd als het gaat om de persoonlijkheid kinderen; De Pauw, 2017; Mervielde, De Fruyt, & De Clercq, 2009), Consciëntieusheid, Emotionele Stabiliteit en Openheid (soms ook Vindingrijkheid genoemd als het gaat om de persoonlijkheid van kinderen; De Pauw, 2017; Mervielde, De Fruyt, & De Clercq, 2009). Extraverte kinderen worden omschreven als sociaal, expressief, levendig en energiek. Vriendelijke kinderen worden beschreven als warm, attent, empathisch, genereus, zachtaardig, beschermend voor anderen en vriendelijk. Consciëntieusheid verwijst naar individuele verschillen in zelfcontrole. Kinderen die hoog scoren op Consciëntieusheid zijn verantwoordelijk, attent, volhardend, ordelijk, planmatig en denken voordat ze handelen. Emotionele Stabiliteit verwijst naar de algehele positieve emotionele aanpassing. Openheid verwijst naar kinderen die graag en snel willen leren, goed geïnformeerd, opmerkzaam, fantasierijk, nieuwsgierig en origineel zijn.

Modellen over de Modererende Rol van Individuele Verschillen.

Reeds verschillende modellen zijn ontwikkeld over de verbanden tussen opvoeding, temperament/persoonlijkheid en ontwikkelingsuitkomsten (zie Kiff, Lengua en Zalewski, 2011 voor een overzicht).

In interactiemodellen gaat men ervan uit dat het effect van een opvoedingsdimensie afhankelijk is van het temperament of de persoonlijkheid van het kind. Volgens het goodness-of-fit model van Thomas en Chess (1968) vinden aanpassing en positieve ontwikkeling plaats wanneer er een match of congruentie bestaat tussen de kenmerken van het kind en de eisen van de omgeving. Deze algemene notie van goodness-of-fit is gespecificeerd in meer toetsbare hypothesen. Diathese-stress-modellen

(Monroe & Simons, 1991), ook wel dual-risk-modellen genoemd (Sameroff, 1983), richten zich op de kwetsbaarheden van individuen die resulteren in negatieve ontwikkelingsuitkomsten, vooral in risicovolle omgevingen (bijv., disfunctionele opvoeding). In het bijzonder zouden kinderen met moeilijke temperamentkenmerken of met kwetsbare persoonlijkheidskenmerken gevoeliger zijn voor de nadelige effecten van disfunctionele vormen van opvoeding.

Meer recente modellen benadrukken het basisidee van de differentiële gevoeligheid van kinderen voor opvoeding (Kiff et al., 2011; Pluess, 2015), zoals bijvoorbeeld uitgedrukt in de differentiële gevoeligheids-hypothese van Belsky (1997). Het centrale idee is dat bepaalde kenmerken kinderen gevoeliger maken voor de omgeving, en dit zowel in positieve als in negatieve zin. Kinderen die gevoeliger zijn voor disfunctionele vormen van opvoeding zouden ook beter gedijen in een positief opvoedingsklimaat. Onderzoek toonde reeds aan dat er voor deze verschillende soorten modellen evidentie bestaat (Kiff et al., 2001).

3. DE ROL VAN INDIVIDUELE VERSCHILLEN VANUIT EEN ZELF-DETERMINATIE THEORIE

PERSPECTIEF

Tegen de achtergrond van modellen en bevindingen die suggereren dat persoonlijkheid het effect van opvoeding en socialisatie kan beïnvloeden, is een belangrijke, maar onderbelichte vraag of individuele verschillen in o.a. persoonlijkheid de effecten van autonomie-ondersteunend en controlerend opvoeden kunnen modereren. Op het eerste zicht lijkt het erop dat ZDT lijnrecht tegenover de modellen staat die hierboven werden besproken. ZDT lijkt de rol van individuele verschillen te negeren omdat wordt aangenomen dat de fundamentele psychologische behoeften universele mechanismen zijn die de groeibevorderende en schadelijke effecten verklaren van

autonomie-ondersteunende en controlerende opvoeding, respectievelijk. Toch dient een meer genuanceerde visie zich aan.

Ten eerste erkent ZDT het bestaan van individuele verschillen en bevat het zelfs een minitheorie die specifiek is toegespitst op verschillen in motivationele oriëntatie, ofwel de Causaliteits Oriëntatie Theorie (Deci & Ryan, 1985b; Ryan & Deci, 2017; Vansteenkiste, Niemiec & Soenens, 2010). Causaliteitsoriëntaties worden gedefinieerd als manieren om gebeurtenissen te interpreteren en te reguleren (bijvoorbeeld een beloning, een deadline, het geven van keuze). De meest adaptieve causaliteitsoriëntatie is de autonome oriëntatie, die kenmerkend is voor mensen met een neiging om bestaande situaties te interpreteren als informatief en gedrag te reguleren op basis van persoonlijke interesses en waarden. Deze oriëntatie kan gecontrasteerd worden met een gecontroleerde oriëntatie, die eerder typerend is voor mensen die de neiging hebben om gebeurtenissen te interpreteren als evaluatief en om hun gedrag te reguleren op basis van meer externe motieven.

Ten tweede is de afgelopen jaren binnen ZDT een gematigd universalistische visie ontwikkeld, die een meer uitgesproken rol toekent aan individuele verschillen in effecten van de context op motivatie en ontwikkelingsuitkomsten. Binnen ZDT wordt een gematigd standpunt over universalisme bepleit (Soenens et al., 2015), zodat de rol van individuele verschillen op drie verschillende manieren naar voren kan komen. Ten eerste kunnen individuele verschillen in kinderen de sterkte van de associatie tussen socialisatie en uitkomsten beïnvloeden (d.w.z., gradatie). Ervaringen uit het verleden, alsook persoonlijkheid kunnen van invloed zijn op hoe gevoelig kinderen worden voor toekomstige ervaringen. Volgens deze (de)sensitisatie hypothese zijn kinderen met een ontwikkelingsgeschiedenis van voornamelijk behoefte-ondersteunende ervaringen en met een persoonlijkheid die behoefte-ondersteunende

ervaringen oproept mogelijk gevoeliger voor nieuwe behoefte-ondersteunende situaties (Moller, Deci, & Elliot, 2010; Van Petegem et. al., 2017), resulterend in een meer uitgesproken effect van nieuwe behoefte-ondersteunende situaties. Daarentegen kunnen kinderen met een ontwikkelingsgeschiedenis van meer behoefte-ondermijnende ervaringen of met een persoonlijkheid die meer behoefte-ondermijnende ervaringen oproept, gevoeliger worden voor nieuwe situaties waarin de behoeftes worden gedwarsboemd, wat maakt dat ze meer zullen lijden in dergelijke situaties. Belangrijk is dat dit (de)sensitisatie effect verondersteld wordt een zaak van gradatie te zijn (Soenens et al., 2015). Hoewel kinderen kunnen verschillen in de mate waarin ze gevoelig zijn voor de voordelen van een autonomie-ondersteunende context, is het onwaarschijnlijk dat sommige kinderen zouden lijden onder een autonomie-ondersteunende aanpak. Evenzo, hoewel kinderen kunnen verschillen in hun kwetsbaarheid voor een controlerende context, is het onwaarschijnlijk dat sommige kinderen er baat bij zouden hebben.

Ten tweede kunnen individuele verschillen in kinderen van invloed zijn op hoe kinderen opvoedingsgedrag en socialisatie interpreteren (d.w.z., interpretatie). Om te onderzoeken hoe kinderen een bepaalde socialisatiecontext ervaren, moet een onderscheid worden gemaakt tussen wat ouders of andere socialisatiefiguren feitelijk doen en de subjectieve ervaring en interpretatie hiervan door kinderen. Hoewel er ruimte lijkt te zijn om socialisatiecontexten op verschillende manieren te interpreteren, zal de subjectief ervaren autonomie of controle vervolgens respectievelijk worden geassocieerd met welzijn en problemen. Zodra kinderen en adolescenten de indruk hebben dat hun autonomie wordt ondersteund dan wel ondermijnd, zou er relatief minder ruimte voor persoonlijkheid zijn om de effecten van de omgeving te beïnvloeden. In dit proefschrift wordt het onderscheid tussen wat socialisatiefiguren effectief doen en de subjectieve ervaring van

kinderen op twee verschillende manieren bestudeerd. Ten eerste gebruiken we naast zelfrapportage over opvoeding ook rapportage door ouders zelf over opvoeding in een aantal hoofdstukken. Ten tweede wordt in Hoofdstuk 6 een experimenteel design gebruikt om de effecten van een gestandaardiseerde manipulatie van autonomie-ondersteuning versus controle en positieve versus negatieve feedback op een puzzeltaak te onderzoeken. Deze experimentele inductie van autonomie-ondersteuning stelde ons in staat om effecten van de feitelijke context te ontwarren van hoe de context werd waargenomen.

Ten slotte kunnen individuele verschillen in kinderen ook invloed hebben op hoe de voordelen en kosten van socialisatie zich manifesteren (d.w.z., manifestatie). Om een voorbeeld te geven, het is mogelijk dat controlerend opvoeden gemiddeld genomen nadelige gevolgen heeft voor elk kind, maar dat de effecten zich voor kinderen anders kunnen manifesteren, afhankelijk van hun persoonlijkheid. Alle kinderen zouden lijden onder een controlerende opvoeding, enkel de manifestatie van die kost zou gekleurd zijn door hun persoonlijkheid.

4. DAGELIJKSE VARIATIE IN OPVOEDING

In dit proefschrift kijken we, behalve naar hoe individuele verschillen een rol spelen in de effecten van autonomie-ondersteunende en controlerende contexten, ook naar de mate waarin een autonomie-ondersteunende en controlerende opvoeding stabiel is (en dus vooral gekenmerkt wordt door inter-individuele verschillen tussen ouders) dan wel varieert van dag tot dag. Een manier om dagelijkse fluctuaties te onderzoeken is via dagboekonderzoek. Een handvol studies hebben al aangetoond dat opvoeding inderdaad van dag tot dag varieert. Deze variabiliteit in opvoeding van dag tot dag is ook gekoppeld aan dagelijkse schommelingen in de uitkomsten van het kind (bijv., Aunola, Ruusunen,

Viljaranta, & Nurmi, 2015). Het feit dat er dagelijkse fluctuaties zijn in opvoedgedrag en dat deze fluctuaties gerelateerd zijn aan schommelingen in de aanpassing van kinderen leidt verder tot de vraag wat deze variabiliteit in opvoeding kan verklaren. Belsky (1984) formuleerde een model van verschillende determinanten van opvoeding. In dit model wordt opvoeding beïnvloed door a) psychologische hulpbronnen van de ouders, b) kenmerken van het kind en c) contextuele factoren. Er is veel onderzoek gedaan naar de rol van deze determinanten in algemene opvoedingsstijlen. Zoeken naar bronnen van dagelijkse variaties in opvoeding impliceert dat men kijkt naar minder stabiele determinanten van opvoeding. In dit doctoraatsproefschrift willen we de rol van de eigen behoeften van ouders als bronnen van autonomie-ondersteunende en controlerende opvoeding onderzoeken.

DOELEN EN OVERZICHT VAN DIT DOCTORAATSPROEFSCHRIFT

DOEL 1: DE MODERERENDE ROL VAN INDIVIDUELE VERSCHILLEN

Het hoofddoel van dit proefschrift is om de genuanceerde manieren (d.w.z., in termen van gradatie, interpretatie en manifestatie) te onderzoeken, waarin individuele verschillen de uitkomsten van autonomie-ondersteunende en controlerende socialisatie kunnen beïnvloeden. Er worden drie verschillende moderatoren onderzocht: Big Five-persoonlijkheidskenmerken (Hoofdstukken 2, 3, 4 en 6), causaliteitsoriëntaties (Hoofdstuk 5) en opvoedingsgeschiedenis (Hoofdstuk 6).

In de eerste plaats wordt nagegaan of sommige kinderen en adolescenten vatbaarder zijn voor effecten van psychologisch controlerend opvoeden afhankelijk van hun persoonlijkheid (Onderzoeksvraag 1). Dit werd onderzocht aan de hand van een cross-sectionele studie (Hoofdstuk 2), een dagboekstudie (Hoofdstuk 3) en een longitudinale studie (Hoofdstuk 4). Alhoewel we op basis van ZDT veronderstellen dat, in het algemeen, alle

kinderen zullen lijden onder een psychologisch controlerende opvoeding, persoonlijkheid een rol kan spelen in termen van gradatie (d.w.z., associaties kunnen sterker/zwakker zijn voor kinderen en adolescenten met bepaalde persoonlijkheidskenmerken) en manifestatie (d.w.z., de manier waarop de kosten van psychologische controle zich manifesteren kunnen ook verschillen afhankelijk van bepaalde persoonlijkheidskenmerken). Door gebruik te maken van een dagboek-gebaseerd en longitudinaal design worden de associaties onderzocht op zowel het tussen- als het binnen-persoonsniveau.

Ten tweede willen we ook nagaan of de associatie tussen autonomie-ondersteunend opvoeden en het welzijn van adolescenten afhankelijk is van de dispositionele motivationele oriëntaties van adolescenten (Onderzoeksvraag 2). Meer specifiek gaan we in Hoofdstuk 5 na of adolescenten met een autonome causaliteitsoriëntatie gevoeliger zijn voor de gunstige effecten van autonomie-ondersteunend opvoeden (d.w.z., gradatie). In dit hoofdstuk willen we ook een onderscheid maken tussen goodness-of-fit als een objectieve match tussen opvoeding en de persoonlijkheid van kinderen en adolescenten en een meer subjectieve ervaring aan de zijde van het kind, meer bepaald het gevoel dat ouders hun persoonlijkheid begrijpen en er rekening mee houden.

Ten derde gaan we ook na of de effecten van experimenteel geïnduceerde autonomie-ondersteunende en controlerende positieve en negatieve feedback hetzelfde zijn, ongeacht verschillen in persoonlijkheid en opvoedingsgeschiedenis (Onderzoeksvraag 3). Dit wordt onderzocht in een experimentele studie in Hoofdstuk 6.

DOEL 2: DE ANTECEDENTE ROL VAN OUDERLIJKE BEHOEFTE-GEBASEERDE ERVARINGEN

We gaan na in welke mate autonomie-ondersteunend en controlerend opvoeden verschillen van dag tot dag (Onderzoeksvraag 4). Dit

doen we aan de hand van een dagboekstudie in de Hoofdstukken 3 en 7. Vervolgens gaan we in Hoofdstuk 7 ook na of schommelingen in de behoeftesatisfactie en -frustratie van ouders gerelateerd zijn aan dagelijkse schommelingen in autonomie-ondersteunend en controlerend opvoeden (Onderzoeksvraag 5).

RESULTATEN

DOEL 1: DE MODERERENDE ROL VAN INDIVIDUELE VERSCHILLEN

Modereren Persoonlijkheidstrekken het Verband tussen Psychologisch Controlerend Opvoeden en Probleemgedrag van Adolescenten?

In de Hoofdstukken 2-4 werd onderzocht in welke mate de persoonlijkheid van adolescenten een invloed heeft op de verbanden tussen psychologisch controlerend opvoeden en probleemgedrag. Hoofdstuk 2 rapporteert over een cross-sectionele studie uitgevoerd in twee steekproeven ($N = 423$ en 292 ; M leeftijd = 12.43 en 15.74 jaar). In beide steekproeven was psychologisch controlerend opvoeden geassocieerd met internaliserende en externaliserende problemen. Er werd weinig systematische evidentie gevonden voor een modererende rol van persoonlijkheid, met de uitzondering van een modererend effect van Vriendelijkheid. Psychologische controle gerapporteerd door de moeder (Steekproef 1) en door de adolescent (Steekproef 2) interageren met Vriendelijkheid in de associatie met externaliserende problemen. In beide gevallen bleek psychologische controle ongerelateerd te zijn aan externaliserende problemen in het geval adolescenten hoog scoorden op Vriendelijkheid. Er was ook een interactie tussen psychologische controle gerapporteerd door de moeder en zowel Extraversie als Emotionele Stabiliteit in de associatie met internaliserende problemen (Steekproef 1). Psychologische controle was geassocieerd met meer internaliserende problemen voor adolescenten die laag scoorden op Extraversie en Emotionele Stabiliteit, terwijl er geen verband was voor

adolescenten die hoog scoorden op beide trekken. Resultaten van analyses in Sample 2 toonden aan dat behoeftefrustratie bovendien een mediërende rol speelde in de associatie tussen psychologische controle en zowel internaliserende als externaliserende problemen, wat erop wijst dat frustratie van de universele basisbehoeften de ondermijnende effecten van psychologische controle kunnen verklaren.

Verder bouwend op Hoofdstuk 2 onderzochten we in Hoofdstuk 3 de modererende rol van persoonlijkheid gebruik makende van een dagboekdesign. Op de eerste plaats onderzochten we of dagelijks psychologisch controlerend opvoeden gerelateerd was aan dagelijkse internaliserende en externaliserende problemen. Daarnaast onderzochten we ook of deze associaties afhingen van de persoonlijkheid van het kind. Door gebruik te maken van een dagboekdesign focussen we in deze studie op een binnen-persoonsperspectief. Terwijl een design dat focust op tussen-persoonsverschillen de vraag stelt of kinderen met bepaalde persoonlijkheidskenmerken vatbaarder zijn voor een verhoging in psychologische controle ten opzichte van andere kinderen, stelt een design dat zich focust op binnen-persoonsverschillen zich de vraag of kinderen met bepaalde persoonlijkheidskenmerken vatbaarder zijn voor een toename in psychologische controle ten opzichte van hun eigen gemiddelde of typische blootstelling aan dergelijke opvoeding. Om dit te onderzoeken werd een multi-informant dagboekstudie uitgevoerd met 206 kinderen (M leeftijd = 9.93 jaar) samen met hun moeders en vaders (M leeftijd = 40.30 en 42.40 jaar). Zowel moeder, vader als kind vulden gedurende 7 dagen een dagboek in.

Multilevel analyses toonden aan dat dagelijkse psychologische controle door zowel de moeder als de vader geassocieerd was met dagelijkse externaliserende en internaliserende problemen, een patroon dat zich voordeed over alle informanten heen. Van de acht getoetste modellen,

bleek dat er bij zeven modellen significante variantie zat rond de sterkte van het verband tussen dagelijkse psychologische controle en de uitkomsten. Meer specifiek betekent dit dat de sterkte van het verband tussen psychologische controle en internaliserende en externaliserende problemen verschilde van kind tot kind. In die modellen werd nagegaan in welke mate persoonlijkheid van het kind deze heterogeniteit kon verklaren. Analyses toonden opnieuw aan dat er slechts beperkt sprake was van interacties met persoonlijkheid. In drie gevallen werd een interactie gevonden. Er was een interactie tussen psychologische controle door de moeder, gerapporteerd door het kind en Openheid in de voorspelling van externaliserende problemen. Er was een verband voor kinderen die laag scoren op Openheid, niet voor de kinderen die hoog scoren op Openheid. Er was ook een interactie tussen psychologische controle door de vader, gerapporteerd door het kind en Vriendelijkheid, zowel in de voorspelling van externaliserende als internaliserende problemen. De verbanden waren significant voor kinderen die laag scoorden op Vriendelijkheid, niet voor kinderen die hoog scoorden op Vriendelijkheid.

In de derde studie binnen deze onderzoeksvraag (Hoofdstuk 4) gingen we na in welke mate de Big Five dimensies van adolescenten een invloed hadden op de sterkte van de associaties tussen psychologische controle en zowel internaliserende als externaliserende problemen op het niveau van binnen-persoonsverandering op de langere termijn. Hiervoor namen 198 families van adolescenten (M leeftijd = 14.89 jaar) deel aan een multi-informant longitudinale studie met 3 waves, met telkens ongeveer één jaar tussen de waves.

Multilevel analyses toonden aan dat veranderingen in psychologische controle door de moeder (zowel gerapporteerd door de moeder als de adolescent), en psychologische controle door de vader (gerapporteerd door de adolescent) positief gerelateerd waren aan

veranderingen in een multi-informant score van zowel internaliserende als externaliserende problemen. Er was enige evidentie voor de modererende rol van persoonlijkheid. Significante interacties toonden aan dat een meer adaptieve/mature persoonlijkheid (d.w.z., hoog scoren op Emotionele Stabiliteit en een veerkrachtig profiel in vergelijking met een overgecontroleerd profiel) bufferden tegen de effecten van psychologische controle in de associatie met internaliserende problemen. Een veerkrachtig profiel (in vergelijking met een ondergecontroleerd profiel) bufferde ook tegen de effecten van psychologische controle in de associatie met externaliserende problemen. Openheid en een onder- en overgecontroleerd profiel bleken ook de gevoeligheid voor de effecten van psychologische controle te vergroten.

Samengevat kunnen we omtrent deze onderzoeksvraag stellen dat vooral de systematiek van de directe verbanden tussen psychologisch controlerend opvoeden en probleemgedrag bij adolescenten opvalt. Deze verbanden doen zich voor over verschillende informanten heen en zowel op het niveau van tussen-persoonsverschillen als op het niveau van binnen-persoonsfluctuatie (van dag tot dag en over jaren heen). De modererende rol van persoonlijkheid in deze verbanden is bescheiden en lijkt vooral een zaak te zijn van de manifestatie van de problemen die gepaard gaan met ouderlijke psychologische controle. Er is een tendens waarbij adolescenten die laag scoren op Vriendelijkheid vooral externaliserende problemen vertonen in samenhang met ouderlijke psychologische controle en waarbij adolescenten die laag scoren op Emotionele Stabiliteit vooral internaliserende problemen vertonen wanneer ze meer psychologische controle ervaren.

Is de Associatie tussen Autonomie-Ondersteunend Opvoeden en het Welzijn van Adolescenten Afhankelijk van de Dispositionele Motivationale

Oriëntaties van Adolescenten? Gebaseerd op het goodness-of-fit concept van Thomas en Chess (1968) gingen we in Hoofdstuk 5 na of de verbanden tussen autonomie-ondersteuning door de moeder en het welzijn van adolescenten afhangt van de causaliteitsoriëntaties van de adolescent. Daarnaast onderzochten we ook of de verbanden konden verklaard worden door een subjectieve ervaring van fit door de adolescent. Op deze manier wilden we een meer dynamische interpretatie geven aan het concept goodness-of-fit. We veronderstelden dat autonomie-ondersteuning bij de adolescent tot een gevoel zou leiden dat de moeder zijn/haar persoonlijkheid begrijpt en daar ook rekening mee houdt in de interactie met de adolescent. Om beide onderzoeksvragen te onderzoeken maakten we gebruik van een multi-informant longitudinale studie van 3 waves ($N = 198$, M leeftijd = 14.89 jaar). Door gebruik te maken van een longitudinale studie konden we de associaties op zowel het tussen- als het binnenpersoonsniveau onderzoeken.

De resultaten toonden aan dat de causaliteitsoriëntaties het verband tussen autonomie-ondersteuning door de moeder, zowel door de adolescent als de moeder zelf gerapporteerd, niet modereren. Meer concreet betekent dit dat ook kinderen met een gecontroleerde oriëntatie de vruchten plukken van een autonomie-ondersteunende opvoeding. Multilevel analyses toonden dat ervaringen van fit wel een interveniërende rol speelden in deze associaties. Het lijkt er dus op dat moederlijke autonomie-ondersteuning bij adolescenten gepaard gaat met het gevoel dat hun moeder hun persoonlijkheid goed kent en er rekening mee houdt. Dit subjectieve gevoel van 'fit' hangt op zijn beurt samen met hoger welzijn.

Hangen de Effecten van Experimenteel Geïnduceerde Autonomie-Ondersteunende en Controlerende Positieve en Negatieve Feedback af van Persoonlijkheid en Opvoedingsgeschiedenis? Voorgaand onderzoek toonde

reeds evidentie voor de positieve effecten van positieve (ten opzichte van negatieve) feedback en een autonomie-ondersteunende (ten opzichte van een controlerende) communicatie stijl op de intrinsieke motivatie van studenten. Gelijkaardig experimenteel onderzoek bij lagere schoolkinderen is schaars. Daarnaast is er ook weinig aandacht besteed aan de vraag of individuele verschillen in persoonlijkheid en opvoedingsgeschiedenis een rol spelen in deze effecten.

In Hoofdstuk 6 wordt een experimenteel design gebruikt ($N = 110$; M leeftijd = 10.71 jaar). Kinderen maakten op school puzzels onder één van vier verschillende condities. Er werd gebruik gemaakt van een 2x2 design waarbij normatieve feedback valentie (d.w.z., positieve versus negatieve) gekruist werd met communicatiestijl (d.w.z., autonomie-ondersteunend versus controlerend). Na de experimentele manipulatie vulden kinderen een vragenlijst in die verschillende motivationele constructen bevroeg. Het krijgen van positieve normatieve feedback resulteerde in de meest positieve uitkomsten. Zowel de valentie van de feedback als de communicatiestijl hadden onafhankelijk van elkaar een invloed op de ervaringen van de kinderen op vlak van competentie en autonomie. Daarnaast was er in de voorspelling van zowel competentie als zelf-gerapporteerde intrinsieke motivatie een interactie tussen beide manipulaties. De ondermijnende impact van negatieve feedback op beide variabelen was minder uitgesproken indien deze feedback op een autonomie-ondersteunende manier werd geïntroduceerd. Zowel gevoelens van competentie als autonomie verklaarden de effecten van de manipulatie op de uitkomstvariabelen.

Enkele van de effecten van de manipulatie werden gemodereerd door de persoonlijkheid van het kind en de opvoedingsgeschiedenis. Eén van deze interacties kon beschouwd worden als in lijn zijnde met de sensitisatie hypothese. Kinderen die hoog scoorden op Consciëntieusheid bleken

sensitiever te zijn voor de voordelen van een autonomie-ondersteunende aanpak, resulterende in meer competentiegevoelens in vergelijking met kinderen die laag scoren op Consciëntieusheid. Drie andere interacties konden geïnterpreteerd worden in termen van veerkracht. Kinderen die hoog scoorden op Consciëntieusheid bijvoorbeeld vertoonden geen daling in intrinsieke motivatie wanneer ze geconfronteerd werden met een controlerende manier van communiceren. Kinderen die hun moeder ervaarden als weinig psychologische controlerend en die zelf hoog scoorden op Vriendelijkheid persisteerden meer in het uitdagende boekje in de controlerende conditie.

De bevindingen suggereren dat vooral positieve feedback, maar ook een autonomie-ondersteunende manier van communiceren effectief zijn in het voorspellen van intrinsieke motivatie. De modererende rol van persoonlijkheid en opvoedingsgeschiedenis deed zich vooral voor in de associatie tussen de manier van communiceren en de uitkomsten, maar was net als in de correlatieve studies beperkt.

DOEL 2: DE ANTECEDENTE ROL VAN OUDERLIJKE BEHOEFTE-GEBASEERDE ERVARINGEN

In Hoofdstukken 3 en 7 gingen we na in welke mate autonomie-ondersteunend en psychologisch controlerend opvoeden variëren van dag tot dag. Daarnaast onderzochten we in Hoofdstuk 7 ook in welke mate dagelijkse ervaringen van behoeftebevrediging en -frustratie aan de kant van de ouders een rol speelde in deze fluctuaties. Beide vragen werden behandeld in een dagboekonderzoek waarbij moeders (M leeftijd = 45.14 jaar) en vaders (M leeftijd = 46.79 jaar) van 194 adolescenten (M leeftijd = 14.89 jaar) gedurende zeven dagen een dagboek bijhielden.

Multilevel analyses toonden aan dat er inderdaad significante variabiliteit is in beide concepten binnen ouders, waarbij ongeveer de helft van de variantie in zowel autonomie-ondersteunende als psychologisch

controlerende opvoeding kan beschouwd worden als binnenpersoonsfluctuatie in ouderlijk gedrag van dag tot dag. Daarnaast toonden analyses ook aan dat dagelijkse fluctuaties in ouderlijke behoeftebevrediging gerelateerd waren aan dagelijkse fluctuaties in autonomie-ondersteunend opvoeden, terwijl dagelijkse fluctuaties in behoeftefrustratie gerelateerd waren aan dagelijkse fluctuaties in controlerend opvoeden. Op dagen dat ouders zich verbonden voelden met anderen, effectief in het uitvoeren van hun dagelijkse activiteiten, en vrij om te handelen naar hun eigen interesses en waarden, rapporteerden ze meer autonomie-ondersteunend te zijn. Op dagen dat ouders zich actief buitengesloten voelden door anderen, faalervaringen hebben en activiteiten tegen hun zin doen, rapporteerden ze meer psychologisch controlerend te zijn.

DISCUSSIE

In dit proefschrift vonden we vrij robuuste associaties tussen autonomie-ondersteunende en psychologisch controlerende socialisatie (en met name opvoeding) en uitkomsten bij kinderen en adolescenten, waarbij autonomie-ondersteunende opvoeding wordt geassocieerd met welzijn en psychologisch controlerende opvoeding met probleemgedrag. De modererende rol van individuele verschillen was eerder beperkt en leek vooral een kwestie van manifestatie, waarbij bijvoorbeeld psychologische controle in sommige studies alleen gerelateerd bleek aan externaliserende problemen bij kinderen die laag scoren op Vriendelijkheid en aan internaliserende problemen bij kinderen die laag scoren op Emotionele Stabiliteit. In geen van de hoofdstukken was er bewijs dat sommige kinderen baat zouden hebben bij een controlerende aanpak of zouden lijden aan een autonomie-ondersteunende aanpak. Dit neemt echter niet weg dat er verschillen tussen kinderen kunnen bestaan in de manier waarop zij autonomie-ondersteunende en controlerende socialisatie zien en hoe ze

daarmee omgaan, een kwestie die verder moet worden onderzocht in toekomstig onderzoek. Bovendien moeten onderzoeks- en preventieprogramma's zich blijven richten op het bevorderen van een autonomie-ondersteunende opvoedingsstijl omdat het de beste garantie lijkt te bieden voor behoeftebevrediging, geluk en veerkracht bij kinderen. Zoals uit de resultaten in Hoofdstuk 3 en 7 blijkt, wijken ouders van dag tot dag af van hun eigen gemiddelde van autonomie-ondersteunende en controlerende opvoeding. Het geven van deze boodschap aan ouders kan het optimisme van ouders en hun geloof in de mogelijkheid om te veranderen stimuleren.

THE ROLE OF INDIVIDUAL DIFFERENCES IN EFFECTS OF AUTONOMY-
SUPPORTIVE AND CONTROLLING SOCIALIZATION DURING MIDDLE
CHILDHOOD AND ADOLESCENCE: A LONGITUDINAL, DIARY-BASED,
AND EXPERIMENTAL APPROACH

GENERAL INTRODUCTION

In the past 30 years, the developmental literature has witnessed an exponential increase in research on parenting (Holden, 2010). Although the opinions about what constitutes 'optimal parenting' vary widely, developmental scholars typically agree that parents play a critical role in shaping a child's social, psychological, and academic functioning. Although the number of parenting dimensions and practices being studied are extensive (Skinner, Johnson, & Snyder, 2005), there is increasing consensus among researchers that three dimensions represent core dimensions of parenting (Barber, 1997; Barber, Stolz, & Olsen, 2005; Smetana, 2017; Soenens, Vansteenkiste, & Beyers, in press): connection (i.e., warmth, affection, responsiveness), regulation (i.e., rule-setting and supervision), and support for autonomy (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Maccoby, 1992).

In the present dissertation, the focus will be on contexts that support and thwart children's and adolescents' autonomy. Since autonomy is a central concept in the Self-Determination Theory (Deci & Ryan, 1985a, 2000; Ryan & Deci, 2017), in this dissertation, we will rely on this theory. Increasingly, theory and research suggest that the degree to which parents support children's autonomy has major ramifications for their development (Grolnick, 2003; Ryan, Deci, & Vansteenkiste, 2016; Soenens et al., 2018). Children and adolescents who experience parents as more autonomy-supportive fare, on average, better in terms of both personal well-being and social adjustment. Conversely, children and adolescents who feel that their parents act in an autonomy-suppressing (i.e., controlling) way are more likely to report ill-being or display behavioral problems (Pinquart, 2016; 2017).

The consistency of these findings raises the question whether all children are equally sensitive to the effects of autonomy-supportive and

psychologically controlling parenting. Accordingly, the main objective of this dissertation is to investigate whether and how child and adolescent personality plays a role in the effects of autonomy-supportive and controlling contexts on well-being and problem behavior (Goal 1). In doing so, effects of autonomy-supportive and controlling contexts will be studied both at the level of stable, interindividual differences and at the level of intra-individual change across short (i.e., daily) and longer (i.e., annual) periods of time. Given this focus on effects of parenting at two different levels of analysis (i.e., the between- and with-person level), an ancillary objective of this dissertation is to examine whether autonomy-supportive and psychologically controlling parenting are stable features of parents' socialization style, thereby reflecting inter-parental differences, or whether such parenting varies from day to day, thereby equally reflecting intra-parental differences (Goal 2). To address the role of autonomy-supportive and psychologically controlling socialization in children's and adolescents' adjustment and the role of individual differences herein, a variety of research designs (i.e., cross-sectional, diary-based, longitudinal and experimental) will be used.

THEORETICAL FRAMEWORK

1. A SELF-DETERMINATION THEORY PERSPECTIVE ON PARENTING

Self-determination theory (SDT; Deci & Ryan, 1985a, 2000; Ryan & Deci, 2017) is a broad theory on human motivation, development, health, personality, and socialization. The theory has been applied in various life domains, including the domain of parenting (Joussemet, Landry, & Koestner, 2008; Soenens, Deci, & Vansteenkiste, 2017; Soenens & Vansteenkiste, 2010; Vansteenkiste & Soenens, 2015).

Three Basic Psychological Needs. At the heart of the SDT is the assumption that people have three basic psychological needs that represent

essential nutriments for well-being (Ryan & Deci, 2000). The need for autonomy refers to the experience of volition and psychological freedom. The need for competence refers to the experience of mastery over one's environment and the capability to attain one's goals. The need for relatedness refers to the experience of reciprocal care and love of important others. Satisfaction of these psychological needs is assumed to be a necessary condition for effective functioning and psychological well-being. Conversely, frustration of these needs forestalls psychological well-being and growth and is associated with an increased risk for maladjustment and even psychopathology (Ryan, Deci, & Vansteenkiste, 2016).

Autonomy-Supportive and Psychologically Controlling Parenting.

Given the centrality of the need for autonomy in children's and adolescents' psychosocial adjustment, SDT highlights the role of parents in the satisfaction or frustration of this need, thereby distinguishing between autonomy-supportive and controlling parenting (Grolnick, 2003; Joussemet et al., 2008; Soenens et al., 2010, 2018). In essence, when parents act in an autonomy-supportive way, they take the frame of reference of their child as their starting point, thereby displaying a curiosity for and deep interest in their child's point of view (Grolnick, 2003; Mageau, Sherman, Grusec, Koestner, & Bureau, 2017; Soenens et al., 2017). Autonomy-supportive parents also unconditionally accept the child as s/he is (Roth, Kanat-Maymon, & Assor, 2016).

Autonomy-supportive parenting can be contrasted with psychologically controlling parenting. Psychologically controlling parenting (Barber, 1996) refers to control attempts that intrude into the psychological and emotional development of the child. Psychologically controlling parents pressure their children to comply with parental requests without explanation, use controlling language in communicating with their children and also make use of insidious tactics such as love withdrawal (Kanat-

Maymon, Roth, Assor, & Raizer, 2016), guilt (Rote & Smetana, 2017) and shame induction (Yu, Cheah, Hart, Sun, & Olsen, 2015) to pressure the child to do what they want.

Correlates of Autonomy-Supportive and Psychologically Controlling Parenting. Research increasingly shows that autonomy-supportive parenting is associated with positive developmental outcomes, whereas controlling parenting is related to relatively more detrimental developmental outcomes. Strikingly, these effects are found among children of different ages (Joussemet et al., 2008), in different socialization contexts such as the home context and school (e.g., Soenens & Vansteenkiste, 2005; Vansteenkiste, Zhou, Lens, & Soenens, 2005), and in different cultures (e.g., Lokes, Gingras, Philippe, Koestner, & Fang, 2010; Vansteenkiste, Zhou et al., 2005).

Explaining Mechanisms. It is assumed within SDT that an autonomy-supportive parenting style will nurture the children's basic psychological needs and the need for autonomy in particular (Grolnick, Ryan, & Deci, 1991; Soenens et al., 2007). The satisfaction of these needs, in turn, will facilitate psychological growth and subsequent positive developmental outcomes. A controlling parenting style in contrast would undermine the satisfaction of the needs, so that growth tendencies are not only blocked but derailed and negative developmental outcomes are more likely the result (Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010).

2. THE ROLE OF INDIVIDUAL DIFFERENCES IN THE EFFECTS OF SOCIALIZATION

Importance of Studying Individual Differences. The claim that effects of autonomy-supportive and controlling socialization are mediated through universally important psychological needs experiences may seem very strong. This claim raises the question whether all children are equally sensitive to effects of autonomy-supportive and controlling contexts, and parenting in particular. Would effects of these parenting dimensions depend

on interindividual differences between children? Within SDT, very little research has investigated the interaction between these two dimensions of socialization and individual differences between children. In this dissertation, we consider the role of both individual differences in causality orientations (Chapter 5), personality (Chapters 2, 3, 4 and 6) and developmental history of parenting (Chapter 6). An interesting and important question is whether the effects of autonomy-supportive and controlling parenting (and more broader: socialization) would also hold across individual differences in these moderators. Examining the moderating role of individual differences yields a new and challenging way to test SDT's claims about the universal importance of need satisfaction and socialization that supports the needs. Such research may also have practical implications because it helps identifying which children are less sensitive to the benefits associated with autonomy-supportive parenting and more sensitive to the costs associated with controlling parenting. Prevention and intervention programs focusing on parenting may then attend more strongly to such individual characteristics that confer vulnerability to need-thwarting parenting.

While relatively little attention has been devoted to the role of individual differences in effects of parenting within the SDT literature, there is a rich tradition of examining such individual differences in the broader socialization literature. This literature has focused mostly on the role of children's temperament and personality in effects of parenting.

In this dissertation, the framework of the Big Five dimensions will be used to investigate the role of individual differences in children (Caspi & Shiner, 2006). The Big Five traits are the following: Extraversion, Agreeableness (sometimes also referred to as Benevolence when it comes to child personality; De Pauw, 2017; Mervielde, De Fruyt, & De Clercq, 2009), Conscientiousness, Emotional Stability and Openness to Experience (sometimes also referred to as Imagination when it comes to child

personality; De Pauw, 2017; Mervielde, De Fruyt, & De Clercq, 2009). Extraverted children are described as sociable, expressive, lively and energetic. Agreeable children are described as warm, considerate, empathic, generous, gentle, protective of others, and kind. Conscientiousness refers to individual differences in self-control. Children scoring high on Conscientiousness are responsible, attentive, persistent, orderly, and they think before they act. Emotional Stability refers to overall positive emotional adjustment. Openness to Experience refers to children who are eager and quick to learn, knowledgeable, perceptive, imaginative, curious, and original.

Models on the Moderating Role of Personality. Several models have been developed with different predictions about the links between parenting, temperament/personality and developmental outcomes (see Kiff, Lengua en Zalewski, 2011 for an overview).

In interaction models of parenting and individual differences, the effect of a parenting dimension or practice is said to depend on the temperament or personality of the child. According to a goodness-of-fit model, adaptation and development take place when there is a *match* or *congruence* between children's own characteristics and the demands of the environment. This general notion of goodness-of-fit has been specified and made amenable to concrete, testable hypotheses in recent person by environment interaction models. Diathesis-stress models (Monroe & Simons, 1991), also called dual-risk models (Sameroff, 1983), focus on individuals' vulnerabilities that result in negative developmental outcomes, especially in at risk environments (e.g., dysfunctional parenting). Specifically, children with difficult temperamental characteristics or with vulnerable personality traits or configurations would be more susceptible to the detrimental effects of dysfunctional parenting.

More recent models highlight the basic idea of children's differential responsiveness to parenting (Kiff et al., 2011; Pluess, 2015), as expressed for

instance in Belsky's (1997) differential susceptibility hypothesis. The central idea is that certain characteristics render children more susceptible to the environment (including parenting), for better and for worse. Children who are more sensitive for dysfunctional parenting would also flourish in response to positive parenting. Research shows that evidence for these different models exists (Kiff et al., 2001).

3. THE ROLE OF INDIVIDUAL DIFFERENCES FROM A SELF-DETERMINATION THEORY PERSPECTIVE

Against the background of models and findings suggesting that individual characteristics can moderate the effect of parenting and socialization, an important, yet understudied question is whether individual differences in children may moderate the effects of autonomy-supportive and controlling socialization, as conceptualized in SDT. At first sight, it may seem as if SDT stands in diametrical opposition to the models describing parenting by personality interactions. SDT seems to ignore the role of individual differences because it assumes that the basic psychological needs are universal mechanisms explaining the growth-promoting and detrimental effects of autonomy-supportive and controlling parenting, respectively. Yet, closer inspection suggests that such oppositional views do not necessarily hold, for two important reasons.

First, SDT does recognize the existence of individual differences and even contains a mini-theory devoted specifically to personality-based differences in motivational orientations, that is, Causality Orientations Theory (Deci & Ryan, 1985b; Ryan & Deci, 2017; Vansteenkiste et al., 2010). Causality orientations are defined as ways of interpreting and regulating events (e.g., a reward, a deadline, a provision of choice). The most adaptive orientation is the autonomous orientation, characteristic of people with the tendency to interpret existing situations as informational and to regulate

behavior on the basis of self-endorsed motives, thereby behaving in accord with their interests and values. This orientation can be contrasted with a controlled orientation, which refers to the tendency to interpret events as evaluative and to regulate behavior on the basis of pressuring motives.

Second, over the past few years, a moderate universalistic viewpoint has been developed within SDT, which assigns a more pronounced role to individual differences in effects of the context on motivation and developmental outcomes. Within SDT, a moderate viewpoint on universalism is advocated (Soenens et al., 2015), such that the role of individual differences may surface in three different ways. First, individual differences in children can affect the strength of the association between socialization and outcomes (i.e., gradation). Past developmental experiences and personality may influence how sensitive children become towards future experiences. According to this *(de)sensitization* hypothesis, children with a developmental history of mainly need-supportive experiences and with a personality eliciting need-supportive experiences may be more sensitive to new need-supportive situations (Moller, Deci, & Elliot, 2010; Van Petegem et al., 2017), resulting in a more pronounced effect of new need-supportive situations. In contrast, children with a developmental history of more need-thwarting experiences or with a personality eliciting more need-thwarting experiences may become more sensitive to new need-thwarting situations, making them suffer more in these situations. Importantly, this sensitization/desensitization effect is assumed to be a matter of gradation (Soenens et al., 2015). While children may differ in the extent to which they are sensitive to the benefits of an autonomy-supportive context, it is unlikely that some children would suffer from such a context. Similarly, while children may differ in their vulnerability to controlling socialization, it is unlikely that some children would benefit from a controlling style and flourish under controlling conditions.

Second, individual differences in children can have an impact on how children interpret parenting behaviors and socialization more broadly (i.e., interpretation). To investigate how children perceive a certain socialization context, a distinction has to be made between what parents or other socialization figures actually do and children's subjective appraisal, experience, and interpretation of the behavior. Although there seems to be room to interpret socialization contexts in different ways, the subjective experienced autonomy or control will subsequently be associated with well-being and problems respectively. As soon as children and adolescents have the perception that their autonomy is supported or undermined, there would be relatively less room for personality to change the effects of the environment. In this dissertation, the distinction between what socialization figures actually do and children's subjective appraisal is studied in two different ways. First, apart from self-reports of parenting, we also use parental reports of parenting in a number of chapters. Second, an experimental induction is used in Chapter 6 in which effects of a standardized manipulation of autonomy support versus control and positive versus negative feedback in a puzzle task were examined. This experimental induction of autonomy support allowed us to disentangle effects of the actual context from how the context was perceived.

Finally, individual differences in children can also have an influence on how the benefits and costs of socialization manifest (i.e., manifestation). To give an example, it is possible that on average, controlling parenting has detrimental effects for every child, but that the effects can manifest differently for children depending on their personality. All children would suffer from controlling parenting, only the way how children compensate for need frustration will be colored by their personality.

4. DAILY VARIATION IN PARENTING

In this dissertation, apart from looking at how individual differences play a role in the effects of autonomy-supportive and controlling contexts on well-being and problem behavior, we also aim to examine the extent to which an autonomy-supportive and controlling socialization is stable and, in particular, show inter-individual differences between parents or vary from day to day. One way of investigating daily interactions is to apply a diary methodology. A handful of studies already demonstrated that parenting is indeed variable from day-to-day. This variability in parenting on a day-to-day basis has also been linked to daily fluctuations in child outcomes (e.g., Aunola, Ruusunen, Viljaranta, & Nurmi, 2015). The fact that parenting is variable on a day-to-day basis and is related to fluctuations in children's adjustment leads to the question: what can account for this variability in parenting? Belsky (1984) formulated a model of several determinants of parenting. In this model, parenting is thought to be influenced by (a) psychological resources of parents, (b) child characteristics, and (c) contextual factors. A lot of research has been devoted to investigate the role of these determinants on general parenting styles. Looking for sources of daily variations in parenting implies that one is looking at less stable determinants of parenting. In this dissertation, we want to investigate the role of parents' own psychological needs as sources of daily autonomy-supportive and psychologically controlling parenting.

GOALS AND OVERVIEW OF THIS DISSERTATION

GOAL 1: THE MODERATING ROLE OF INDIVIDUAL DIFFERENCES

The main aim of this dissertation is to examine the nuanced ways (i.e., in terms of gradation, interpretation and manifestation) in which individual differences may affect the outcomes of autonomy-relevant socialization. These individual differences are conceptualized in terms of

three different moderators, that is, Big Five personality traits (Chapters 2, 3, 4 and 6), causality orientations (Chapter 5) and developmental history of parenting (Chapter 6).

In the first place, it is investigated whether some children and adolescents are more susceptible to effects of psychologically controlling parenting depending on their personality traits (Research Question 1). This was investigated using a cross-sectional study (Chapter 2), a diary study (Chapter 3) and a longitudinal study (Chapter 4). Although on the basis of SDT we assume that, in general, all children will suffer from psychologically controlling parenting, personality may play a role in terms of gradation (i.e., associations may be stronger or weaker for children and adolescents with certain personality characteristics) and manifestation (i.e., the way in which the costs of psychological control manifest may also differ depending on certain personality characteristics). By making use of a diary-based and longitudinal design, the associations are examined at both between- and within-person level.

Second, we also aim to examine whether the association between perceived maternal autonomy-supportive parenting and adolescents' well-being depends on adolescents' dispositional motivational orientations (Research Question 2). More specifically, we want to investigate whether adolescents with an autonomous causality orientation are more sensitive to the beneficial effects of autonomy-supportive parenting (i.e., gradation). In this chapter, we also distinguish between goodness-of-fit as an objective match between parental practices and child and adolescents' personalities and a more subjective experience at the side of the child involving the feeling that parents understand and take into account their personalities.

Third, we also examine whether the effects of experimentally induced autonomy-supportive and controlling positive and negative feedback are the same regardless differences in personality traits and

parenting history (Research Question 3). This will be investigated in an experimental study in Chapter 6.

GOAL 2: THE ANTECEDENT ROLE OF PARENTAL NEED-BASED EXPERIENCES

We investigate whether autonomy-supportive and controlling parenting fluctuate on a day-to-day basis (Research Question 4). This will be examined using a diary study in Chapters 3 and 7. Additionally, in Chapter 7, we investigate whether fluctuations in parental need satisfaction and frustration account for the daily fluctuations in autonomy-supportive and controlling parenting (Research Question 5).

RESULTS

GOAL 1: THE MODERATING ROLE OF INDIVIDUAL DIFFERENCES

Do Personality Traits Moderate Relations Between Psychologically Controlling Parenting and Problem Behavior in Adolescents? In Chapters 2-4, it is investigated whether adolescents' personality has an influence on the associations between psychologically controlling parenting and problem behavior. In Chapter 2, a cross-sectional study in two samples ($N = 423$ and 292 ; M age = 12.43 and 15.74 years) was conducted. Psychologically controlling parenting was related to internalizing and externalizing problems in both samples. Little systematic evidence was obtained for the moderating role of personality, with the exception of a moderating effect of Agreeableness. There was an interaction between psychological control reported by the mother (Sample 1) and adolescent (Sample 2) and Agreeableness in the association with externalizing problems. In both cases psychological control was unrelated to externalizing problems among adolescents high on Agreeableness. There was also an interaction between psychological control reported by the mother and both Extraversion and Emotional Stability in the association with internalizing problems (Sample 1).

Psychological control was associated with more internalizing problems for adolescents scoring low on Extraversion and Emotional Stability, whereas there was no association for adolescents scoring high on both traits. Analyses of Sample 2 showed that associations between psychological control and problem behavior were mediated by psychological need frustration, suggesting that frustration of the basic and universal psychological needs can account for the undermining effects of psychologically controlling parenting.

Building further on Chapter 2, in Chapter 3, we investigated the moderating role of personality, making use of a diary design. First, we investigated whether daily psychologically controlling parenting relates to children's daily externalizing and internalizing problems. Furthermore, we also investigated whether these associations depend on child personality. By using a diary study, in this study, we focus on the within-person perspective. Studies at the between-person level consider the question whether a child exposed to more (perceived) psychologically controlling parenting *compared to other children* will be more vulnerable to the effects of such parenting based on his or her personality. In studies focusing on within-person differences the question is asked whether children with certain personality characteristics are more susceptible to an increase in psychological control compared to the average degree of psychological control in the specific relationship. A multi-informant diary study was used with 206 children (M age = 9.93 years) together with their mothers and fathers (M age = 40.30 and 42.40 years). All 3 family members filled out a diary each day for 7 days. Multilevel analyses indicated that daily maternal and paternal psychological control were positively related to daily externalizing and internalizing problems, a pattern that was fairly consistent across informants. Of the eight models tested, it was found that in seven models there was significant variance in the strength of the association between daily psychological

control and outcomes. More specifically, this means that the strength of the association between psychological control and internalizing and externalizing problems differed from child to child. In these models, it was investigated to what extent personality of the child could explain this heterogeneity. Analyses again showed that there was only limited evidence for interactions with personality. In three cases, an interaction was found. There was an interaction between maternal psychological control reported by the child and Openness to Experience in the prediction of externalizing problems. The association was significant for children scoring low on Openness to Experience, not for those scoring high on this trait. There was also an interaction between paternal psychological control reported by the child and Agreeableness, both in the prediction of externalizing and internalizing problems. The associations were significant for children scoring low on Agreeableness, not for those scoring high on this trait.

A third study within this research question (Chapter 4), investigated whether the Five Factor Model (FFM) dimensions of adolescent personality alter the strength of associations between parental psychological control and both internalizing and externalizing problems at the level of within-person change in the long term. 198 families of adolescents (*M* age = 14.89 years) participated in a multi-informant longitudinal study with 3 waves, with one-year intervals between waves.

Multilevel analyses demonstrated that changes in maternal psychological control (as reported by both mother and adolescent) and paternal psychological control (as reported by adolescents) related positively to changes in multi-informant scores of both internalizing and externalizing problems. The interactions obtained indicated that a mature personality (i.e., higher scores on Emotional Stability, or membership in a resilient profile in comparison to an overcontrolled profile) buffered against the detrimental effects of psychologically controlling parenting on internalizing

problems. A resilient profile (in comparison to an undercontrolled profile) also buffered against effects of psychologically controlling parenting on externalizing problems. In contrast, higher scores on Openness to Experience or membership in an over- or undercontrolled profile (in comparison to a resilient profile) appeared to increase adolescents' sensitivity to the effects of psychologically controlling parenting.

In summary, with regard to this research question we can conclude that there is striking consistency in the direct associations between psychologically controlling parenting and problem behavior among adolescents. These associations occur for different informants and at both the level of interpersonal differences and at the level of intra-person fluctuations (from day to day and over years). The moderating role of personality in these associations is modest and seems to be primarily a matter of manifestation of the problems associated with parental psychological control. There is a trend in which adolescents who score low on Agreeableness mainly exhibit externalizing problems facing psychological control. Adolescents who score low on Emotional Stability show mainly internalizing problems when they experience more psychological control.

Does the Association between Perceived Maternal Autonomy-Supportive Parenting and Adolescents' Well-Being Depend on Adolescents' Dispositional Motivational Orientations? Based on Thomas and Chess's (1968) notion of goodness-of-fit, in Chapter 5, we examined whether associations between perceived maternal autonomy support and adolescent well-being depend on adolescents' dispositional motivational orientations (i.e., autonomous or controlled). Second, we examined whether associations between perceived maternal autonomy support and well-being are accounted for by adolescents' subjective experiences of goodness-of-fit. In this way, we wanted to give a more dynamic interpretation of the concept of

goodness-of-fit. We assumed that autonomy support would lead to a feeling that the mother understands the personality of the adolescent and also takes it into account in the interaction with the adolescent. Both questions were investigated using a multi-informant three-wave longitudinal study ($N = 198$, M age = 14.89 years), allowing for an analysis of the associations both at the level of between-person differences and at the level of within-person changes.

Results showed that adolescents' motivational orientations did not moderate associations between either parent-reported or adolescent-reported maternal autonomy support and well-being. More specifically, this means that also children with a controlled orientation benefit from autonomy-supportive parenting. Multilevel analyses showed that experiences of fit played an intervening role in these associations. It therefore seems that maternal autonomy support in adolescents is accompanied by the feeling that their mother knows their personality well and takes it into account. This subjective feeling of 'fit' in turn is associated with higher well-being.

Are the Effects of Experimentally Induced Autonomy-Supportive and Controlling Positive and Negative Feedback the same Regardless Differences in Personality Traits and Parenting History? Prior research among adolescents and emerging adults has provided evidence for the beneficial effects of positive (relative to negative) feedback and an autonomy-supportive (relative to a controlling) communication style on students' intrinsic motivation. Unfortunately, similar experimental research during middle childhood is lacking. Moreover, little attention has been paid to the question whether individual differences in personality and perceived parenting play a role in these effects.

In Chapter 6, an experimental design is used ($N = 110$; M age = 10.71 years). Children completed puzzles at school under one of four experimental conditions, thereby crossing normative feedback valence (i.e., positive vs. negative) with communication style (i.e., autonomy-supportive vs. controlling). After the experimental induction, children rated several motivational constructs. Providing positive normative feedback in an autonomy-supportive way yielded the most favorable motivational outcomes. Both feedback valence and communication style yielded an independent impact on children's experiences of competence and autonomy. In addition, there was an interaction between both manipulations in the prediction of both competence and self-reported intrinsic motivation. The undermining impact of negative feedback on both variables was less pronounced if this feedback was introduced in an autonomy-supportive way. Both feelings of competence and autonomy explained the effects of the manipulation on the outcome variables.

A few effects were moderated by children's perceived parenting and personality traits. One interaction was in line with the *sensitization* hypothesis. Specifically, children scoring high on Conscientiousness were more sensitive to the benefits of an autonomy-supportive communication style, thereby deriving a greater sense of competence from the activity compared to children scoring low on Conscientiousness. The three other interactions were indicative of *resilience*. Specifically, children high, relative to those low, in Conscientiousness did not report a decrease in self-reported intrinsic motivation when facing a controlling communication style. Further, children who perceived their mother as low on psychological control and scoring high on Agreeableness persisted more at the challenging booklet after receiving controlling feedback.

These findings suggest that especially positive feedback, but also an autonomy-supportive communication style are effective in predicting

intrinsic motivation. The moderating role of personality and parenting history occurred mainly in the association between the communication style and the outcomes, but was also limited, as in the correlational studies.

GOAL 2: THE ANTECEDENT ROLE OF PARENTAL NEED-BASED EXPERIENCES

In Chapters 3 and 7, we investigated whether autonomy-supportive and psychologically controlling parenting fluctuate on a day-to-day basis. In Chapter 7, it was also examined to what extent daily fluctuations in parents' need satisfaction and frustration play a role in these fluctuations. Both questions were dealt with in a diary study in which mothers (M age = 45.14 years) and fathers (M age = 46.79 years) of 194 adolescents (M age = 14.89 years) participated in a 7-day diary study.

Multilevel analyses indeed showed that there was evidence for significant day-to-day variability in both parenting dimensions. About half of the variance in both autonomy-supporting and psychologically controlling parenting can be considered as within-person fluctuations in day-to-day parental behavior. In addition, analyses also showed that daily fluctuations in parental need satisfaction were related to daily fluctuations in autonomy-supportive parenting, while daily fluctuations in need frustration were related to daily fluctuations in psychologically controlling parenting. On days that parents felt related to others, effective in carrying out their daily activities, and free to act on their own interests and values, they reported being more autonomy-supportive. On days that parents felt actively excluded by others, experienced failure, and engaged in activities against their will, they reported being more controlling.

DISCUSSION

In this dissertation, we found fairly systematic associations between autonomy-supportive and psychologically controlling socialization (and

parenting in particular) and outcomes in children and adolescents, with autonomy-supportive parenting being associated with well-being and with psychologically controlling parenting being associated with problem behaviors and maladjustment. The moderating role of individual differences was rather limited and seemed primarily a matter of manifestation, whereby controlling parenting for example mainly relates to externalizing problems in children low on Agreeableness and mainly relates to internalizing problems in children who score low on Emotional Stability. In none of the chapters there was evidence that some children would benefit from a controlling approach or suffer from an autonomy-supportive approach. These findings do not preclude the possibility, however, that there can be differences between children in the way they perceive autonomy-supportive and controlling parenting and how they deal with it, an issue that needs to be explored further in future research. In the meantime, research and prevention programs would do well to continue to focus on promoting an autonomy-supportive parenting style because such a parenting style seems to foster need satisfaction, happiness, and resilience in children. As the results in Chapters 3 and 7 show, parents deviate from their own average of autonomy-supportive and controlling parenting on a daily basis. Giving this message to parents can stimulate parents' optimism and their belief in the possibility of change, because this variability means that one can improve.

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% Author: Elien Mabbe

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- file(s) describing the transition from raw data to reported results.

Specify: SPSS syntax file (which describes the different steps via which raw data were transformed into the used variables needed vor analyses in MPlus)

- file(s) containing processed data. Specify: .dat file for analyses in MPlus

- file(s) containing analyses. Specify: MPlus files with analyses conducted in MPlus

- file(s) containing information about informed consent

- a file specifying legal and ethical provisions

- file(s) that describe the content of the stored files and how this content should be interpreted. Specify: ...

- other files. Specify: ...

* On which platform are these other files stored?

- individual PC

- research group file server

- other: ...

* Who has direct access to these other files (i.e., without intervention of another person)?

- main researcher

- responsible ZAP

- all members of the research group
- all members of UGent
- other (specify): ...

4. Reproduction

=====

* Have the results been reproduced independently?: YES / NO

* If yes, by whom (add if multiple):

- name:
- address:
- affiliation:
- e-mail:

% Data Storage Fact Sheet

% Name/identifier study: LongitudinalPaper_Mabbe, Soenens,
Vansteenkiste, Beyers, Brenning, & De Pauw

% Author: Elien Mabbe

% Date: 28/11/2017

1. Contact details

=====

1a. Main researcher

- name: Elien Mabbe
- address: Henri Dunantlaan 2, 9000 Ghent, Belgium
- e-mail: Elien.Mabbe@UGent.be

1b. Responsible Staff Member (ZAP)

- name: Prof. Dr. Bart Soenens
- address: Henri Dunantlaan 2, 9000 Ghent, Belgium
- e-mail: Bart.Soenens@UGent.be

If a response is not received when using the above contact details, please send an email to data.pp@ugent.be or contact Data Management, Faculty of Psychology and Educational Sciences, Henri Dunantlaan 2, 9000 Ghent, Belgium.

2. Information about the datasets to which this sheet applies

=====

* Reference of the publication in which the datasets are reported: Mabbe, E., Vansteenkiste, M., Beyers, W., Brenning, K, De Pauw, S. S. W. & Soenens, B., (submitted for publication). The moderating role of adolescent personality in associations between psychologically controlling parenting and problem behaviors: A longitudinal examination at the level of within-person change.

* Which datasets in that publication does this sheet apply to?: The sheet applies to all the data used in the publication

3. Information about the files that have been stored

=====

3a. Raw data

* Have the raw data been stored by the main researcher? YES / NO

If NO, please justify:

* On which platform are the raw data stored?

- researcher PC
- research group file server
- other (specify): ...

* Who has direct access to the raw data (i.e., without intervention of another person)?

- main researcher
- responsible ZAP

- all members of the research group
- all members of UGent
- other (specify): ...

3b. Other files

* Which other files have been stored?

- file(s) describing the transition from raw data to reported results. Specify: SPSS syntax file (which describes the different steps via which raw data were transformed into the used variables needed vor analyses in MPlus)
- file(s) containing processed data. Specify: .dat file for analyses in MPlus
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- files(s) containing information about informed consent
- a file specifying legal and ethical provisions
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- other files. Specify: ...

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- individual PC
- research group file server
- other: ...

* Who has direct access to these other files (i.e., without intervention of another person)?

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- responsible ZAP
- all members of the research group
- all members of UGent
- other (specify): ...

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* Have the results been reproduced independently?: YES / NO

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- name:
- address:
- affiliation:
- e-mail:

% Data Storage Fact Sheet

% Name/identifier study: Journal of Child And Family Studies_Mabbe,
Soenens, Vansteenkiste, & De Pauw

% Author: Elien Mabbe

% Date: 28/11/2017

1. Contact details

=====

1a. Main researcher

- name: Elien Mabbe
- address: Henri Dunantlaan 2, 9000 Ghent, Belgium
- e-mail: Elien.Mabbe@UGent.be

1b. Responsible Staff Member (ZAP)

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* Which datasets in that publication does this sheet apply to?: The sheet applies to all the data used in the publication

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3b. Other files

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- affiliation:
- e-mail:

% Data Storage Fact Sheet

% Name/identifier study: Journal of Experimental Child Psychology_Mabbe,

Soenens, De Muynck, & Vansteenkiste

% Author: Elien Mabbe

% Date: 28/11/2017

1. Contact details

=====

1a. Main researcher

- name: Elien Mabbe
- address: Henri Dunantlaan 2, 9000 Ghent, Belgium
- e-mail: Elien.Mabbe@UGent.be

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* Reference of the publication in which the datasets are reported: Mabbe, E., Soenens, B., De Muynck, G.-J., & Vansteenkiste, M. (in press). The impact of feedback valence and communication style on intrinsic motivation in middle childhood: Experimental evidence and generalization across individual differences. *Journal of Experimental Child Psychology*.

* Which datasets in that publication does this sheet apply to?: The sheet applies to all the data used in the publication

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- all members of the research group

- all members of UGent
- other (specify): ...

3b. Other files

* Which other files have been stored?

- file(s) describing the transition from raw data to reported results.
Specify: SPSS syntax file (which describes the different steps via which raw data were transformed into the used variables needed vor analyses in MPlus)

- file(s) containing processed data. Specify: .dat file for analyses in MPlus

- file(s) containing analyses. Specify: MPlus files with analyses conducted in MPlus

- files(s) containing information about informed consent

- a file specifying legal and ethical provisions

- file(s) that describe the content of the stored files and how this content should be interpreted. Specify: ...

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4. Reproduction

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- name:
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- affiliation:
- e-mail:

% Data Storage Fact Sheet (versie 7 maart 2014)

% Name/identifier study: Parenting_ScienceAndPratice2017_Mabbe,
Soenens, Vansteenkiste, van der Kaap_Deeder, Mouratidis

% Author: Elien Mabbe

% Date:17/03/2017

1. Contact details

=====

1a. Main researcher

- name: Elien Mabbe
- address: Henri Dunantlaan 2, 9000 Ghent, Belgium
- e-mail: Elien.Mabbe@UGent.be

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2. Information about the datasets to which this sheet applies

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* Reference of the publication in which the datasets are reported: Mabbe, E., Soenens, B., Vansteenkiste, M., van der Kaap-Deeder, J. & Mouratidis, A. (2017). Day-to-day variation in autonomy-supportive and psychologically controlling parenting: The role of parents' daily experiences of need satisfaction and need frustration. *Parenting: Science and Practice*, ... (2017), ...-....

* Which datasets in that publication does this sheet apply to?: There is only one dataset used in this publication.

3. Information about the files that have been stored

=====

3a. Raw data

* Have the raw data been stored by the main researcher? YES / NO

If NO, please justify:

* On which platform are the raw data stored?

- researcher PC
- research group file server
- other (specify): ...

* Who has direct access to the raw data (i.e., without intervention of another person)?

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- all members of the research group
- all members of UGent
- other (specify): ...

3b. Other files

* Which other files have been stored?

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Specify: SPSS syntax file (which describes the different steps via which raw data were transformed into the used variables)
- file(s) containing processed data. Specify: .dat file for analyses in MPlus and analyses reported in SPSS syntax file
- file(s) containing analyses. Specify: MPlus files with analyses conducted in MPlus, MIWIN files with analyses conducted in MLWIN
- file(s) containing information about informed consent. Specify: ...
- a file specifying legal and ethical provisions. Specify: ...
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