



Satisfaction and frustration of autonomy and relatedness needs: Associations with parenting dimensions and psychological functioning

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Abstract

Framed from Basic Psychological Needs Theory (Ryan and Deci in *American Psychologist* 55:68–78; Ryan, Deci, *American Psychologist* 55:68–78, 2000) and Kağitçibaşı's Autonomous-Related Self Theory (*Journal of Cross-Cultural Psychology* 36:1–20; Kağitçibaşı, *Journal of Cross-Cultural Psychology* 36:1–20, 2005), the study examined the relationships of adolescents' satisfaction and frustration of autonomy and relatedness, with (a) adolescents' perception of mother's and father's psychological control and autonomy support, and (b) adolescents' self-acceptance and anxiety. Participants were 556 adolescents ($M = 17.25$, $SD = 0.92$). Path analysis showed more significant associations of autonomy support with satisfaction/frustration of autonomy and relatedness than psychological control, reporting also some differences between parents. Moreover, both satisfaction and frustration of autonomy and relatedness were associated with adolescents' self-acceptance and anxiety although in different ways. Our study provides further data, useful to understand how needs for autonomy and relatedness are associated with parenting dimensions and contribute to the adjustment of adolescents living in psychologically interdependent cultures, taking into account the role of each parent as well as the separate contribution of need satisfaction and need frustration.

Keywords Autonomy · Relatedness · Parenting · Adolescence · Basic Psychological Needs Theory

Introduction

The Basic Psychological Needs Theory (BPNT) is one of the six mini-theories of Self-Determination Theory (SDT; Deci and Ryan 2000; Ryan and Deci 2000) that posits that all human beings have three universally basic psychological needs (namely autonomy, competence, and relatedness), whose satisfaction is associated with high levels of psychological functioning. Autonomy reflects the need to choose one's own life direction and psychological freedom in carrying out an activity, as well as to feel efficacious and capable of achieving desired outcomes. Competence involves the need to feel adequate of achieving goals and to effectively carry out activities. Finally, relatedness concerns the necessity to establish close relationships and to belong to a community or to feel part of a group (Deci and Ryan 2000).

As Vansteenkiste and Ryan state (2013, p. 264), “just as plants need water and sunshine to grow and flower, the satisfaction of the basic psychological needs is deemed essential to psychological thriving”. Indeed, many studies have shown that the satisfaction of these psychological needs is

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positively associated with psychological well-being among youth (Bartholomew et al. 2011; Chen et al. 2015; Cordeiro et al. 2016). Previous research has also indicated that low need satisfaction is related with various maladaptive outcomes, such as burnout, internalizing distress and other negative affective states (e.g., Costa et al. 2015; Inguglia et al. 2015, 2016; Reinboth et al. 2004).

However, more recently researchers have pointed out that there is a deep difference between the lack of fulfillment of the needs and the experience of need frustration (Bartholomew et al. 2011; Vansteenkiste and Ryan 2013). Vansteenkiste and Ryan (2013), continuing their plant metaphor, say that low need satisfaction is like when plants do not get sunshine and water, whereas the presence of need frustration is like when salted water is thrown on plants. In both cases, plants are destined to stop growing and die, but in the latter it will happen more quickly. In sum, the presence of low levels of need satisfaction have negative effects over time, while this deteriorating process is hastened by need frustration. In line with this metaphor, Vansteenkiste and Ryan (2013) argue that while the satisfaction of basic psychological needs is a crucial condition for individuals' psychological flourishing, their frustration is expected to lead to energy depletion, maladjustment and illness.

With growing recognition of the different contribution of satisfaction and frustration of basic psychological needs to youth's psychological functioning, more studies are needed to shed light on this issue. In this line, the present paper tries to extend prior research by examining the associations of satisfaction and frustration of two basic psychological needs, namely autonomy and relatedness, with adolescents' psychological functioning in terms of anxiety state and self-acceptance. At the same time, the paper takes into account the relationships between satisfaction and frustration of autonomy and relatedness needs and two parenting dimensions, namely parental psychological control and autonomy support. Indeed, as it is outlined in the next section, the satisfaction and frustration of basic psychological needs is associated with these parenting dimensions (Ahmad et al. 2013; Costa et al. 2015; Inguglia et al. 2015; Mabbe et al. 2015).

Associations between the satisfaction and frustration of basic needs and parenting dimensions

According to SDT (Deci and Ryan 2000), the satisfaction of child's basic psychological needs is related to the experiences provided by significant social contexts in which child develops, such as family. When individuals develop in social contexts that deprive need satisfaction or when they are exposed to environments that actively thwart the satisfaction of the needs, the possibility to reach a positive psychological functioning is undermined (Cordeiro et al.

2016; Vansteenkiste and Ryan 2013). With regard to family, SDT postulates that the satisfaction and frustration of basic psychological needs is associated with some parenting dimensions, such as psychological control and autonomy support (Ahmad et al. 2013; Costa et al. 2018; Inguglia et al. 2015; Mabbe et al. 2015). Psychological control is a parenting dimension characteristic of parents who pressure their children to comply with their own agenda through insidious and manipulative tactics, such as guilt induction, shaming, and love withdrawal (Barber and Harmon 2002; Soenens et al. 2010), whereas parental autonomy support is a parenting dimension characteristic of parents who promote the volitional functioning of their children and encourage them to act upon their true personal interests and values (Fousiani et al. 2014; Soenens et al. 2007).

Psychological control and autonomy support are linked to the satisfaction and the frustration of fundamental needs (Deci and Ryan 2000; Inguglia et al. 2016). Generally, controlling parenting is associated with low need satisfaction and high need frustration, whereas autonomy granting is related to high need satisfaction and low need frustration (Ahmad et al. 2013; Costa et al. 2015; Inguglia et al. 2016; Mabbe et al. 2015). Although SDT refers to three basic psychological needs, some scholars have specifically focused their attention on the relationships between parenting dimensions and the satisfaction/frustration of autonomy and relatedness needs (Fousiani et al. 2016; Inguglia et al. 2016). This is in line with the Kağıtçıbaşı's theory of autonomous-relatedness self stating that autonomy and relatedness are very relevant issues in the context of parent–child relationships, especially when dealing with psychologically controlling and autonomy promoting parenting practices (Kağıtçıbaşı 1996, 2005). In this framework, the family interaction pattern called Family Model of Psychological Interdependence (Kağıtçıbaşı 2005), characterized by a synthesis of authoritative parenting, material independence, psychological interdependence and close-knit ties, allows children to develop an autonomous-related self showing at the same time high levels of agency and closeness to significant others. This pattern contributes to the satisfaction of both needs for autonomy and relatedness and is appropriate to describe the predominant model of family relations in many Mediterranean countries, such as Italy (Inguglia et al. 2016).

Even more the issues of autonomy and relatedness are particularly relevant when we focus on adolescence. In this developmental stage, youngsters begin to be independent people who are less influenced by parents and other adults, as well as having more opportunities to determine their own behaviors (Buhl 2008; Inguglia et al. 2015). Although this growing sense of autonomy is often associated with a temporary decline of the sense of closeness to parents and increasing conflicts between child and parents (Collins and Laursen 2004), the desire to feel connected to parents is

still noticeable and associated with positive developmental outcomes (Inguglia et al. 2015). Thus, in this period the link between autonomy and relatedness goes beyond a simple interaction, but involves a dialectical process along two developmental lines in which progress in a line is essential in order to have progress in the other (Blatt and Shichman 1983; Inguglia et al. 2015).

As already generally mentioned with reference to the Kağıtçıbaşı's (2005) theory, both autonomy and relatedness, as distinct but complementary motives in the context of parent–child relationships, are associated with specific parenting dimensions. There is a certain empirical evidence that the more parents support their children's strivings for autonomy, the more children are able to strengthen their sense of volition and to establish satisfying relationships (Ahmad et al. 2013; Costa et al. 2016; Inguglia et al. 2016). Moreover, research has shown that the more parents behave in psychologically controlling ways, the less their children are autonomous and embedded in a network of positive relationships (Inguglia et al. 2015; Koepke and Denissen 2012). In sum, parental autonomy support seems to be positively associated with the satisfaction of autonomy and relatedness needs, while parental psychological control seems to be negatively linked to the satisfaction of both needs (Ahmad et al. 2013; Costa et al. 2015; Inguglia et al. 2016).

Despite this evidence, such studies are characterized by some limitations. First, most of them request participants to report the psychological control or the autonomy support perceived by both parents together (Costa et al. 2015; Inguglia et al. 2016) or by only one parent, especially mother (Ahmad et al. 2013). In this way, they lack in analyzing the unique role of each parent by allowing youth to provide separate ratings for maternal and paternal parenting dimensions. Hence, important gender-specific effects could be masked. Accordingly, Soenens and colleagues (2010) have suggested that mothers' and fathers' use of psychological control may produce different effects on their children's adjustment. Thus, it is likely that psychological control and autonomy support of mothers and fathers may be differently associated with autonomy and relatedness needs. For instance, Costa et al. (2016) have investigated the associations between maternal and paternal psychological control and autonomy support, on the one hand, with need satisfaction and need frustration, on the other hand. They found that mothers and fathers differ only with regard the negative association between autonomy support and need frustration, that is significant for the mothers and not for the fathers. However, they analyzed only the associations of maternal/paternal parenting dimensions with global scores of need satisfaction/frustration, without disentangling specific needs like autonomy and relatedness.

Second, many of these studies are focused on the associations among parenting dimensions and need satisfaction.

Thus, they do not take into account that it is necessary to disentangle the satisfaction of basic needs from the frustration of these needs (Bartholomew et al. 2011; Cordeiro et al. 2018; Vansteenkiste and Ryan 2013). Based on these considerations, there is the need of further research considering how separate ratings for maternal and paternal parenting dimensions are associated with both the satisfaction and frustration of autonomy and relatedness needs.

Associations between satisfaction and frustration of basic needs and psychological functioning

Recent research underlines that the satisfaction and frustration of psychological basic needs are likely to function separately and to provide a different contribution to individuals' psychological functioning in adolescence (Chen et al. 2015; Vansteenkiste and Ryan 2013). In particular, the satisfaction of basic psychological needs is associated with adolescents' positive development of the Self (Church et al. 2013; Kipp and Weiss 2015; Ryan et al. 2006, 2016). According to SDT, people's abilities to develop and act from a coherent sense of Self, characterized by high levels of self-acceptance and self-esteem, are facilitated by satisfaction of the basic psychological needs, such as the sense of autonomy and the experience of being connected with significant others (Di Domenico et al. 2013).

Moreover, the frustration of basic psychological needs seems to be associated with ill-being and diminished human functioning, in terms of feelings of inadequacy, exclusion, anxiety, depression, and loneliness (Ahmad et al. 2013; Bartholomew et al. 2011; Chen et al. 2015; Cordeiro et al. 2016; Costa et al. 2015; Longo et al. 2016; Vansteenkiste and Ryan 2013; Verstuyf et al. 2013). In particular, Longo and colleagues (2016) have found that need frustration was correlated more strongly with anxiety than need satisfaction. Probably, the link between need frustration and anxiety may be explained considering that the frustration of basic needs is often associated to parental practices that involve the use of manipulative and coercive tactics such as love withdrawal and instilling anxiety (Fousiani et al. 2016; Soenens and Vansteenkiste 2010). Specifically, autonomy frustration is linked to the feeling of being controlled through externally enforced coercive pressures, whereas relatedness frustration involves the feeling of relational exclusion and loneliness (Nishimura et al. 2016), and these feelings may result in anxiety states.

Despite the substantial evidence in favor of the unique contribution of satisfaction and frustration of basic psychological needs to individuals' psychological functioning, the research on this topic is still limited. Hence, supporting data are still needed to develop a better understanding of the nature of the relationships among need satisfaction, need frustration, well-being and maladjustment.

The current study

In light of the limited body of research on these issues, the current study sought to contribute to a more detailed knowledge of the associations between adolescents' satisfaction and frustration of basic psychological needs, perceived parenting dimensions and psychological functioning. In doing so, we were also interested in exploring the existence of differences in the associations between maternal and paternal parenting dimensions and satisfaction/frustration of needs for autonomy and relatedness in a cultural context like southern Italy, characterized by high levels of psychological interdependence (Inguglia et al. 2016; Jurado et al. 1997). To our knowledge, to date research has never examined a combination of such variables.

The conceptual framework of the study is based on the integration of BPNT (Ryan and Deci 2000) and Kağıtçıbaşı's Autonomous-Related Self Theory (2005). In particular, the study was aimed at examining the relationships between adolescents' satisfaction and frustration of autonomy and relatedness needs, and (a) adolescents' perception of mother's and father's psychological control and autonomy support, and (b) adolescents' psychological functioning in terms of self-acceptance and anxiety. Self-acceptance was chosen in line with the studies highlighting that the satisfaction of basic psychological needs is associated with a more positive development of the Self in adolescence (Church et al. 2013; Kipp and Weiss 2015; Ryan et al. 2016). Moreover, anxiety was selected because

frustration of basic psychological needs may be associated with feeling of being controlled through externally pressures and feeling of relational exclusion that, on their turn, may result in anxiety states during adolescence (Fousiani et al. 2016; Soenens and Vansteenkiste 2010). In order to achieve this aim, we tested two theoretical models summarized in Figs. 1 and 2.

Our hypotheses were the following:

Hypothesis 1 (H₁) Perceived autonomy-supportive behaviors from fathers and mothers would be positively associated with satisfaction of autonomy and relatedness needs, and negatively associated with frustration of autonomy and relatedness needs. With regard the different role of mothers and fathers our study had an exploratory intent since we did not have specific predictions.

Hypothesis 2 (H₂) Perceived controlling behaviors from fathers and mothers would be positively associated with frustration of autonomy and relatedness needs, and negatively associated with the satisfaction of autonomy and relatedness needs. With regard the different role of mothers and fathers our study had an exploratory intent since we did not have specific predictions.

Hypothesis 3 (H₃) Self-acceptance would be positively associated with satisfaction of autonomy and relatedness, and negatively associated with frustration of autonomy and relatedness;

Fig. 1 Hypothesized model of the relations between satisfaction and frustration of basic needs and parenting dimensions. Correlations between variables are not reported

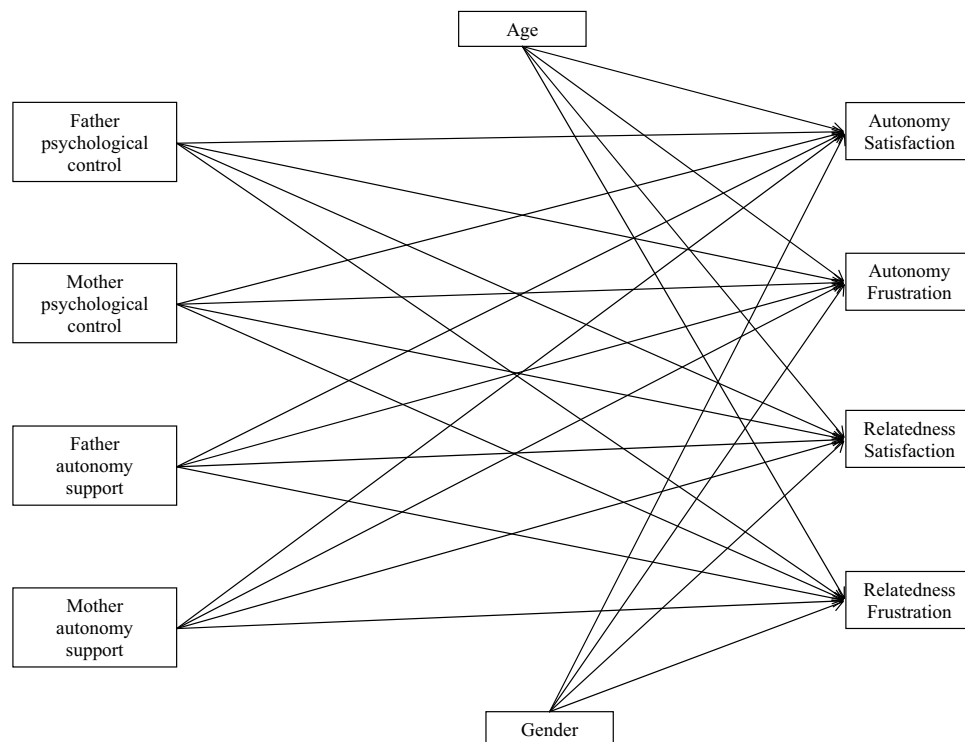
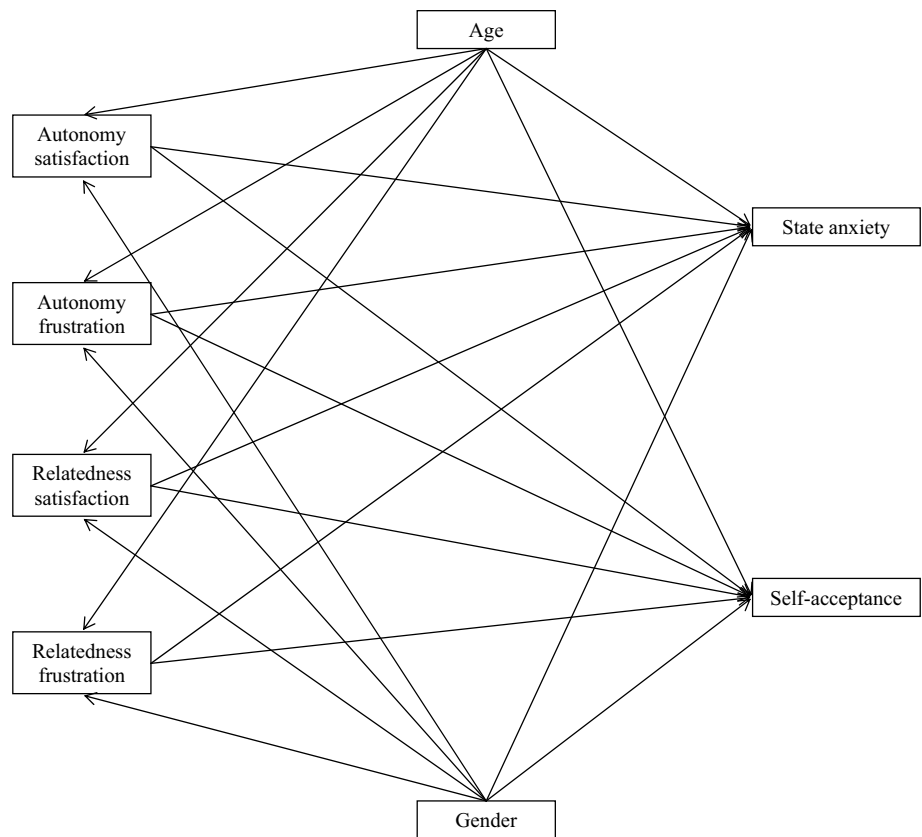


Fig. 2 Hypothesized model of the relations between satisfaction and frustration of basic needs and psychological functioning. Correlations between variables are not reported



Hypothesis 3a (H_{3a}) moreover, we hypothesized that satisfaction of autonomy and relatedness would be more strongly associated with self-acceptance than frustration of these needs;

Hypothesis 4 (H₄) Anxiety state would be positively associated with frustration of autonomy and relatedness, and negatively associated with satisfaction of autonomy and relatedness;

Hypothesis 4a (H_{4a}) moreover we hypothesized that frustration of autonomy and relatedness would be more strongly associated with anxiety state than satisfaction of these needs.

Finally, gender and age were specified as control variables in the analyzed models due to gender and age differences in some study variables showed by earlier studies. In particular, results of previous research have found higher levels of anxiety in females than males (Beesdo et al. 2009), as well as gender differences with regard to the Self (Quatman and Watson 2001), and autonomy and relatedness needs (Guérin et al. 2012). Similarly, other studies have found age-related differences with regard to autonomy, relatedness, and psychological functioning (e.g., Inguglia et al. 2015).

Method

Participants

The sample was composed of 556 Italian adolescents attending four secondary schools in the area of Palermo and Messina, in Southern Italy (Males = 52%) aged from 16 to 19 years (*M* = 17.25, *SD* = 0.92). All adolescents were Caucasian, 99% were Italians and 1% were from Eastern Europe. All participants were living in one household with their parents; 92% came from two-parent families, 7% had divorced or separated parents, and 1% came from a family in which one of the parents had died. With regard to parents' education level, 49% of mothers held at least a lower secondary education diploma and 18% of them a university degree; 47% of fathers held at least a lower secondary education diploma and 22% of them a university degree. With regard to parents' occupational level, 52% of mothers were housewives, 7% professional or managerial, 4% tradespeople, 29% skilled workers, 4% unskilled workers; 26% of fathers were professional or managerial, 13% tradespeople, 48% skilled workers, 4% unskilled workers, 3% retired.

Measures

Autonomy and relatedness satisfaction and frustration

Adolescents filled out four subscales of the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS; Chen et al. 2015). The scale contains 24 items assessing the satisfaction and frustration of autonomy, relatedness, and competence (for the present study, the competence subscales were not used): Autonomy satisfaction (4 items; e.g., “I feel a sense of choice and freedom in the things I undertake”), Relatedness satisfaction (4 items; e.g., “I feel that the people I care about also care about me”), Autonomy frustration (4 items; e.g., “I feel forced to do many things I wouldn’t choose to do”), and Relatedness frustration (4 items; e.g., “I feel that people who are important to me are cold and distant towards me”). Participants responded on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Scores were averaged across all items. In the present study, the subscales had adequate internal consistency: Cronbach’s alphas ranged from 0.79 to 0.81.

Perceived parental psychological control

Adolescents were administered the Psychological Control Scale-Youth Self-Report (PCS-YSR; Barber 1996). It globally includes 16 items (8 items for each parental version), such as “My mother/father is a person who is always trying to change how I feel or think about things”. Participants responded on a 3-point Likert scale ranging from 1 (*not like her/him*) to 3 (*a lot like her/him*). The mean of all items was computed with higher scores indicating more parental psychological control. In the present study, the scale had adequate internal consistency: Cronbach’s alpha was 0.76 for mother and 0.78 for father.

Perceived parental autonomy support

Participants filled out the Autonomy support subscale of the Perceptions of Parents Scale (POPS; Grolnick et al. 1991). It globally consists of 12 items (6 items for each parental version), such as “My mother/father always tells me what to do”. Participants responded on a 7-point Likert scale ranging from 1 (*not true for me*) to 7 (*completely true for me*). The mean of all items was computed with higher scores indicating more parental autonomy support. In the present study, the scale had good internal consistency: Cronbach’s alpha was 0.83 for mother and 0.80 for father.

State anxiety

Adolescents filled out a subscale of the State Trait Anxiety Inventory (STAI; Spielberger et al. 1983). It consists of 20

items assessing state anxiety (e.g., “I am tense”). Items were rated on a 4-point Likert scale ranging from 1 (*a very bad description of me*) to 4 (*a very good description of me*). In the present study, the scale had excellent internal consistency: Cronbach’s alpha was 0.92.

Self-acceptance

Participants were administered the Self-acceptance subscale of the Psychological Well-Being Scale (PWS; Ryff 1989; Ryff and Keyes 1995). It consists of 3 items (e.g., “I like most aspects of my personality”) assessing the positive attitude towards oneself and one’s past life. Participants were asked to indicate the degree of agreement with each statement on a 4-point Likert scale ranging from 1 (*a very bad description of me*) to 4 (*a very good description of me*). In the present study, the subscale had good internal consistency: Cronbach’s alpha was 0.84.

Procedure

The Institutional Review Boards (IRB) of the University of Palermo and the University of Messina approved this study, which was conducted in conformity with the guidelines for the ethical treatment of human participants of the Italian Association of Psychology (Associazione Italiana di Psicologia 2015). Participation in the study was voluntary and anonymous, and participants received no compensation; 98% of the students initially contacted agreed to take part in the research. Prior permission was obtained from each participant or their parents for minors. Participants received written information about the study. The scales were administered collectively during class hours; it took no longer than 30 min to complete.

Plan of data analysis

In order to test the hypothesized models reported in Figs. 1 and 2, a series of path analysis was performed using EQS 6.1 (Bentler 2006). All models testing used maximum likelihood estimation. In addition, robust statistics were used in order to account for the multivariate non-normality of variables (normalized Mardia’s coefficient was 13.19, $p > 0.001$); robust statistics included the Satorra-Bentler χ^2 test statistic ($SB\chi^2$) and robust Comparative Fit Index (CFI; Satorra and Bentler 1994), both of which adjust standard errors to calculate parameter estimates in situations where multivariate normality cannot be assumed. In evaluating the overall goodness of fit for path analysis models, the following criteria was used: the robust CFI > 0.95 (Kenny and McCoach 2003), the Root-Mean-Square Error of Approximation (RMSEA) < 0.05 (Steiger 1990).

In order to test the hypotheses of non-invariance for paths linking satisfaction and frustration of autonomy and relatedness with self-acceptance (H_{3a}), on the one hand, and state anxiety (H_{4a}), on the other hand, equality constraints were imposed on these parameters. The significance of equality constraints was tested with the χ^2 difference test ($\Delta\chi^2$). A significant deterioration in the model's fit would indicate non-invariance and would also lead to a significant $SB\chi^2$ difference. Because the scaled difference χ^2 detects small discrepancies, with no practical or theoretical implications in sample sizes > 200 , we considered CFI decreases ≥ 0.010 and RMSEA increases ≥ 0.015 as more meaningful indicators (Chen 2007; Cheung and Rensvold 2002). Preliminary analyses indicated that some study variables varied by gender and age, therefore, they were included in later analyses as control variables.

Results

Preliminary analyses

Means, standard deviations, scores range and Pearson correlation coefficients of study variables are presented in Table 1. Results showed that autonomy and relatedness satisfaction/frustration were positively associated with each other; autonomy and relatedness satisfaction were positively correlated with self-acceptance and parental autonomy support, and negatively correlated with state anxiety and parental psychological control. The opposite pattern of associations was observed for autonomy and relatedness frustration; specifically, autonomy and relatedness frustration were negatively correlated with parental autonomy support and self-acceptance, and positively correlated with parental psychological control and state anxiety.

Relations between satisfaction and frustration of basic needs and parenting dimensions

Results of path analysis showed that the hypothesized model (see Fig. 1) had a good fit to the data: $SB\chi^2(9) = 30.63$, $p < 0.001$, CFI = 0.976, RMSEA = 0.066, RMSEA 90% CI 0.041–0.092. The standardized solution is reported in Fig. 3. Findings showed that (a) father's autonomy support was positively and significantly associated with autonomy satisfaction, and negatively and significantly associated with autonomy frustration; (b) mother's autonomy support was positively and significantly associated with autonomy and relatedness satisfaction, and negatively and significantly associated with autonomy and relatedness frustration; (c) father's psychological control was not significantly related with satisfaction and frustration of autonomy and relatedness; (d) mother's psychological control was negatively and

significantly associated with relatedness satisfaction, and positively and significantly associated with autonomy and relatedness frustration.

Relations between satisfaction and frustration of basic needs and psychological functioning

Results of path analysis showed that the hypothesized model (see Fig. 2) had a good fit to the data: $SB\chi^2(6) = 7.64$, $p = 0.26$, CFI = 0.998, RMSEA = 0.022, RMSEA 90% CI 0.001–0.061. In order to test the hypotheses of non-invariance for paths linking need satisfaction and frustration with self-acceptance and state anxiety, first, we imposed an equality constraint on the paths from autonomy satisfaction and autonomy frustration on self-acceptance, and an equality constraint on the paths from autonomy satisfaction and autonomy frustration on state anxiety. Results showed a significant deterioration in the model's fit: $SB\chi^2(8) = 16.57$, $p = 0.03$, CFI = 0.989, RMSEA = 0.043, RMSEA 90% CI 0.001–0.073, $SB\chi^2(2) = 8.40$, $p < 0.05$, CFI = 0.009, RMSEA = 0.021. The Lagrange Multiplier (LM) test was used to test these equality constraints and to determine whether any of them should be released. An analysis of the univariate and multivariate statistics produced by the LM test revealed that the paths from autonomy satisfaction and autonomy frustration on self-acceptance should not be constrained to be equal. Therefore, a partial constrained model was run in which the paths from autonomy satisfaction and autonomy frustration on self-acceptance were freely estimated, while the paths from autonomy satisfaction and autonomy frustration on state anxiety were constrained to equality. Results showed a good fit to the data: $SB\chi^2(7) = 10.52$, $p = 0.16$, CFI = 0.995, RMSEA = 0.030, RMSEA 90% CI 0.000–0.064, $SB\chi^2(1) = 2.69$, $p > 0.05$, CFI = 0.003, RMSEA = 0.008. Second, we added an equality constraint on the paths from relatedness satisfaction and relatedness frustration on self-acceptance, and an equality constraint on the paths from relatedness satisfaction and relatedness frustration on state anxiety. Results showed a good fit to the data: $SB\chi^2(9) = 10.44$, $p = 0.32$, CFI = 0.998, RMSEA = 0.017, RMSEA 90% CI 0.000–0.052, $SB\chi^2(3) = 2.87$, $p > 0.05$, CFI = 0.000, RMSEA = 0.005.

The standardized solution is reported in Fig. 4. Findings showed that self-acceptance was positively and significantly associated with satisfaction of autonomy and relatedness, and negatively and significantly associated with frustration of autonomy and relatedness; moreover, satisfaction of autonomy resulted more strongly associated with self-acceptance than frustration of autonomy. Findings also showed that anxiety state was positively and significantly associated with frustration of autonomy and relatedness, and negatively and significantly associated with satisfaction of autonomy and relatedness.

Table 1 Mean, standard deviation, score range and Pearson correlation coefficients of the study variables (n = 556)

	1	2	3	4	5	6	7	8	9	10	11	12
1 Autonomy satisfaction	—											
2 Autonomy frustration	-0.502**	—										
3 Relatedness satisfaction	0.367**	-0.225**	—									
4 Relatedness frustration	-0.323**	0.389**	-0.504**	—								
5 Father's psych. control	-0.133**	0.165**	-0.121**	0.113**	—							
6 Mother's psych. control	-0.155**	0.269**	-0.193**	0.220**	0.377**	—						
7 Father's autonomy support	0.257**	-0.234**	0.185**	-0.142**	-0.406**	-0.190**	—					
8 Mother's autonomy support	0.288**	-0.301**	0.248**	-0.226**	-0.145**	-0.440**	0.497**	—				
9 State anxiety	-0.390**	0.319**	-0.277**	0.325**	0.151**	0.247**	-0.204**	-0.244**	—			
10 Self-acceptance	0.399**	-0.300**	0.251**	-0.271**	-0.048**	-0.174**	0.178**	0.304**	-0.525**	—		
11 Age	-0.085*	0.103*	-0.049	0.046	0.105*	0.085*	-0.042	-0.015	0.106*	-0.020	—	
12 Gender	0.064	-0.107*	0.086*	-0.010	-0.032	0.016	-0.086*	0.066	0.305**	-0.088*	-0.035	—
M	3.761	2.339	4.043	1.790	1.507	1.650	5.020	5.208	2.194	3.058	17.243	1.475
SD	0.784	0.930	0.791	0.864	0.360	0.361	1.347	1.178	0.584	0.613	0.924	0.500
Scores range	1–5	1–5	1–5	1–5	1–3	1–3	1–7	1–7	1–4	1–4	16–19	1–2

Gender was coded as 1 = male, 2 = female

* $p < 0.05$, ** $p < 0.01$

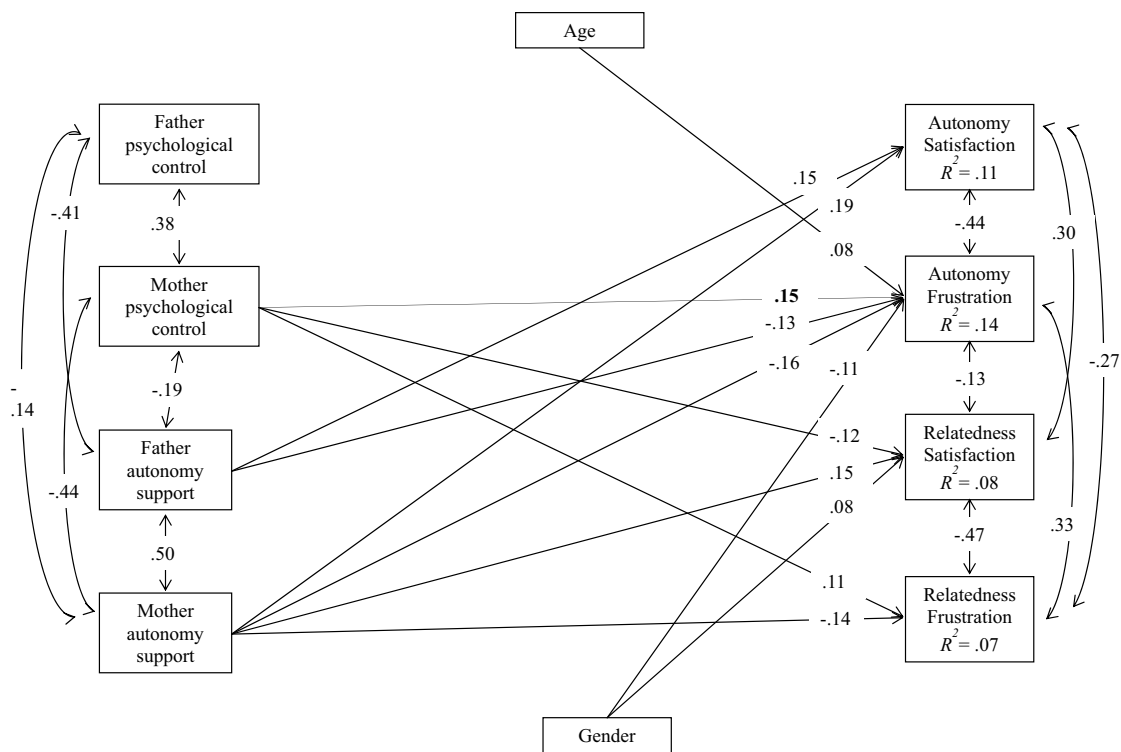


Fig. 3 Statistical model of the relations between satisfaction and frustration of basic needs and parenting dimensions. Standardized solution. Uniqueness are not reported. *Note* All parameter estimates were significant at $p < 0.05$. Not significant paths are not reported

Discussion

Although there is an increasing interest in studying the relationships among parenting dimensions, the satisfaction of basic psychological needs, and adolescents’ psychological functioning, the associations among parental control and autonomy support, need frustration, and maladjustment have been less frequently studied within the SDT framework (Ahmad et al. 2013; Bartholomew et al. 2011; Chen et al. 2015; Cordeiro et al. 2016; Costa et al. 2016; Verstuyf et al. 2013). Moreover, to our knowledge none of these studies, with the exception of Costa et al. (2016), have taken into account the unique role of each parent, considering separate ratings of psychological control and autonomy support for fathers and mothers. Framed on an integration of BPNT (Ryan and Deci 2000) and Kağitçibaşı’s Autonomous-Related Self Theory (2005), the present study examined the relationships between adolescents’ satisfaction and frustration of autonomy and relatedness needs, and (a) adolescents’ perception of mother’s and father’s psychological control and autonomy support, and (b) adolescents’ psychological functioning in terms of self- acceptance and anxiety state. Except for some findings, a number of our hypotheses were supported.

Findings partly confirmed H₁. As expected mother’s autonomy support was positively associated with satisfaction

of both autonomy and relatedness, and negatively associated with the frustration of both these needs. In line with the predictions, father’s autonomy support was positively associated with satisfaction of autonomy, as well as negatively associated with its frustration. However, contrary to our expectations, father’s autonomy support was not significantly associated to both satisfaction and frustration of relatedness.

Findings also partly confirmed H₂. As expected, mother’s psychological control was positively associated with frustration of both autonomy and relatedness, and negatively with satisfaction of relatedness. However, differently from our predictions, mother’s psychological control was not significantly associated with satisfaction of autonomy, as well as father’s psychological control was not significantly associated with both satisfaction and frustration of autonomy and relatedness.

Generally, our results confirm the importance of perceived autonomy support conveyed by fathers and mothers and its association with the satisfaction and the frustration of autonomy and relatedness in adolescence. In line with the literature on autonomy granting (Ahmad et al. 2013; Costa et al. 2015; Inguglia et al. 2015; Kağitçibaşı 2017; Mabbet et al. 2015), adolescents who perceive their parents as promoting their volitional functioning, as well as encouraging them to behave according to their true personal interests

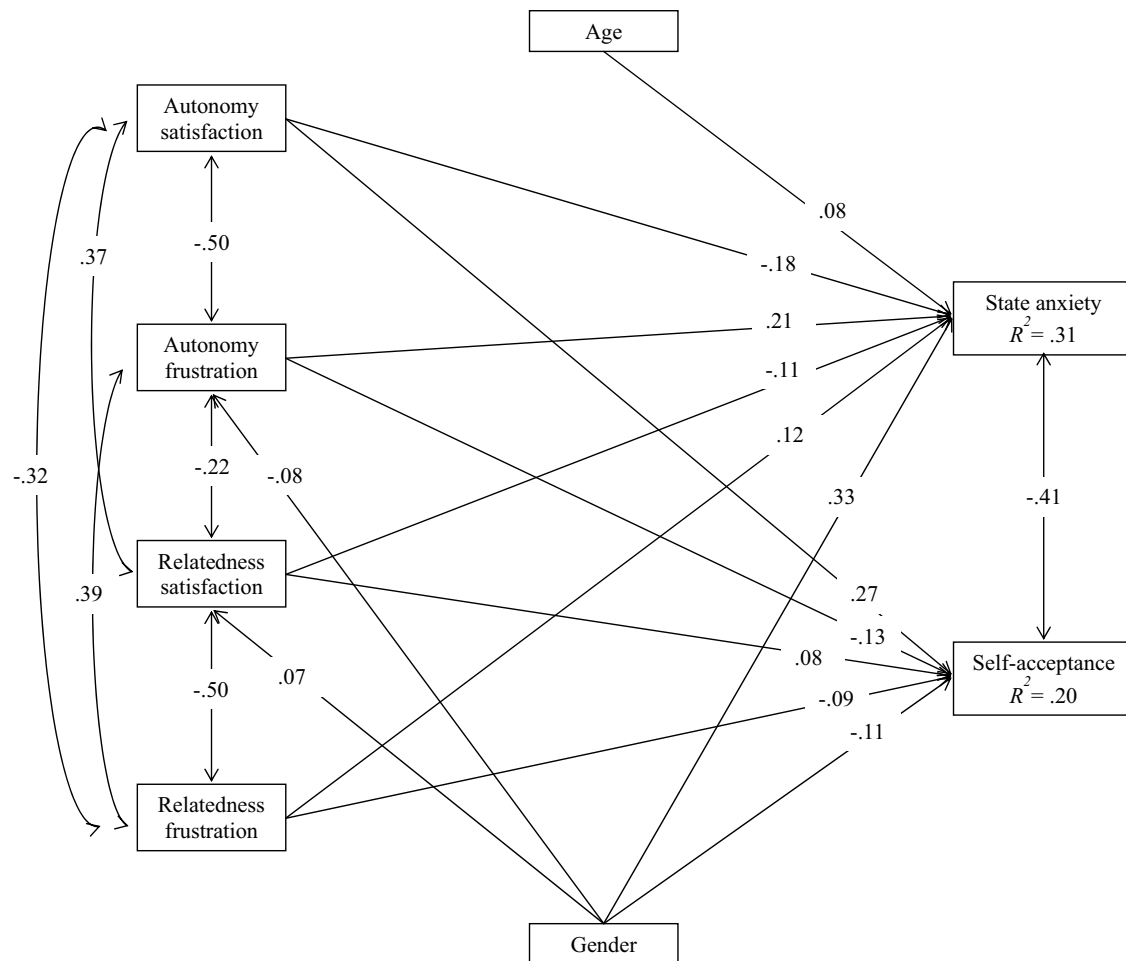


Fig. 4 Statistical model of the relations between satisfaction and frustration of basic needs and psychological functioning. Standardized solution. Uniqueness are not reported. *Note* All parameter estimates were significant at $p < 0.05$. Not significant paths are not reported

are likely to feel satisfied and not frustrated with regard to their autonomy need. Moreover, higher levels of mother's autonomy support seem to be associated with high satisfaction and low frustration of relatedness, indicating that motivating adolescents towards a more independent functioning may bring them also to establish positive relations with others (Inguglia et al. 2015, 2016; Koepke and Denissen 2012). However, the same consideration cannot be extended to fathers' autonomy support which do not seem to be linked to adolescents' satisfaction or frustration of relatedness. Probably this difference between the role of mothers and fathers is due to the centrality of the child–mother relationship in promoting the social competence and the capacity of being part of mutually gratifying, intimate and accepting relations with peers and significant others (Farley and Kim-Spoon 2014; Groh et al. 2014).

With regard to psychological control these gender differences between parents become more evident since the perception of controlling behaviors conveyed by fathers is not associated with either adolescents' satisfaction or frustration

of autonomy and relatedness, whereas mothers' psychological control was negatively and significantly linked to satisfaction of relatedness, as well as positively associated with frustration of both autonomy and relatedness. These differences can be also explained in light of the different roles exerted by parents in the research context (Scabini 2000; Scabini et al. 2006). In general, Italian family is characterized by psychological interdependence with high degrees of emotional bonding and support, as well as restriction from both parents (Claes et al. 2011; Inguglia et al. 2016; Inguglia et al. 2016). However, the issues of control and discipline are traditionally considered as a father's task. Hence, it is likely that children tend to perceive father's controlling behaviors as normative and, as a consequence they have weaker associations with satisfaction/frustration of autonomy and relatedness. Instead, Italian mothers are expected to be warmer and supportive, taking care of their children's socialization and rearing them in a safe and protective environment (Bombi et al. 2011; Scabini 2000). Thus, the perception of them as controlling may have more significant associations

with children's satisfaction/frustration of autonomy and relatedness, in particular with relatedness since mothers are expected to have a central role in promoting the social competence as well as the interpersonal relationships of the children (Groh et al. 2014).

When considered together, these findings suggest that although parental autonomy support and psychological control play together a universal role in the satisfaction or frustration of autonomy and relatedness, these associations may vary in a certain extent with regard to the culture in which are studied. In the Italian culture, autonomy support seems to be more relevant than psychological control for satisfaction of autonomy, perhaps because in Italian families the restriction from parents are frequent and there are strong emotional ties between parents and children. Thus, control may be expected from parents by their children and consequently may have less negative consequences on children's need satisfaction. Moreover, the findings about the difference between mothers and fathers indicate that there is the need to analyze the unique role of each parent by allowing youth to provide separate ratings for mothers and fathers. Otherwise, the lack of gender differences in the assessments of parental psychological control may mask subtle underlying differences in the association between psychological control and satisfaction or frustration of autonomy and relatedness.

Findings supported H_3 . Self-acceptance was positively associated with satisfaction of autonomy and relatedness, and negatively associated with frustration of autonomy and relatedness. The additional hypothesis H_{3a} was only partially supported; satisfaction of autonomy was more strongly associated with self-acceptance than frustration of autonomy, while satisfaction and frustration of relatedness have a similar association with self-acceptance.

In some respects, our results replicate the evidence obtained in previous studies about the distinction between need satisfaction and frustration (Bartholomew et al. 2011; Chen et al. 2015; Cordeiro et al. 2016; Costa et al. 2015; Vansteenkiste and Ryan 2013). Only in the case of autonomy, our findings demonstrated that need satisfaction is a stronger predictor of self-acceptance than need frustration. These results suggest the necessity to take in consideration the singular role of basic needs in its double component (satisfaction and frustration). Such findings can be explained considering the peculiarity of autonomy need and its association with self-acceptance. Autonomy satisfaction is related to the feeling of having chosen one's own life direction, as well as to be efficacious and capable of achieving desired outcomes (Deci and Ryan 2000), thus it is likely to be more positively associated with self-acceptance than its frustration. Similar results were obtained by Cordeiro and colleagues (2016) who underlined the unique contribution of autonomy satisfaction for individuals' well-being in the domain of self-concept. However, these conclusions are not

valid for the relatedness need, that is very valued in our research context (Claes et al. 2011; Manzi et al. 2012) and seems to be important for adolescents' self-acceptance both in its satisfaction and frustration components.

Finally, findings also supported H_4 . Anxiety state was positively associated with frustration of autonomy and relatedness, and negatively associated with satisfaction of autonomy and relatedness. The additional hypothesis H_{4a} was not supported: frustration of autonomy and relatedness were not more strongly associated with anxiety state than satisfaction of these needs.

These results are closer to the predictions of Kağıtçıbaşı's Autonomous-Related Self Theory (2005) than those of BPNT. The former theory highlights that both low satisfaction and high frustration (and not only the frustration) of the needs of autonomy and relatedness have negative associations with adolescents' anxiety state. Maybe our findings can be explained considering that in Southern Italy, where this study was conducted, the prevailing cultural model is the "autonomous relatedness" model (Kağıtçıbaşı 2005), in which autonomy goals are encouraged along with strong family ties and interdependence (Inguglia et al. 2016; Liga et al. 2017). Thus, the low satisfaction and high frustration of these needs have a similar relevance for youth and are similarly associated with state anxiety and probably with other forms of maladjustment.

There are several limitations to this study that are important to note. First, the cross-sectional nature of the study design precludes us from concluding the direction of the associations among these variables. For instance, probing into the unique predictive role of psychological need satisfaction and frustration on psychological functioning or of parenting dimensions on need satisfaction and frustration. Thus, it would be important to conduct future longitudinal studies following the same participants across adolescence to draw clearer conclusions about the direction of associations between these variables. Second, future research should perform a multi-informant replication of this study including parental reports or observations of psychological controlling and autonomy promoting practices although previous research suggested that adolescents' reports on how they perceive their parents' behavior is not inherently inferior to more objective measures (Chen et al. 1998; Inguglia et al. 2016). However, future studies should analyze the presence of divergent views of control and autonomy support in parents and children through the comparisons of parental reports and adolescents' self-reports because in research on family functioning and child adjustment, the inclusion of multiple informants has become highly desirable and allow scholars to analyze disagreements among informants' reports on the same construct of interest (Nelemans et al. 2016). Third, since some studies revealed that maternal and paternal parenting behaviors are associated with problem

behaviors for the same-gender children (Bronte-Tinkew et al. 2006; Hovee et al. 2009; Mandara and Pikes 2008), future research needs to consider the correspondence among the gender of parents and children. Fourth, although grounded in SDT, our study did not include the need for competence but focused only on the needs for autonomy and relatedness in line with Kağıtçıbaşı's Autonomous-Related Self Theory (2005). Thus, further studies should include an assessment of the need for competence to examine the unique intervening role that this variable might play. Fifth, future studies should also include other indicators of both psychological well-being (i.e., life satisfaction, vitality) and maladjustment (i.e., depression, externalizing behaviors) since we focused only on self-acceptance and anxiety state. Moreover, since mothers and fathers are important socialization figures in somewhat different life domains (e.g., studying, leisure time, friendships), future research should also analyze the differential role of mothers and fathers in adolescents' needs-based experiences in different domains. Likewise, it would be interesting to perform studies using the latent sum and difference model (Nelson et al. 2006), an approach that provides answers to questions regarding the interplay of maternal and paternal influence, assessing whether the combined or differential impact of mothers' and fathers' parenting is uniquely predictive of adolescents' satisfaction and frustration of autonomy and relatedness. Finally, given the complexity of our study for sake of clarity we decided to test two separate models of associations among variables of the study. However, further studies should test a more comprehensive model of relationships among all the variables of study, taking also into account the intervening role of some variables in these relationships (for instance, the intervening role of basic needs in the associations among parenting dimensions and adolescents' psychological functioning). Other interesting directions for future research include the examination of how child's cultural expectations of parental roles impact their perceptions of parents as psychological controlling and autonomy supporting, as well as the analysis of how the strength of relational bonds between parents and child may affect children's perceptions of parental psychological controlling behaviors.

Despite these limitations, our study contributes meaningfully to the literature in this field because it extends the understanding of the relationships between parenting dimensions, psychological basic needs, and psychological functioning in adolescence. In particular, our examination of the unique role of each parent with regard to parenting dimensions advances the literature by allowing us to identify the associations between adolescents' perception of mother's and father's psychological control and autonomy support, on the one hand, and adolescents' satisfaction and frustration of needs for autonomy and relatedness, on the other hand. To date research has never examined a combination of such

variables. To our knowledge, only Costa et al. (2016) have investigated the associations between maternal/paternal psychological control and autonomy support, need satisfaction and need frustration. However, they took into account only global scores of need satisfaction and need frustration, without disentangling autonomy and relatedness needs as we did.

Additionally, our study provides further data to the literature that analyses the separate contribution of satisfaction and frustration of basic psychological needs to adolescents' psychological functioning (Chen et al. 2015; Cordeiro et al. 2016; Costa et al. 2016, 2017; Vansteenkiste and Ryan 2013). Together, these findings enhance the knowledge of how needs for autonomy and relatedness are associated with parenting dimensions and contribute to the adjustment of adolescents living in psychologically interdependent cultures like southern Italy through a theoretical perspective that integrates BPNT (Ryan and Deci 2000) and Kağıtçıbaşı's Autonomous-Related Self Theory (2005). Finally, these findings also provide implications for practice, suggesting some guidelines for designing educational and counseling programs aimed at promoting positive psychological functioning in adolescence. In particular, these programs should take into account the specific cultural context in which adolescents live, as well as the separate contribution of each parent to adolescents' satisfaction and frustration of basic psychological needs. Our study suggests that both mothers and fathers should be trained to promote autonomy in their children in order to let them achieve high levels of satisfaction and low levels of frustration with regard to autonomy need, that in turn are related to a positive attitude towards the Self and low levels of anxiety. Moreover, intervention programs should consider the importance of mothers' parenting behaviors with regard to the satisfaction and frustration of relatedness need that is also meaningful for adolescents' psychological functioning. In sum, in cultures characterized by the predominance of family model of psychological interdependence (Kağıtçıbaşı 2005) like southern Italy, programs should be addressed at reaching an optimal balance among autonomy, relatedness, and control within the family.

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