Current Psychology (2025) 44:8593–8604
https://doi.org/10.1007/s12144-025-07734-x

Need-relevant parenting and Peruvian high school students' affect and academic achievement: the differential role of need satisfaction and need frustration

Lennia Matos[1] · Rafael Gargurevich[1] · Jolene van der Kaap-Deeder[2] · Álvaro M. Chang-Arana[1] · Benjamin Lira[1,3] · Angelica Aedo[1] · Maarten Vansteenkiste[4]

Accepted: 23 March 2025 / Published online: 17 April 2025

Abstract

This study examined the mediating role of need-related experiences in the relation between need supportive and need thwarting parenting, positive and negative affect and grades among 304 high school students (*M* age = 14.91; *SD* age = 0.91; 53% female) from a Peruvian private school. Grounded in Self-Determination Theory (SDT) and considering latest empirical findings, a dual pathway, involving a *bright* and *dark* path, was hypothesized with need satisfaction and frustration mediating the relation from, respectively, need supportive parenting to positive affect and grades and from need thwarting parenting to negative affect. Using structural equation modeling we found evidence for the proposed mediation model, with the exception that academic achievement was predicted directly by parental need support. The present results highlight the importance of fostering students' psychological needs to promote optimal emotional and academic functioning through parents' need support.

Keywords Parenting styles · Need support and need thwarting · Need satisfaction and frustration · Academic achievement · Positive and negative affect

Introduction

Parenting plays a critical role in adolescents' development and well-being, with Self-Determination Theory (SDT) stating that especially parenting practices that nurture adolescents' basic needs for autonomy, competence, and relatedness are crucial. Indeed, need-supportive parenting has been linked to an array of adaptive outcomes such as higher vitality (Costa et al., 2016), better coping (Seiffge-Krenke & Pakalniskiene, 2011), and higher academic engagement and autonomous motivation (Griffith & Grolnick, 2014). Nonetheless, the vast majority of studies have exclusively focused on autonomy supportive and thwarting parenting (Bradshaw et al., 2024; Vasquez et al., 2016), with parenting practices related to the satisfaction (i.e., structure and warmth) and frustration (i.e., chaos and rejection) of adolescents' other two psychological needs (i.e., competence and relatedness) receiving less attention (Crandell et al., 2018). Moreover, extant research has included predominantly individuals from Western or Asian countries, limiting our understanding of the effects of these parenting dimensions in South American collectivistic cultures. The general aim of this study was, therefore, to examine the relations from need-supportive and need-thwarting parenting (addressing all three needs) to predict, respectively, positive affect and academic achievement (via need satisfaction) and negative affect (via need frustration) among Peruvian late adolescents.

✉ Lennia Matos
lmatosf@pucp.pe

1 Department of Psychology, Pontifical Catholic University of Peru, Lima, Peru

2 Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway

3 Department of Psychology, University of Pennsylvania, Philadelphia, PA, USA

4 Department of Developmental, Social, and Personality Psychology, Ghent University, Ghent, Belgium

Need-supportive and need-thwarting parenting

Self-Determination Theory (SDT) is a macro theory of human motivation, personality, and socialization that regards human beings as organisms with innate tendencies toward growth and development (Ryan & Deci, 2017). These growth tendencies are fueled by the satisfaction of individuals' universal and inherent needs for autonomy, competence, and relatedness (Vansteenkiste & Ryan, 2013). Autonomy is "the need to self-regulate one's experiences and actions", competence refers to "our basic need to feel effectance and mastery" and relatedness refers to the need to feel "socially connected" (Ryan & Deci, 2017, p. 10-11).

The satisfaction and frustration of these needs are crucial in SDT for understanding variation in individuals' adjustment and growth as well as ill-being and psychopathology (Vansteenkiste & Ryan, 2013). Specifically, whereas need satisfaction contributes to adaptive functioning and well-being (i.e., the *bright* side of psychological functioning), need frustration contributes to maladaptive functioning and ill-being (i.e., the *dark* side of psychological functioning; Vansteenkiste et al., 2010). In this study, we examine the role of basic psychological needs in the prediction of individuals' positive and negative affect and academic achievement.

Given the critical role of need satisfaction, it is imperative for socializing figures, like parents, to support children's basic psychological needs for autonomy, competence, and relatedness, thereby significantly impacting the child's development (Soenens et al., 2017). Drawing upon SDT, Skinner et al. (2005) identified six core parental dimensions, relating to support, or thwarting of the three basic psychological needs: autonomy support, coercion, structure, chaos, warmth, and rejection. Autonomy support is characterized by supporting the child's volitional functioning, for instance through enabling the child to express their own perspectives and preferences, supporting a sense of choice in the child, and by considering the child's perspectives and needs when planning and solving problems (Grolnick & Ryan, 1991; Skinner et al., 2005). On the other hand, coercion refers to restrictive parenting in which obedience is expected and demanded (Baumrind, 1971; Skinner et al., 2005). Structure refers to the provision of clear expectations, setting consistent limits and rules, as well guiding the child in achieving desired outcomes (Grolnick & Ryan, 1989; Skinner et al., 2005). Chaos, however, refers to parents acting in inconsistent, unpredictable or in arbitrary ways leading to a context characterized by confusion and disorganization (Skinner & Wellborn, 1997; Skinner et al., 2005). Finally, warmth (involvement) is typified by parents genuinely caring and expressing their love, affection, and appreciation towards the child. In contrast, rejection is apparent when parents show dislike, hostility, over-reactivity, irritability, criticism, and disapproval towards their child (Skinner et al., 2005).

Most research has focused on the outcomes of parental autonomy support and coercion, finding autonomy support to be beneficial and coercion to be detrimental for mental health (Crandell et al., 2018; Soenens et al., 2012; Vasquez et al., 2016), with these effects being mediated by the satisfaction or frustration of the basic psychological needs (Costa et al., 2015a, b; Gargurevich & Soenens, 2016). Furthermore, parental autonomy support has been shown to longitudinally predict adaptive emotion regulation among early adolescents (Brenning et al., 2015), mediate the intergenerational transmission of perspective taking and sympathy (Soenens et al., 2007), and relate to greater identified/integrated internalization and prosocial behavior (Roth, 2008). On the contrary, controlling (i.e., coercive) parenting has been linked to higher depression and anxiety in children (Laurin et al., 2015), higher physical aggression (Joussemet et al., 2008), less internalization and more defiance in adolescents (Vansteenkiste et al., 2014), and more internalizing problems and loneliness in diverse countries such as Belgium, Korea, Italy, and Peru (Costa et al., 2015a, b; Gargurevich et al., 2016; Soenens et al., 2012). Importantly, parents may behave in an autonomy-supportive or coercive manner dynamically, with its provision thus varying across time and situations (van der Kaap-Deeder et al., 2017).

Most attention within SDT has been devoted to parents' provided autonomy support-and coercion, with fewer studies focusing on the structure-chaos and warmth-rejection dimensions (Bradshaw et al., 2024; Vasquez et al., 2016). Yet, these parental dimensions also predict children's well-being and ill-being. For instance, parental structure has been found to relate to better executive functioning (i.e., a set of high cognitive functions comprised of working memory, inhibitory control, and cognitive flexibility; Diamond, 2013), more prosocial behavior (Menéndez et al., 2023), better achievement (Farkas & Grolnick, 2010), and persistence as well as less disruption (Neitzel & Stright, 2003). When parents are chaotic or unpredictable, children feel ineffective, less in control of outcomes, and they experience more difficulties with predicting responses from other people (e.g., peers, parents) (Ryan & Deci, 2017).

Furthermore, research has shown parental warmth (involvement) to be positively linked with grades and negatively to acting-out behaviors (Grolnick & Ryan, 1989), better engagement and achievement in U.S. and Chinese samples (Cheung & Pomerantz, 2011) and higher perceived competence (Grolnick et al., 1991). As for rejection, parental phubbing (i.e., "engaging with a phone while ignoring others during an interaction" (Angeluci, 2016)" in Xiao & Zheng, 2022, p. 2) has been shown to be a risk factor for the

onset of depression in junior high school students (Xiao & Zheng, 2022).

In sum, research has provided evidence for the, respectively, beneficial and detrimental effects of need-supportive and need-thwarting parenting. However, besides most research focusing on the autonomy-coercion dimension, studies have also mainly shed light on the bright side of development. That is, the dual process model (Haerens et al., 2015; Jang et al., 2016) recognizes two fairly independent mechanisms, involving a *bright* pathway from need support to adaptive development via need satisfaction and a *dark* pathway from need-thwarting to maladaptive development via need frustration. Two pathways are theorized as a lack of satisfaction does not imply the presence of need frustration, and vice versa (Abidin et al., 2022; Haerens et al., 2015; Vansteenkiste & Ryan, 2013). As a result, to fully understand maladjustment, one needs to move beyond merely measuring low need satisfaction but instead include also measures of need frustration need-thwarting parenting.

Need-relevant parenting in the Peruvian context: cultural considerations

Within SDT, the claim is made that basic psychological needs have universal importance, serving as a foundation to understand variation in individuals' well-being, regardless of age, socio-economic status, gender, or cultural background. This universality hypothesis has been largely supported, with need satisfaction relating to higher well-being across cultures (Chen et al., 2015a, b), regardless of individuals' felt financial insecurity in life (Chen et al., 2015a, b) or their valuation of the need (Van Assche et al., 2018). However, in studying basic needs from a cross-cultural perspective and outside of the Western context, most studies have been conducted among countries in the Middle East (e.g., Jordan; Ahmad et al., 2013) or South-East (Nalipay et al., 2020; Yu et al., 2018). Comparatively speaking, fewer studies were conducted in South America (but see Benita et al., 2020; Unanue et al., 2014) and especially the topic of need-relevant parenting has been understudied in this context and, specifically, in the Peruvian one (and South America in general; Bradshaw et al., 2024). This is a pressing issue, given that there are specific cultural underpinnings, such as the values of family, respect, and moral education (Halgunseth et al., 2006), that might need to be considered to provide a more nuanced understanding of the relation from parenting styles to well-being and educational outcomes.

Peru represents a collectivistic culture (Hofstede, 2011, 2023), with the cultural dimension of individualism versus collectivism representing the level of interdependence within a society and whether individuals prioritize their own interests or those of the collective. Peru, with a score of 20 (on individualism versus collectivism) demonstrates a highly collectivistic orientation. This collectivist mindset manifests in various ways. For instance, at the organizational level, there are centralized structures, significant wage disparities and subordinates often perceive superiors as inaccesible and untrustworthy, while superiors may demand respect, particularly towards individuals of indigenous backgrounds, highlighting inequalities within Peruvian social dynamics.

Another cultural dimension of interest when focusing on Peru is Hofstede´s dimension of competitiveness versus consensus (Hofstede, 2023). This dimension focuses on whether a society values competition and achievement or prioritizes caring for others and quality of life. Peru obtains a score of 42, leaning towards a consensus orientation, where success is measured by quality of life rather than by standing out or being the best. This cultural trait stems from a weaker drive for achievement, a preference for interpersonal relationships and family over recognition or wealth.

Given Peru's cultural focus on collectivism, care for others, and quality of life (rather than individual achievements, pride, uniqueness, and independence), it provides an optimal context of examining SDT's universality claim (Vansteenkiste et al., 2020). That is, SDT states that the needs for autonomy, competence, and relatedness are universally present, and that therefore all individuals need to have these needs met. While certain research traditions question the universal value of autonomy (Markus & Kitayama, 2003), other research has shown that in several countries and cultures (e.g., Eastern cultures) experiences of autonomy and parental autonomy support is predictive of well-being and optimal learning strategies (Vansteenkiste et al., 2005; Yu et al., 2018). So, while some might argue that parenting styles and their outcomes are specific to certain cultures, there is also research pointing to the cross-cultural validity of the concept (Soenens et al., 2012). One prior study (Gargurevich & Soenens, 2016) among Peruvian late adolescents provided evidence for the detrimental effects of psychologically controlling parenting, a need-thwarting parenting style characterized by the use of manipulative and intrusive tactics (e.g., guilt induction, shaming). Relatedly, Peruvian children reported more externalizing symptoms when their parents punished them harshly or ignored them (Manrique-Millones et al., 2014).

The present study

In this study, we take a theory-driven approach that considers both the *bright* and *dark* sides of parenting (Abidin et al., 2022) and their effects on adolescents' felt affect and academic achievement. Rather than focusing exclusively on autonomy-supportive and coercive parenting, the present

study focuses on a conglomeration of adaptive (i.e., parental autonomy support, structure, and warmth) and maladaptive parenting styles (i.e., parental coercion, chaos, and rejection) as all have relevance for adolescents' basic needs (Skinner et al., 2005; Ryan & Deci, 2017; Ryan et al., 2022). This was done because of two reasons. First, different need-supportive styles typically covary, meaning that, in practice, different need-supportive parenting dimensions emerge as a gestalt instead of occurring in isolation from each other (Soenens & Vansteenkiste, 2023). To illustrate, when parents assist their child in doing their homework, the child's basic needs will be optimally nurtured when parents not only help (competence support) but do so in an autonomy supportive manner (e.g., providing choice or a rationale), while displaying warmth and care. Second, although one parenting dimension (e.g., autonomy support) might seem to be especially relevant for one of the three needs (e.g., the need for autonomy), theoretically and empirically all parenting dimensions are associated with all three needs (Ryan & Deci, 2017). Taking the perspective of the child, for instance, is regarded to be at the core of autonomy support and will indeed relate to the child experiencing more volitional functioning. However, this same practice may also foster feelings of competence in the child (as they will gain more confidence in the value of their own perspective) and will foster the parent-child relatedness. This conceptual reasoning has indeed been shown in empirical studies. For example, Ahmad et al. (2013) found significant positive correlations between parental responsiveness and all three need satisfaction variables and negative associations between psychological control and the need satisfaction variables. A logical outcome following from this aggregated approach is that all three need satisfactions are also considered simultaneously as mediating factors (in line with previous research, e.g., Cordeiro et al., 2018).

Overall, we follow the dual-model approach (Haerens et al., 2015; Jang et al., 2016), which delineates a *bright* and *dark* pathway at the contextual and explanatory level, with overall parental need support relating to desirable outcomes via composite need satisfaction and overall need-thwarting parenting relating to undesirable outcomes via composite need frustration.

Specifically, the following hypotheses were tested among Peruvian late adolescents, as to also shed light on SDT's universality claim. In a first set of analyses, we hypothesized that need satisfaction would mediate the positive relation from parental need-support to positive affect and academic achievement, while need frustration would mediate the positive relation from need-thwarting to negative affect.

Methods

Participants

In total, 319 students were invited to participate in this study, of which 15 declined. Therefore, the current sample consisted of 304 high school students from a Peruvian private school from Lima (mean age = 14.91 years, $SD = 0.91$ years). Male and female students were well represented in the sample with 47% being male ($n = 143$), while 53% were female ($n = 161$). In this sample, 84% of the students were born in Lima (Peru). Students belonged to the 9th grade ($n = 121$, 39.8%), 10th grade ($n = 105$, 34.5%) and 11th grade ($n = 78$, 25.7%).

Procedure

The study purpose and questionnaires were presented to the school's Psychology and Pedagogical Department and principal, who authorized its implementation. Consent from the parents was not required, as the school had a previous agreement with parents to include several activities such as applying questionnaires that may give beneficial and useful information for the students and for the school to further use it in activities like parental trainings, etc. The results of the study were later presented to the Psychology and Pedagogical Department and school principal.

The school psychologist introduced the researcher to the students and explained the purpose of the study. The researcher obtained the informed consent from the students. In the document, the purpose of the study was explained, assuring that their participation was voluntary and that their responses would be treated with confidentiality (their names were required to match the questionnaires with their grades). Questionnaires were completed during a class session in approximately 20 minutes. During this session, the researcher always remained present in the classroom, so students could ask any questions they might have.

Measures

Need-supportive and need-thwarting parenting Students' perceptions of their parents' parenting were assessed with the 24-item Parent as Social Context Questionnaire (PASCQ, Skinner et al., 2005) which evaluates six dimensions of parenting using a Likert scale ranging from 1 ("Not at all true") to 5 ("Very true"). The subscales (four items each) of this scale are autonomy support ("*My parents accept me for myself*", α = 0.76), coercion ("*My parents boss me*", α = 0.78), structure ("*My parents explain the reasons for our family rules*", α = 0.75), chaos ("*My parents keep changing the rules on me*", α = 0.67), warmth ("*My parents enjoy*

being with me", α = 0.82) and rejection ("*Sometimes I wonder if my parents like me*", α = 0.60).

Basic psychological need satisfaction and frustration The 24-item Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015a, b) was employed to assess participants' experienced satisfaction and frustration of the three basic psychological needs. This scale has a Likert scale ranging from 1 ("Not at all true") to 5 ("Very true") and includes the following subscales: autonomy satisfaction ("*I feel my choices express who I really am*", α = 0.74), autonomy frustration ("*Most of the things I do feel like 'I have to'*", α = 0.77 *)*, competence satisfaction ("*I feel capable at what I do*", α = 0.78), competence frustration ("*I feel insecure about my abilities"*, α = 0.67*)*, relatedness satisfaction ("*I feel that the people I care about also care about me*", α = 0.75), and relatedness frustration ("*I feel that people who are important to me are cold and distant towards me*", α = 0.64).

Positive and negative affect To assess participants' positive (e.g., "*Interested*") and negative (e.g., "*Upset*") affect, the 20-item Positive and Negative Affect Schedule (PANAS, Watson et al., 1988) was used, with items being rated on a scale from 1 ("Not at all") to 5 ("Extremely"). Both subscales (i.e., positive affect and negative affect) were found to have an adequate reliability (α = 0.89 in both cases).

Academic achievement The mean score of grades of the first and second bimester were averaged when doing descriptive statistics.

Demographics Participants reported on their age, sex, place of birth, and the grade they were in.

Data analyses

Descriptive statistics and correlations among the studied variables were performed using SPSS v27. Structural Equation Modelling (SEM) was conducted using LISREL 8.7 (Jöreskog & Sorbom, 2004). Given that all variables were normally distributed (asymmetry and kurtosis variables were under |2|) and had five response options (Likert scale), variables were treated as continuous variables (Robitzsch, 2020) and therefore, Maximum likelihood estimation method was used in all SEM analyses.[1]

[1] For this study, this appeared to be an adequate estimation method in comparison with other methods such as diagonally weighted least square (DWLS) that are more suitable for analyzing questionnaires with responses that have fewer than five answer options (Baghdarnia et al., 2014; Robitzsch, 2020). Nonetheless, we also performed analyses using DWLS and found the same results: the best fitting models were the same and we found the same significant paths.

The goodness of fit for the model was determined using the Chi-square statistics (χ^2), the root mean squared error of approximation (RMSEA) with 90% confidence intervals, the comparative fit index (CFI), and the standardized root-mean square residual (SRMR). To consider that a model had a good fit, the recommendations of Hu and Bentler (1999) were followed when inspecting several fit indices. The χ^2 statistic should be as small as possible, then, values need to be lower than 0.08 for SRMR; and 0.06 for RMSEA to show good fit, and CFI values equal or higher than 0.95 show good fit as well. Because models were nested, χ^2 difference tests were used.

For the SEM analyses, regarding the need-supportive and need-thwarting variables, the subscales were used as indicators of the latent variables of need-support (i.e., autonomy support, structure, warmth; α = 0.83) and need-thwarting (i.e., coercion, chaos, rejection; α = 0.79), based on a second order CFA: χ^2 (241) = 484.46, $p < .001$, RMSEA = 0.060 (CI 90% = 052 −0.067), SRMR = 0.066, CFI = 0.92). The satisfaction and frustration subscales (i.e., autonomy, competence, and relatedness) were used as indicators of the latent variables of need satisfaction (α = 0.85) and need frustration (α = 0.80), based on a second order CFA: χ^2 (242) = 323.54, $p < .001$, RMSEA = 0.035 (CI 90% = 024 −0.055), SRMR = 0.051, CFI = 0.95. For positive and negative affect, three parcels were used for each latent variable. Academic achievement was operationalized as a latent variable composed of the scores of the first and second bimester general average grades (equivalent to GPA).

Results

Descriptive and correlation analysis

Table 1 shows the descriptive statistics and correlation analyses among the studied variables. As expected, parental need support correlated positively with need satisfaction, positive affect, and academic achievement and negatively with parental need-thwarting, need frustration and, negative affect. In contrast, parental need-thwarting correlated positively with need frustration and negative affect and negatively with need satisfaction, positive affect, and academic achievement. Need satisfaction correlated negatively with need frustration and negative affect and positively with positive affect and academic achievement, and need frustration correlated positively with negative affect and negatively with positive affect. Finally, positive and negative affect had a negative correlation. All values were normally distributed (scores ranged from −0.63 to 0.83, and from −0.50 to 0.34 for asymmetry and kurtosis, respectively). From the

Table 1 Means (M), standard deviations (SD) and correlations among the studied variables

Variable	M	SD	1	2	3	4	5	6	7
1. Sex	-	-							
2. Need Support	4.03	0.67	−0.03						
3. Need Thwarting	2.13	0.67	−0.03	−0.62***					
4. Need Satisfaction	4.02	0.55	−0.07	0.56***	−0.37***				
5. Need Frustration	2.36	0.59	−0.03	−0.39***	0.52***	−0.59***			
6. Positive Affect	3.43	0.76	−0.16**	0.42***	−0.22***	0.55***	−0.34***		
7. Negative Affect	2.05	0.75	0.16**	−0.35***	0.47***	−0.36***	0.49***	−0.22***	
8. Academic Achievement	14.71	4.52	−0.00	0.16**	−0.16**	0.16**	−0.10	0.11	−0.07

Academic achievement is reported on a 0–20 scale. Sex was coded as: 0 = men, 1 = women. **$p < .01$, ***$p < .001$

demographic variables, only sex obtained significant point biserial correlations with positive and negative affect.

Structural equation modeling analyses

Measurement model A measurement model was tested to see that the indicator variables reflected the latent constructs. The result was satisfactory: χ^2 (147) = 275.50, $p < .001$, RMSEA = 0.056 (90% CI = 0.045 −0.066), SRMR = 0.050, CFI = 0.95. After verifying the adequacy of the measurement model, the hypothesized paths were gradually added to the model in the next steps.

Main analyses A total mediation model was first calculated (Model 1), where need satisfaction mediated the relation between parental need support and positive affect (*bright path*) and need frustration mediated the relation between parental need-thwarting and negative affect (*dark path*). Additionally, a direct effect from need satisfaction towards academic achievement was calculated (given that need satisfaction and not frustration correlated significantly with academic achievement). Sex was controlled for in this initial model and discarded from further analysis, as its effect was not significant. This total mediation model obtained the following fit indices: $\chi^2(161) = 301.68$, $p < .001$, RMSEA = 0.056 (90% CI = 0.046 −0.065), SRMR = 0.057, CFI = 0.95, and this model was used as a baseline for model comparison (all calculated effects were significant).

After this initial model, several models were tested using an incremental model building approach (Kline, 2016). A second model (Model 2), including direct effects from parental need support to positive affect and academic achievement and from parental need-thwarting to negative affect, was tested. Model 2 obtained good fit indices: $\chi^2(158) = 291.73$, $p < .001$, RMSEA = 0.055 (90% CI = 0.045 −0.065), SRMR = 0.055, CFI = 0.95, and the χ^2 difference test showed a significant difference between the two models ($\triangle$ = 9.95, $df = 3$, $p < .05$). In this model, all paths of the *dark side* were significant, providing evidence for partial mediation by need frustration as in Model 1. As the *bright* side of the model, need satisfaction mediated the relation between parental need support and positive affect but not to academic achievement as the path from need satisfaction to academic achievement was not significant. As the path from parental need support to positive affect was not significant either, these two non-significant paths were removed from the model. This newly tested model (Model 3) yielded the following fit indices: $\chi^2(160) = 291.31$, $p < .001$, RMSEA = 0.054 (90% CI = 0.044 −0.064), SRMR = 0.054, CFI = 0.95. A χ^2 difference test between Model 2 and 3 showed no significant differences ($\triangle$ = 0.42, $df = 2$, $p = .98$). Thus, these non-significant paths (in Model 2) were removed from further analyses as well as they did not contribute to the model fit. A χ^2 difference test between Model 1 and 3 showed a significant difference ($\triangle$ = 10.37, $df = 1$, $p < .01$), therefore Model 3 was the best fitting model so far. As in Model 2, need frustration was a partial mediator of the relation between parental need-thwarting and negative affect, while need satisfaction fully mediated the relation between parental need support and positive affect. Also, need support had a main effect on academic achievement. Given that academic achievement also correlated with need-thwarting, an extra effect was calculated in a subsequent model (Model 4), which showed an adequate fit: $\chi^2(159) = 290.93$, $p < .001$, RMSEA = 0.054 (90% CI = 0.044 −0.064), SRMR = 0.054, CFI = 0.95. However, this direct path from need-thwarting towards academic achievement did not improve the model fit significantly ($\triangle$ = 0.38, $df = 1$, $p = .54$). Thus, this effect was again discarded from the model, such that Model 3 remained the best fitting model.

In a final step paths from parental need support and need-thwarting towards, respectively, need frustration and need satisfaction were calculated. This model (Model 5) showed an adequate fit: SBS- $\chi^2(158) = 282.82$, $p < .001$, RMSEA = 0.053 (90% CI = 0.043 −0.063), SRMR = 0.034, CFI = 0.95. Although the chi-square comparison between Model 3 and 5 was significant ($\triangle$ = 8.49, $df = 2$, $p < .05$), both cross-paths were not significant, adding no to minimal explanatory value. Thus, these paths were again removed from the model. Finally, similar cross-paths from need-based experiences to affect were added to the model, with need

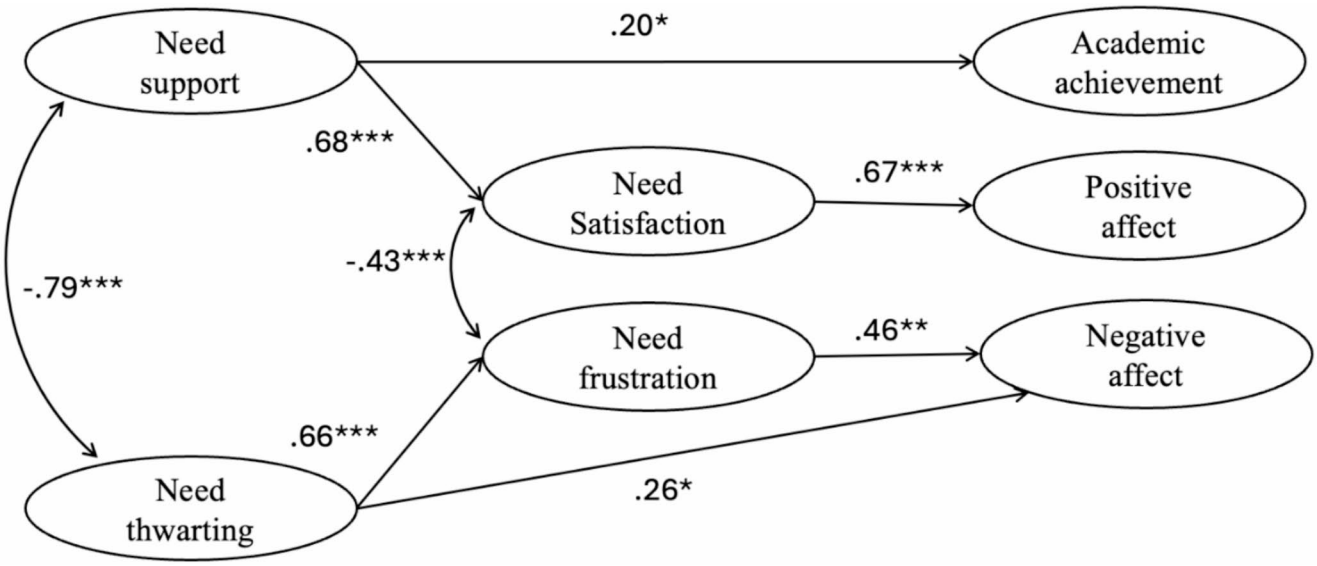

Fig. 1 Final SEM model (Model 3). *Note.* *$p < .05$, **$p < .01$, ***$p < .001$

satisfaction and need frustration predicting, respectively, negative and positive affect. Although this model (Model 6) showed an adequate fit: SBS- $\chi^2(158) = 289.03$, $p < .001$, RMSEA = 0.054 (90% CI = 0.044 −0.064), SRMR = 0.052, CFI = 0.95, compared to Model 3, the addition of these paths did not significantly improve the model fit ($\triangle = 2.28$, $df = 2$, $p = .32$).

In conclusion, Model 3 was the best fitting model (see Fig. 1). This model showed that parental need support and need-thwarting predicted, respectively, need satisfaction and frustration which, in turn, yielded corresponding unique relations with, respectively, positive and negative affect. Need satisfaction and frustration were also adequately explained by need support and thwarting ($R^2 = 0.46$ and 0.44, respectively). Further, there was a direct effect from parental need-thwarting to negative affect, indicating that need frustration partially (rather than fully) mediated the effects of need-thwarting to negative affect. The indirect effects from need support and thwarting on, respectively, positive and negative affect were 0.46 and 0.30 ($p < .001$) and the total effect of need-thwarting on negative affect was 0.56 ($p < .001$). The final model had a small direct effect in predicting academic achievement ($R^2 = 0.04$), but larger effects in predicting positive and negative affect ($R^2 = 0.44$ for each).

To provide a more detailed perspective on the relation between need supportive or thwarting parenting, the basic psychological needs, and the outcomes, different models were tested to include the six parenting dimensions and the six indicators of basic psychological need satisfaction and frustration. These results are presented in the Supplementary Material.

Discussion

This study sought to examine the relations from need-supportive and need-thwarting parenting to, respectively, positive affect and academic achievement (mediated by need satisfaction) and negative affect (mediated by need frustration) among 304 Peruvian high school students. Results showed that students' positive affect was predicted by need-supportive parenting while negative affect was predicted by need-thwarting parenting, through need satisfaction and need frustration, respectively. Furthermore, parental need support positively related to academic achievement, whereas need-thwarting also directly related to higher levels of negative affect.

A bright and dark pathway

Our results provided evidence for two pathways, a *bright* one, linking together need support, need satisfaction, positive affect, and academic achievement; and a *dark one*, linking need-thwarting, need frustration, and negative affect. As expected, need frustration and need satisfaction were the mediators that explained how parental practices of support or thwarting of basic psychological needs relate to positive and negative affect.

These results add to a growing body of evidence showing the adaptive outcomes of adequate need functioning (satisfaction) and the maladaptive outcomes of inadequate need functioning (frustration). These *bright* and *dark* paths (Haerens et al., 2015; Vansteenkiste et al., 2010; Vansteenkiste & Ryan, 2013) have been observed in different contexts and environments, for example in physical education (Haerens et al., 2015), when exercising (Rodrigues et al., 2020), at

school (de Smedt et al., 2019; Haerens et al., 2016), and in interpersonal relationships (Costa et al., 2015a, b). Moreover, these findings show that contextual need support is central to adequate development, well-being, achievement, and positive outcomes in general, in line with the central tenet of the Basic Psychological Need Theory of SDT (Vansteenkiste et al., 2023; Ryan & Deci, 2017). In addition, the mediational role of the subjective, intrapersonal experience of having one's needs satisfied or frustrated illustrates the importance of personal experience of need-based functioning.

One interesting way in which our results depart from prior research is in the fact that need satisfaction was not a mediator nor a predictor of academic achievement (cfr. Gutiérrez et al., 2018)[2]. Instead, only the students' perceived parental need support predicted academic achievement. In other words, for this sample, the students' perceived parental need support was more important in fostering achievement than the subjective experience of having their needs met.

We provide a number of explanations. One possible explanation concerns the domain-specificity of the outcomes. While our general measure of basic psychological needs predicted general affect, it did not explain achievement. Presumably, if need satisfaction and need frustration would have been assessed in relation to school or academic work, such a domain-specific measure may have more predictive power. An alternative explanation is that basic psychological needs are more predictive of motivation for school or persistence for instance. Comparatively speaking, such outcomes are more in control of the students compared to achievement, which is also determined by the person's abilities/intelligence (Lavrijsen et al., 2022). Related to this explanation is the possibility that need satisfaction/frustration are more likely to play a mediating role when the outcome is subjective (i.e., positive and negative affectivity), and non-mediators (or less powerful) compared to objective (i.e., academic achievement) outcomes. Notably, Lu et al. (2017) reported similar findings as in the present study, thereby observing that psychological needs failed to play an explanatory role in the case of academic performance, while they did for academic self-concept. A third explanation is that the observed direct association between need-supportive parenting and achievement reflect a child, instead of a parent-effect, with parents increasingly supporting children's needs as they found out that they are performing well at school.

While need support directly predicted achievement, parental need-thwarting related directly to negative affect, above and beyond the explanatory role of need frustration. This association may also reflect a child effect. In a recent study by van der Kaap-Deeder et al. (2023) using experience sampling methodology (ESM) they found that negative affect predicted later psychological control, but psychological control did not predict negative affect. Of course, this is something to test in future research, as the cross-sectional nature of the present study cannot help to disentangle this finding.

The relations of need-relevant parenting in the Peruvian context

Most of the research on need-relevant parenting and the psychological needs has included participants from WEIRD countries (Western, Educated, Industrialized, Rich, and Democratic countries, Rad et al., 2018), providing limited information on the effects or associations of these parenting practices in other, non-WEIRD countries. It is important to continue giving empirical evidence of what happens in other underrepresented countries and cultures, as Peru. According to Hofstede's (2023) classification, Peru can be characterized as collectivistic oriented, with people being more likely to value (extended) family relations, group harmony and loyalty. Moreover, as a culture, there is a weaker drive for achievement or being the best and a stronger preference for interpersonal relationships (Hofstede, 2023). This is relevant to consider as our study can contribute to the available literature in the field.

Nonetheless, it is important to continue testing the assertion that the satisfaction of basic psychological needs consistently correlates with well-being, while their frustration relates to adverse outcomes across diverse countries and cultures (Ryan, 2023). Such findings provide further evidence for the universality of these needs being essential nutrients for growth and adjustment across cultural contexts. To more adequately test the universality of parental need support, a multi-country and multi-culture investigation is needed. The possible moderating effect of country or cultural values central to one's culture could then be directly tested. Also as noted by Lynch (2023), it is useful to continue exploring cross-cultural variation in the manifestation and fulfillment of basic psychological needs through an idiographic approach. Qualitative methods help to understand more deeply how need satisfactions and frustrations are experienced and in different cultures, with variation in the culture-specific pathways to need satisfaction (Soenens et al., 2015). Therefore, it is important to consider this in the future research agenda.

Strengths and limitations

The strengths of this research include the study of an extensive number of need-relevant parenting dimensions, thereby

[2] Although this study refers to teacher's autonomy support specifically.

going beyond parental autonomy support and coercion. Further, as previous research has included predominantly individuals from WEIRD countries, the present findings add to our understanding of the effects of these parenting dimensions in understudied populations.

Despite these strengths, this study had several important limitations. First, given the cross-sectional and correlational nature of our design, the causal relation between the variables cannot be determined. Further experimental and longitudinal research could help disentangle the direction of effects observed herein and even provide evidence for their causal ordering. Second, as we employed convenience sampling methodology, the current findings cannot be generalized to the overall population of Peruvian students. Third, this study assessed students' perceived parenting. Future studies could complement these ratings with others such as observational methods, and parents' reports of their parenting styles (need-supporting, need-thwarting).

Despite these limitations, there are clear practical implications of this research regarding parenting. This study furthers a growing body of evidence that highlights the importance of parenting practices that provide support to all three of the basic psychological needs (Brenning et al., 2015; Costa et al., 2015a, b, 2019; Fousiani et al., 2014; Halguseth et al., 2006).

Conclusion

In sum, the present findings are generally consistent with a dual pathway model of basic psychological needs. Perceived parental need support relates directly to academic achievement and indirectly to positive affect via need satisfaction. Perceived parental need-thwarting related both directly to negatively affect and indirectly via need frustration. To the best of our knowledge, the differential role of psychological need satisfaction and frustration in Latin American countries has not been documented before. Although the present findings are consistent with Basic Psychological Need Theory, they need replication and extension to provide further insights in the specific way of how basic psychological experiences manifest and the multiple pathways to nurture them across cultures.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12144-025-07734-x.

Funding Open access funding provided by Pontificia Universidad Catolica del Peru.

Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest The authors have no conflicts of interest to declare.

References

Abidin, F. A., Yudiana, W., & Fadilah, S. H. (2022). Parenting style and emotional well-being among adolescents: The role of basic psychological needs satisfaction and frustration. *Frontiers in Psychology*, *13*, 901646. https://doi.org/10.3389/fpsyg.2022.901646

Ahmad, I., Vansteenkiste, M., & Soenens, B. (2013). The relations of Arab Jordanian adolescent'' perceived maternal parenting to teacher-rated adjustment and problems: The intervening role of perceived need satisfaction. *Developmental Psychology*, *49*(1), 177.

Baghdarnia, M., Soreh, R. F., & Gorji, R. (2014). The comparison of two methods of maximum likelihood (ML) and diagonally weighted least squares (DWLS) in testing construct validity of achievement goals. *Journal of Educational and Management Studies*, *4*(1), 22–38.I had a comment saying that this reference does not appear in the text, but it appears in a footnote. so it is OK to keep it

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology*, *4*(1p2), 1.

Benita, M., Benish-Weisman, M., Matos, L., & Torres, C. (2020). Integrative and suppressive emotion regulation differentially predict well-being through basic need satisfaction and frustration: A test of three countries. *Motivation and Emotion*, *44*, 67–81.

Bradshaw, E. L., Duineveld, J., Conigrave, J. H., Steward, B. A., Ferber, K., Ms, Joussemet, M., & Ryan, R. M. (2024). Disentangling autonomy-supportive and psychologically controlling parenting: A meta-analysis of self-determination theory's dual process model across cultures. https://doi.org/10.31234/osf.io/maf3e

Brenning, K., Soenens, B., Van Petegem, S., & Vansteenkiste, M. (2015). Perceived maternal autonomy support and early adolescent emotion regulation: A longitudinal study. *Social Development*, *24*(3), 561–578. https://doi.org/10.1111/sode.1210

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., & Verstuyf, J. (2015a). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*(2), 216–236. https://doi.org/10.1007/s11031-014-9450-1

Chen, B., Van Assche, J., Vansteenkiste, M., Soenens, B., & Beyers, W. (2015b). Does psychological need satisfaction matter when environmental or financial safety are at risk? *Journal of Happiness Studies*, *16*(3), 745–766. https://doi.org/10.1007/s10902-014-9532-5

Cheung, C. S. S., & Pomerantz, E. M. (2011). Parents' involvement in children's learning in the united States and China: Implications for children's academic and emotional adjustment. *Child Development*, *82*(3), 932–950.

Cordeiro, P. M. G., Paixão, M. P., Lens, W., Lacante, M., & Luyckx, K. (2018). Parenting styles, identity development, and adjustment in career transitions: The mediating role of psychological needs. *Journal of Career Development*, *45*(1), 83–97. https://doi.org/10.1177/0894845316672742

Costa, S., Soenens, B., Gugliandolo, M. C., Cuzzocrea, F., & Larcan, R. (2015a). The mediating role of experiences of need satisfaction in associations between parental psychological control and internalizing problems: A study among Italian college students. *Journal of Child and Family Studies*, *24*(4), 1106–1116. https://doi.org/10.1007/s10826-014-9919-2

Costa, S., Ntoumanis, N., & Bartholomew, K. J. (2015b). Predicting the brighter and darker sides of interpersonal relationships: Does psychological need thwarting matter? *Motivation and Emotion*, *39*(1), 11–24. https://doi.org/10.1007/s11031-014-9427-0

Costa, S., Cuzzocrea, F., Gugliandolo, M. C., & Larcan, R. (2016). Associations between parental psychological control and autonomy support, and psychological outcomes in adolescents: The mediating role of need satisfaction and need frustration. *Child Indicators Research*, *9*, 1059–1076.

Costa, S., Sireno, S., Larcan, R., & Cuzzocrea, F. (2019). The six dimensions of parenting and adolescent psychological adjustment: The mediating role of psychological needs. *Scandinavian Journal of Psychology*, *60*(2), 128–137. https://doi.org/10.1111/sjop.12507

Crandell, J. L., Sandelowski, M., Leeman, J., Havill, N. L., & Knafl, K. (2018). Parenting behaviors and the well-being of children with a chronic physical condition. *Families Systems & Health*, *36*(1), 45–61. https://doi.org/10.1037/fsh0000305

de Smedt, F., Graham, S., & Van Keer, H. (2019). The bright and dark side of writing motivation: Effects of explicit instruction and peer assistance. *Journal of Educational Research*, *112*(2), 152–167. https://doi.org/10.1080/00220671.2018.1461598

Diamond, A. (2013). Executive functions. *Annual Review of Psychology*, *64*(1), 135–168. https://doi.org/10.1146/annurev-psych-113011-143750

Farkas, M. S., & Grolnick, W. S. (2010). Examining the components and concomitants of parental structure in the academic domain. *Motivation and Emotion*, *34*, 266–279.

Fousiani, K., Van Petegem, S., Soenens, B., Vansteenkiste, M., & Chen, B. (2014). Does parental autonomy support relate to adolescent autonomy? An in-depth examination of a seemingly simple question. *Journal of Adolescent Research*, *29*. https://doi.org/10.1177/0743558413502536

Gargurevich, R., & Soenens, B. (2016). Psychologically controlling parenting and personality vulnerability to depression: A study in Peruvian late adolescents. *Journal of Child and Family Studies*, *25*, 911–921. https://doi.org/10.1007/s10826-015-0265-9

Gargurevich, R., Soenens, B., & Matos, L. (2016). Propiedades Psicométricas de La Escala de control psicológico Orientado a La dependencia Ya La autocrítica (DAPCS-S) En adolescentes Tardíos de Lima. *Interamerican Journal of Psychology*, *50*(2), 248–264.

Griffith, S. F., & Grolnick, W. S. (2014). Parenting in Caribbean families: A look at parental control, structure, and autonomy support. *Journal of Black Psychology*, *40*(2), 166–190.

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, *81*(2), 143–154.

Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, *83*(4), 508–517. https://doi.org/10.1037/0022-0663.83.4.508

Gutiérrez, M., Sancho, P., Galiana, L., & Tomás, J. M. (2018). Autonomy support, psychological needs satisfaction, school engagement and academic success: A mediation model. *Universitas Psychologica*, *17*(5), 1–12. https://doi.org/10.11144/Javeriana.upsy17-5.aspn

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, *16*(3), 26–36. https://doi.org/10.1016/j.psychsport.2014.08.013

Haerens, L., Vansteenkiste, M., Aelterman, N., & Van den Berghe, L. (2016). Toward a systematic study of the dark side of student motivation: Antecedents and consequences of teachers' controlling behaviors. In W. Liu, J. Wang, & R. Ryan (Eds.), *Building autonomous learners*. Springer. https://doi.org/10.1007/978-981-287-630-0_4

Halgunseth, L. C., Ispa, J. M., & Rudy, D. (2006). Parental control in Latino families: An integrated review of the literature. *Child Development*, *77*(5), 1282–1297. https://doi.org/10.1111/j.1467-8624.2006.00934.x

Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online Readings in Psychology & Culture*, *2*(1), 1–25. https://doi.org/10.9707/2307-0919.1014

Hofstede Insight Oy (2023). Country Comparison Tool. https://www.hofstede-insights.com/country-comparison-tool?countries=peru Latest update: October 16th, 2023. Retrieved November 22.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Jang, H., Kim, E. J., & Reeve, J. (2016). Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model. *Learning and Instruction*, *43*, 27–38.

Jöreskog, K. G., & Sörbom, D. (2004). *LISREL 8.70*. Scientific Software Inc.

Joussemet, M., Vitaro, F., Barker, E. D., Côté, S., Nagin, D. S., Zoccolillo, M., & Tremblay, R. E. (2008). Controlling parenting and physical aggression during elementary school. *Child Development*, *79*(2), 411–425. https://doi.org/10.1111/j.1467-8624.2007.01133.x

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). U.S.A.: The Guilford Press.

Laurin, J. C., Joussemet, M., Tremblay, R. E., & Boivin, M. (2015). Early forms of controlling parenting and the development of childhood anxiety. *Journal of Child and Family Studies*, *24*(11), 3279–3292. https://doi.org/10.1007/s10826-015-0131-9

Lavrijsen, J., Vansteenkiste, M., Boncquet, M., & Verschueren, K. (2022). Does motivation predict changes in academic achievement beyond intelligence and personality? A multitheoretical perspective. *Journal of Educational Psychology, 114*(4), 772–790. https://doi.org/10.1037/edu0000666

Lu, M., Walsh, K., White, S., & Shield, P. (2017). The associations between perceived maternal psychological control and academic performance and academic self-concept in Chinese adolescents: The mediating role of basic psychological needs. *Journal of Child and Family Studies*, *26*(5), 1285–1297. https://doi.org/10.1007/s10826-016-0651-y

Lynch, M. F. (2023). Self-determination theory in cross-cultural research. In R. M. Ryan (Ed.), *The Oxford handbook of Self-Determination theory* (pp. 1023–1050). Oxford University Press.

Manrique Millones, D. L., Ghesquière, P., & Van Leeuwen, K. (2014). Evaluation of a parental behavior scale in a Peruvian context. *Journal of Child and Family Studies*, *23*, 885–894. https://doi.org/10.1007/s10826-013-9744-z

Markus, H. R., & Kitayama, S. (2003). Models of agency: Sociocultural diversity in the construction of action. In V. Murphy-Berman, & J. J. Berman (Eds.), *Cross-cultural differences in perspectives on the self* (pp. 18–74). University of Nebraska.

Menéndez, M. D. C. R., López, S. T., & González, M. E. R. (2023). Parental structure and well-being among Spanish children: Promotion of positive parenting. *Revista De Investigación En Educación*, *21*(1), 31–47.

Nalipay, M. J. N., King, R. B., & Cai, Y. (2020). Autonomy is equally important across East and West: Testing the cross-cultural universality of self-determination theory. *Journal of Adolescence*, *78*, 67–72.

Neitzel, C., & Stright, A. D. (2003). Mothers' scaffolding of children's problem solving: Establishing a foundation of academic self-regulatory competence. *Journal of Family Psychology*, *17*(1), 147–159. https://doi.org/10.1037/0893-3200.17.1.147

Rad, M. S., Martingano, A. J., & Ginges, J. (2018). Toward a psychology of Homo sapiens: Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences*, *115*(45), 11401–11405.

Robitzsch, A. (2020, October). Why ordinal variables can (almost) always be treated as continuous variables: Clarifying assumptions of robust continuous and ordinal factor analysis Estimation methods. *Frontiers in education* (Vol. 5, p. 589965). Frontiers Media SA.

Rodrigues, F., Teixeira, D. S., Neiva, H. P., Cid, L., & Monteiro, D. (2020). The bright and dark sides of motivation as predictors of enjoyment, intention, and exercise persistence. *Scandinavian Journal of Medicine & Science in Sports*, *30*(4), 787–800. https://doi.org/10.1111/sms.13617

Roth, G. (2008). Perceived parental conditional regard and autonomy support as predictors of young adults' self- versus other-oriented prosocial tendencies. *Journal of Personality*, *76*(3), 513–534. https://doi.org/10.1111/j.1467-6494.2008.00494.x

Ryan, R. M. (Ed.). (2023). *The Oxford handbook of self-determination theory*. Oxford University Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., Duineveld, J. J., Domenico, D., Ryan, S. I., Steward, W. S., B. A., & Bradshaw, E. L. (2022). We know this much is (meta-analytically) true: A meta-review of meta-analytic findings evaluating self-determination theory. *Psychological Bulletin*, *148*(11–12), 813.

Seiffge-Krenke, I., & Pakalniskiene, V. (2011). Who shapes whom in the family: Reciprocal links between autonomy support in the family and parents' and adolescents' coping behaviors. *Journal of Youth and Adolescence*, *40*, 983–995.

Skinner, E. A., & Wellborn, J. G. (1997). Children's coping in the academic domain. *Handbook of children's coping: Linking theory and intervention* (pp. 387–422). Springer US.

Skinner, E., Johnson, S., & Snyder, T. (2005). Six dimensions of parenting: A motivational model. *Parenting*, *5*(2), 175–235. https://doi.org/10.1207/s15327922par0502_3

Soenens, B., & Vansteenkiste, M. (2023). A lifespan perspective on the importance of the basic psychological needs for psychosocial development. In R. M. Ryan (Ed.), *The Oxford handbook of Self-Determination theory* (pp. 457–490). Oxford University Press.

Soenens, B., Duriez, B., Vansteenkiste, M., & Goossens, L. (2007). The intergenerational transmission of empathy-related responding in adolescence: The role of maternal support. *Personality and Social Psychology Bulletin*, *33*(3), 299–311. https://doi.org/10.1177/0146167206296300

Soenens, B., Park, S. Y., Vansteenkiste, M., & Mouratidis, A. (2012). Perceived parental psychological control and adolescent depressive experiences: A cross-cultural study with Belgian and South-Korean adolescents. *Journal of Adolescence*, *35*(2), 261–272. https://doi.org/10.1016/j.adolescence.2011.05.001

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let Us not throw out the baby with the bathwater: Applying the principle of universalism without uniformity to autonomy-supportive and controlling parenting. *Child Development Perspectives*, *9*(1), 44–49.

Soenens, B., Deci, E. L., & Vansteenkiste, M. (2017). How parents contribute to children's psychological health: The critical role of psychological need support. In L. Wehmeyer, T.D. Little, S. J. Lopez, K. A. Shogren, & R. Ryan (Eds.), Development of self-determination through the life-course (pp. 171-187). New York: Springer.

Unanue, W., Dittmar, H., Vignoles, V. L., & Vansteenkiste, M. (2014). Materialism and well–being in the UK and Chile: Basic need satisfaction and basic need frustration as underlying psychological processes. *European Journal of Personality, 28*(6), 569–585.

Van Assche, J., van der Kaap-Deeder, J., Audenaert, E., De Schryver, M., & Vansteenkiste, M. (2018). Are the benefits of autonomy satisfaction and the costs of autonomy frustration dependent on individuals' autonomy strength? Journal of Personality, 86(6), 1017–1036. https://doi.org/10.1111/jopy.12372

van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., & Mabbe, E. (2017). Children's daily well-being: The role of mothers', teachers', and siblings' autonomy support and psychological control. *Developmental Psychology*, *53*(2), 237–251. https://doi.org/10.1037/dev0000218

van der Kaap-Deeder, J., Bülow, A., Waterschoot, J., Truyen, I., & Keijsers, L. (2023). A moment of autonomy support brightens adolescents' mood: Autonomy support, psychological control and adolescent affect in everyday life. *Child Development*, *94*(6), 1659–1671.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280. https://doi.org/10.1037/a0032359

Vansteenkiste, M., Zhou, M., Lens, W., & Soenens, B. (2005). Experiences of autonomy and control among Chinese learners: Vitalizing or immobilizing? *Journal of Educational Psychology*, *97*(3), 468–483. https://doi.org/10.1037/0022-0663.97.3.468

Vansteenkiste, M., Niemiec, C. P., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. In T. C. Urdan & S. A. Karabenick (Eds.). *The decade ahead: Theoretical perspectives on motivation and achievement* (pp. 105–165, Advances in Motivation and Achievement, Vol. 16 Part A), Emerald Group Publishing Limited, Bingley. https://doi.org/10.1108/S0749-7423(2010)000016A007.

Vansteenkiste, M., Soenens, B., Van Petegem, S., & Duriez, B. (2014). Longitudinal associations between adolescent perceived degree and style of parental prohibition and internalization and Defiance. *Developmental Psychology*, *50*(1), 229–236.

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*, 1–31.

Vansteenkiste, M., Soenens, B., & Ryan, R. M. (2023). Basic psychological needs theory: A conceptual and empirical review of key criteria. In R. M. Ryan (Ed.), *The Oxford handbook of Self-Determination theory* (pp. 84–123). Oxford University Press.

Vasquez, A. C., Patall, E. A., Fong, C. J., Corrigan, A. S., & Pine, L. (2016). Parent autonomy support, academic achievement, and

psychosocial functioning: A meta-analysis of research. *Educational Psychology Review*, *28*, 605–644.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6). https://doi.org/10.1037/0022-3514.54.6.1063

Xiao, X., & Zheng, X. (2022). The effect of parental phubbing on depression in Chinese junior high school students: The mediating roles of basic psychological needs satisfaction and self-esteem. *Frontiers in Psychology*, *13*, 868354. https://doi.org/10.3389/fpsyg.2022.868354

Yu, S., Levesque-Bristol, C., & Maeda, Y. (2018). General need for autonomy And subjective wellbeing: A meta-analysis of studies in the U.S. And East Asia. *Journal of Happiness Studies*, *19*(6), 1863–1882. https://doi.org/10.1007/s10902-017-9898-