

Contribution of personal and environmental factors on positive psychological functioning in adolescents

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Abstract

This study examined self-esteem as mediator in the relations of personal (extraversion, neuroticism) and environmental (maternal, paternal, peer-relationships) variables with domains of positive psychological functioning (PPF) in adolescence (Satisfaction with life, Mastery, Vigor, Social Interest, Social Cheerfulness).

We compared one-sided and multidimensional models using a sample of 1193 high school students (592 males and 601 females). We examined variations in adolescent PPF as a function of parenting styles via independent examination of maternal and

paternal bonding. Results supported the multidimensional models, which indicated direct effects of personality traits, maternal care and peer relationships, as well as indirect effects, mediated by self-esteem, of all predictors on most PPF dimensions.

Overall, our study provided a broader picture of personal and environmental predictors on different dimensions of PPF, which supported the mediating role of self-esteem and emphasized the importance of considering multidimensional models to characterize PPF in adolescents.

Keywords

Adolescence, Positive Psychological Functioning, Self-esteem, Parental Bonding

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Adolescence represents a critical phase of life in which young individuals must confront and solve issues derived from their biological, physical, psychological and social development (Petersen, 1988; Smetana, Campione-Bar, & Metzger, 2006) and is associated with contextual changes (Bronfenbrenner, 1979). A successful transition to adult life is linked to the ability to cope with these changes and challenges and the achievement of important developmental tasks, including self-acceptance, attainment of emotional autonomy, and the redefinition of bonds with family and peers (Coleman & Hendry, 1999; Lamborn & Steinberg, 1993). There are many paths of adolescence because of “differences in the timing of connections among biological, psychological, and societal factors” (Lerner, 2009, p.151). Thus, depending on personal, interpersonal,

and contextual factors, when the psychological strengths of young individuals are consistent with family, school, and community resources, this encounter promotes positive youth development (Lerner, 2009).

The concept of positive psychological functioning (PPF) overlaps, in part, with the more general construct of well-being, which, as Delle Fave, Brdar, Freire, Vella-Brodick, and Wissing (2011) state, is a broader umbrella construct that may have different meanings in various theoretical perspectives. For positive psychologists (e.g., Compton, 2005; Seligman & Csikszentmihalyi, 2000), positive functioning is a combination of three elements: positive connections to other individuals, positive individual traits, and life regulation qualities. PPF includes multiple levels, such as biological, experiential, personal, relational, institutional, cultural, and global levels. Ryff and Singer (1996) argued that to understand the meaning of PPF in adolescence, it is necessary to take into account mental health, clinical, and life-span developmental theories. A further contribution to PPF in adolescence derives from Argyle and colleagues' work (e.g., Argyle, 2001; Argyle, Martin & Crossland, 1989). Argyle, consistent with Ryff's (1989) suggestions, has extended his initial perspective on happiness developing a multidimensional conception of PPF.

Transitioning from Argyle's perspective, we consider five dimensions of PPF: Satisfaction with life, Mastery, Vigor, Social Interest and Social Cheerfulness (see Meleddu, Guicciardi, Scalas, & Fadda, 2012). Recent investigations have demonstrated the incremental importance of the Satisfaction with life construct in the prevention of psychopathology (Huebner, Suldo, Smith, & McKnight, 2004) and mediation of the impact of stressful life events and parenting behavior on adolescent risk behavior (McKnight, Huebner, & Suldo, 2002). Mastery includes capacities that concur with self-

fulfillment, such as life control, making decisions easily, organizing time, and getting started. These elements are increasingly relevant during adolescence because they are associated with the development and acquisition of behavioral and emotional autonomy (Steinberg & Silverberg, 1986). Vigor can be defined as the energy required to engage in activities and achievements (Mahon & Yarcheski, 2002). Social Interest and Social Cheerfulness relate to interest in other individuals and fun in social group activities, respectively; these factors are relevant in the promotion of PPF and social development (Bonaiuto, Perucchini, & Pierro, 1997; Meeus, 1994).

Predictors of PPF

Research has identified several factors that influence PPF in adolescence, such as personality and social environmental factors (e.g., Cheng & Furnham, 2003; DeNeve & Cooper, 1998). Both dimensions are essential to achieve developmental tasks and promote a psycho-social adaptation.

Traits of personality and PPF. Among personal predictors, many theoretical and empirical studies have demonstrated that the traits predominately related to PPF are extraversion and neuroticism (Costa & McCrae, 1980; Sumer, Bilgic, Sumer, & Erol, 2005). Argyle Martin and Lu (1995), in a longitudinal study, demonstrated that PPF was linked to extraversion via the social skill and cognitive style of extraverts, whereas individuals with high levels of neuroticism exhibited a lack of social skills. Extraversion and neuroticism also exhibited positive and negative correlations, respectively, with physical and mental energy and vigor (Wood, Magnello, & Jewell, 1990), and they were able to influence satisfaction with life (Diener & Lucas, 1999). Schmutte and Ryff (1997) demonstrated that extraversion and neuroticism were strong and consistent

predictors of multiple aspects of PPF, particularly self-acceptance, mastery, and purpose in life.

Regarding adolescence, Hills and Argyle (2001) reported that emotional stability was the sole significant predictor of PPF in young individuals. In a repeated panel study, Headey, Glowacki, Holmstrom and Wearing (1985) demonstrated that extraversion predisposed young individuals to have favorable life events, especially in the domain of friendship. These events, in turn, may lead to high levels of PPF and increments in extraversion. Finally, Cheng and Furnham (2003) demonstrated that in young individuals, extraversion predicted the dimension of PPF linked to enjoyment, whereas neuroticism negatively predicted vigor.

Environment and PPF. Among the environmental factors that can influence PPF during adolescence, the family is very important (e.g., Smetana et al., 2006). Several decades of research regarding parent-child relationships have identified *care* and *overprotection* as two dimensions of parental bonding that affect the child's PPF. Care characterizes warm-hearted parents who are able to exhibit support, affection and involvement. Overprotection characterizes intrusive parents who discourage the independence and autonomy of their child (Parker, Tupling, & Brown, 1979). A caring parenting style facilitates adolescent PPF, increases self-esteem, life satisfaction, social competence, and confidence, and improves social and academic skills (Gray & Steinberg, 1999). Overprotection, in turn, is associated with externalizing and internalizing problems, such as depression and anxiety, in children (Barber & Olsen, 1997). Because relationships with mothers and fathers have been demonstrated to differ in both quality and substance (Steinberg & Silk, 2002), recent studies illustrate the need to independently examine the influence of mothers and fathers on adolescent PPF

(Milevsky, Schlechter, Klem, & Kehl, 2008; Smetana et al., 2006). In general, mothers have closer relationships with their children and adolescents compared with fathers, and they tend to provide more warmth and support that, in turn, influence the child's adjustment (Holmbeck, Paikoff, & Brooks-Gunn, 1995; Stocker, 1994).

Several studies suggest that during adolescence, the support and quality of relationships with peers are good indicators of PPF, as well as protective factors of psychosocial risk (Argyle, 2001; Meeus, 1994). The domain of friendship and social interaction is believed to be more relevant during adolescence compared with childhood. Early adolescence has been identified as a developmental period during which the salience of peer relations increases as the salience of the family decreases (Steinberg & Silverberg, 1986).

Adolescents spend substantial time with peers, and the quality of their relationships changes substantially from childhood through adolescence. Friendships evolve into more intimate, supportive, disclosing, and communicative relationships (Buhrmester 1990; Levitt, Guacci-Franco, & Levitt, 1993). To have friends and be appreciated by them reinforces personal satisfaction, provides confidence in the future (Meeus, 1994) and affects aspects of PPF linked to enjoyment and fun with other individuals (Cheng & Furnham, 2003). Furthermore, adolescents' perceptions of being able to rely on friends to share their problems provides them greater confidence in their ability to cope with everyday problems. The relationship with friends is, therefore, an appropriate context to develop effective strategies, resolve difficulties and turn ideas into projects (Bosma & Jackson, 1990).

Self-esteem and PPF. Self-esteem is the overall evaluation of oneself, and it indicates an individual's global sense of self-worth. Self-esteem is one of the strongest

predictors of well-being and psycho-social adaptation in adults and adolescents (Diener, 1984; Neto, 2001; Rosenberg, 1965). Individuals with high self-esteem are more functional and self-accepting and therefore more likely to exhibit healthy behaviors. Poor self-esteem has been associated with indices of poor adjustment (Bosacki, Dane, & Marini, 2007), whereas high self-esteem has been associated with PPF (DeNeve & Cooper, 1998; Diener, 1984), despite differences in culture and/or nationality (Diener & Diener, 1995). In particular, global self-esteem has been related to indices of PPF, such as happiness and life satisfaction (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). Self-esteem is relatively stable during adolescence, with a minimal increment during the period (Erol & Orth, 2011). Studies that have examined the relationship between self-esteem and PPF in adolescence have identified patterns similar to adults, with a strong association between the two variables (Cheng & Furnham, 2004). Previous studies have demonstrated that self-esteem contributes, in particular, to the overall sense of mastery (e.g., Mahon & Yarcheski, 2002; Ryff, 1989). Cheng and Furnham (2003), in high school and college students, demonstrated that high self-esteem may increase or maintain one's vigor and health, and it is important in increasing young individuals' social enjoyment.

Self-esteem and personality traits. Self-esteem has been positively associated with high extraversion and low neuroticism in adult and adolescent samples (Erdle, Gosling, & Potter, 2009; Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001), as well as cross-cultural studies (Fickova, 1999). One explanation is that, at least in Western cultures, extraverted tendencies are encouraged and valued more than introverted tendencies (Francis & James, 1996). Other authors have argued that extraversion develops very early and could subsequently contribute to the evolution of other personality-based

tendencies (e.g., seeking social support, positive affect), which could serve as potential mediators of the relationship between extraversion and self-esteem (Swickert, Hittener, Kitos, & Cox-Fuenzalida, 2004).

Self-esteem and environment. Researchers have identified a positive relationship between self-esteem and social support in adolescents (McNicholas, 2002; Yarcheski, Mahon, & Yarcheski, 1997). The support of parents and, above all, peers are critical to self-esteem in adolescence. Adolescents become increasingly reliant on friends for emotional and instrumental support, as well as a mutual validation of self-esteem (Rubin, Bukowski, & Parker, 1998). When adolescents experience high social support from significant others, such as parents and peers, they will express positive regard for themselves in the form of high self-esteem, and this positive assessment of self-worth (Rosenberg, 1965) will contribute, in turn, to their PPF (Yarcheski, Mahon, & Yarcheski, 2001). Regarding parental bonding dimensions, it has been speculated that perceived overprotection may threaten children's emerging sense of self and may increase the likelihood of maladjustment and internalizing problems (Barber, 1996).

Mediating Role of Self-esteem

Previous studies have suggested that self-esteem positively mediates the relationship between PPF, personality characteristics and social support in adolescents (e.g., Furnham & Cheng, 2000; Yarcheski et al., 2001).

Furnham and Cheng (2000), using path models, examined the relation between personality and PPF. In their study, extraversion exhibited direct and indirect predictive power, whereas neuroticism predicted PPF only through the mediation of self-esteem. The hypothesis of a mediating role of self-esteem is consistent with a hierarchical organization between personality traits and self-esteem. According to Hair and Graziano

(2003), the variables exert their influence in sequence and, in this system, personality characteristics influence the way the self selects strategies to address new information and other individuals.

Yarcheski et al. (2001) demonstrated that self-esteem is a mediating variable in the relationship between perceived social support (parents and peers) and PPF in early adolescents. When adolescents experience support and affirmation from significant others, they develop greater self-esteem, and this positive assessment of self-worth (Rosenberg, 1965) contributes, in turn, to their well-being.

Finally, a positive relationship has been identified between parental styles and self-esteem (Buri, Louiselle, Misukanis, & Mueller, 1988), particularly for care (Allgood, Beckett, & Peterson, 2012). Specifically, Cheng and Furnham (2004) suggested that maternal care had direct and indirect positive effects on PPF, whereas paternal care predicted PPF through positive self-esteem.

In conclusion, although previous studies appear to suggest a crucial role of self-esteem as a direct and mediating variable between PPF and personal and environmental predictors, to our knowledge, studies have rarely examined these issues jointly, and no study has directly tested the mediating role of self-esteem for both personal and environmental factors in the determination of PPF. For example, Cheng and Furnham (2003) conducted a study that took into account self-esteem, personality traits, and relationships with peers and parents and demonstrated that only self-esteem and relationships with parents had direct predictive power on the PPF total score. Moreover, because extraverts (compared with introverts) tended to have higher self-esteem, and individuals with high levels of neuroticism (compared with stable individuals) tended to have lower self-esteem, the authors suggested that extraversion and neuroticism

predicted PPF through self-esteem. Nevertheless, they did not examine the mediating role of self-esteem in the relationships between PPF and significant others, which is a major aim of the current investigation.

Present Study

The general focus of the present study is to obtain a better understanding of adolescent PPF conceptualized on the basis of the multidimensional model of Argyle and colleagues (e.g., Argyle, 2001; Argyle et al., 1995), which includes several dimensions: Satisfaction with life, Mastery, Vigor, Social Interest and Social Cheerfulness (Meleddu et al., 2012). Previous studies have often been limited to the use of a PPF total score (e.g., Furnham & Cheng, 2000), which has been suggested to be an oversimplification of the PPF construct (Meleddu et al., 2012). Specifically, this study is aimed at a better qualification of personal (extraversion and neuroticism) and environmental (perceptions of maternal/paternal care and overprotection and quality of peer relationships) factors as determinants of PPF in adolescence through the mediation of self-esteem. Mediators facilitate explanations as to how and why a relationship between the independent and dependent variables occurs, which thus contributes to theory building and a better understanding of relationships (Baron & Kenny 1986). Nevertheless, few studies have examined, in part, the mediating role of self-esteem in the relation between adolescent PPF and personal and environmental factors (e.g., Furnham & Cheng, 2000; Yarcheski et al., 2001). Moreover, although personal and environmental factors appear to be involved in the determination of PPF in adolescence, they have rarely been jointly examined, and no study has directly tested the mediating role of self-esteem in the relationship between PPF dimensions and personal and environmental predictors, which is precisely the focus of this investigation. Finally,

literature regarding parenting styles (e.g., Milevsky et al., 2008; Smetana et al., 2006) has suggested the need to examine variations in adolescent PPF as a function of maternal and paternal bonding separately.

To overcome these limitations, we have adopted a multidimensional approach to jointly investigate the links between different predictors and PPF with the mediation of self-esteem. Moreover, because relationships with mothers and fathers have been demonstrated to differ in both quality and substance (e.g., Steinberg & Silk, 2002), we replicate the analysis considering separately, in two different models, the perceptions of maternal and paternal care and overprotection. Within this framework, we compare one-sided models, based on only personal predictors (e.g., Diener & Lucas, 1999; Mahon & Yarcheski, 2002; Schmutte & Ryff, 1997) or environmental predictors (e.g., Meeus, 1994; Smetana et al., 2006), and multidimensional models, based on both personal and environmental predictors (a detailed description of the models is presented in the methods section). On the basis of previous empirical studies, we expect positive effects for extraversion, peer relationships and parental care and negative effects for neuroticism and parental overprotection (Argyle, 2001; Cheng & Furnham, 2003; Furnham & Cheng 2000; Meeus, 1994).

We believe that multidimensional models are more adequate than the one-sided models to examine the links between personal and environmental variables and PPF. We will use a path analysis to contrast the personal, environmental, and multidimensional models, and we expect that the multidimensional models will provide a better fit to the data, according to the indices of information criteria, and higher levels of explained variance, measured with R^2 . Although an examination of the explained variance is not common practice in structural equation modelling, this approach has

recently been suggested as a relevant criterion in the comparison-model process (e.g., Scalas, Morin, Marsh, & Nagengast, 2014). Finally, although the literature is limited in this area, a second aim is to examine the mediating role of self-esteem in the relations between personal (Furnham & Cheng, 2000) and environmental (Yarcheski et al., 2001) predictors and dimensions of PPF. Thus, we expect to identify not only direct effects of self-esteem on PPF dimensions (e.g., Cheng & Furnham 2004; Diener & Diener, 1995; Mahon & Yarcheski, 2002) but also indirect effects from personal and environmental factors to PPF.

In summary, this study aimed to investigate two general objectives: 1) understanding if the multidimensional model works better than the personal and environmental models in the explanation of PPF in adolescents (operationalized in terms of the fit indices and explained variance of the outcomes); and 2) understanding if self-esteem mediates the relations between the dimensions of PPF and personal and environmental predictors (operationalized in terms of significant indirect effects).

Methods

Participants

For the recruitment of study participants, we contacted several public schools. For each school, students received a parental consent form, with information about the study. We used an opt-out method, so that only parents not interested in the study would have to return back the signed form within one week after receiving it. On the testing date this was supplemented by oral assent from students. The response rate was 98%.

The participants anonymously completed a battery of questionnaires in group sessions. Confidentiality was guaranteed. All test sessions took place during students' regular school time and took 30 minutes. The study protocol received approval from the

Ethics Committee of the Department of Pedagogy, Psychology, Philosophy, University of Cagliari, Italy.

A convenience sample of 1 193 Italian high school students (592 males and 601 females) aged between 13 and 21 years ($M = 16.85$; $SD = 1.74$) was recruited. Consistent with the Italian school population in general, the sample was homogeneous in terms of race (Caucasian) and cultural background (all students spoke Italian as their native language). Most parents of the participants were married or cohabiting (83%); 14.5% of the parents were separated or divorced; 2.5% of the parents were widowed.

Measures

To measure extraversion and neuroticism traits, we used the specific scales of the Big Five Questionnaire (Caprara, Barbaranelli, & Borgogni, 1993) comprised of 48 items (e.g., “I am an active and vigorous person”) with a 5-point (from 1 = *absolutely false* to 5 = *absolutely true*) response format. For self-esteem, the Rosenberg Self-Esteem Scale (Rosenberg, 1965; Italian version: Prezza, Trombaccia, & Armento, 1997) comprised of 10 items (e.g., “I take a positive attitude toward myself”) with a 4-point (from 1 = *strongly disagree* to 4 = *completely agree*) response scale, was used.

Relationships with parents were measured with the Parental Bonding Instrument (PBI; Parker et al., 1979; Italian version: Bonaiuto et al., 1997). The PBI consists of 21 items that measure two parental bonding dimensions (care and overprotection), assessed separately for mother (e.g., “My mother appeared to understand my problems and worries”) and father (e.g., “My father appeared to understand my problems and worries”), on a 4-point response scale (from 1 = *very unlike* to 4 = *very like*)¹.

Three indicators of relationships with peers were taken from the Health Behavior Questionnaire (Jessor, Donovan, & Costa, 1992; Italian version: Bonino, Cattelino &

Ciairano, 2005. These indicators were quality of relations (“How well do you get along with others your age?”; 1 = *not well at all*, 4 = *very well*; $M = 3.28$, $SD = .66$); perception of emotional support (“When you have personal problems, do your friends try to understand and let you know they care?”; 1 = *never*, 4 = *always*; $M = 2.99$, $SD = .85$); time spent with friends (“About how many hours do you usually spend with friends each week?”; 1 = *none*, 6 = *eight or more hours*; $M = 5.08$ $SD = 1.17$). For PPF, we used the revised Oxford Happiness Inventory (OHI; Argyle, 2001; Argyle et al., 1989), comprised of 29 items with a 4-point response scale. Each item invites the respondent to choose one of four sentences constructed to reflect incremental steps. For example: 1 = *I do not feel happy*; 2 = *I feel fairly happy*; 3 = *I am very happy*; 4 = *I am incredibly happy*. A recent Italian version of the OHI showed a five-factor structure (Satisfaction with life, Mastery, Vigor, Social Interest and Social Cheerfulness), adequate internal consistency values and strong measurement invariance over gender (Meleddu et al., 2012). Additional information about descriptive statistics and reliability of the instruments are provided in Table 1.

Models and Analyses

In order to proceed with the statistical analyses all data were standardized. To avoid unnecessary complexities and to ease the analyses, only observed measured variables were used (i.e. we used mean scale scores). Because the three items concerning relationships with peers used different response formats, the average score was calculated on standardized item scores.

We contrasted three models, including the multidimensional predictor model, the personal predictor model, and the environmental predictor model (Figure 1). To ensure the same degree of complexity and ease comparability across the models, the models

were built as follows: 1) the multidimensional predictors model includes direct and indirect (mediated by self-esteem) effects of personal and environmental variables on PPF dimensions (Fig. 1a). This model is characterized by correlations between personal and environmental variables; direct effects of extraversion, neuroticism, self-esteem, peer relationships, maternal or paternal care and overprotection on PPF; indirect effects of traits and environmental variables mediated by self-esteem; 2) the personal predictors model is a model in which the direct and indirect effects of environmental variables on PPF were fixed to zero (Fig. 1b). This model is characterized by correlations between personal and environmental variables; direct effects of extraversion, neuroticism and self-esteem on PPF; indirect effects of traits mediated by self-esteem; 3) the environmental predictors model is a model in which the direct and indirect effects of personality traits on PPF were fixed to zero (Fig. 1c). This model is characterized by correlations between personal and environmental variables; direct effects of peer relationships, maternal or paternal care and overprotection on PPF; indirect effects of environmental variables mediated by self-esteem.

In the path model analyses, in order to deal with the few missing values, full information MLR estimation was used (Enders & Bandalos, 2001). For the model selection, we used information criterion indices, including the Akaike Information Criterion (AIC), the Bayesian Information Criterion, and the sample-size adjusted Bayesian Information Criterion (adj-BIC). The AIC is a measure of the relative quality of a statistical model for a given set of data. The BIC is based, in part, on the likelihood function, and it is closely related to the AIC. The AIC and BIC are not used to test the model in the sense of hypothesis testing, but rather for model selection. The AIC and BIC combine absolute fit with model parsimony. These statistics differ in relation to

how model complexity is penalized. Of the two models, the BIC more strongly penalizes by adding parameters to the model compared with the AIC. The sample-size adj-BIC is less biased by sample size, imposes a less harsh penalty in fitting additional parameters compared with the BIC and is a more accurate statistic compared with the BIC under some circumstances. For all information criterion indices, lower values are considered to reflect a better fit in model comparisons (Henson, Reise, & Kim, 2007). Analyses was conducted using Mplus 5.2. (Muthén & Muthén, 1998-2008).

Results

Regarding the fit indices and R^2 , similar patterns of results were identified for maternal and paternal models. The multidimensional models exhibited the best fit compared with the one-sided models based on only personal predictors or only environmental predictors (Table 2). Regarding R^2 , for the one-sided models, it should be noted that the variance of the social components of PPF accounted by the personal models was fairly low, particularly for Social Interest. In contrast, these dimensions were better explained by the environmental predictors. Personality traits appear to have better explanatory power in relation to Mastery and Vigor compared with the environmental predictors. Finally, both personal and environmental factors appear to have similar explanatory power in relation to Satisfaction with life.

As expected, the R^2 for PPF dimensions were higher in the multidimensional models compared with the one-sided models. In both multidimensional models (maternal and paternal), the greatest amount of variance explained was for Mastery and the lowest for Social Interest (Table 2).

Multidimensional Model with Maternal Relationships

Table 3 shows the correlations among the predictors estimated in the maternal and paternal multidimensional models. These correlations are consistent with previous literature and exhibit positive correlations among extraversion, peer relationships and maternal care, which are, in turn, negatively correlated with neuroticism and maternal overprotection. Maternal overprotection was positively correlated with neuroticism. Table 4 presents the direct and indirect effects of the predictors on the different aspects of PPF for maternal relationships.

Direct effects. The results demonstrated that extraversion, peer relationships and maternal care positively promote all PPF dimensions. In particular, Table 4 shows that extraversion particularly influences Mastery; peer relationships, Social Cheerfulness; maternal care, Satisfaction with life and Social Interest. Self-esteem positively influenced Mastery, Satisfaction with life, Vigor and Social Cheerfulness, but not Social Interest (Table 4).

Regarding negative influences on PPF dimensions, maternal overprotection hindered Mastery, whereas neuroticism negatively affected Satisfaction with life, Mastery and Vigor and positively affected Social Interest (Table 4). Self-esteem was positively influenced by extraversion ($\beta = .348, p < .001$), peer relationships ($\beta = .184, p < .001$), and maternal care ($\beta = .118, p < .001$) and negatively affected by neuroticism ($\beta = -.238, p < .001$) and maternal overprotection ($\beta = -.123, p < .001$).

Indirect effects. Self-esteem mediated the effects of all predictors on four of the five dimensions of PPF (Table 4). In particular, the highest indirect effects were identified in relation to Mastery, which was indirectly and negatively affected by neuroticism and positively affected by extraversion and, to a lesser extent, environmental factors (Table 4).

Interestingly, maternal overprotection, which only directly affected Mastery, exhibited modest but significant indirect effects on Satisfaction with life, Mastery, Vigor and Social Cheerfulness through the mediation of self-esteem (Table 4).

Multidimensional Model with Paternal Relationships

Regarding the correlations among predictors, the pattern of results was similar to the maternal multidimensional model (Table 3). Maternal care and overprotection exhibited a stronger correlation compared with paternal bonding; this difference was significant ($Z = 3.58, p < .01$).

Table 5 presents the direct and indirect effects of the predictors on the different aspects of PPF for paternal relationships.

Direct effects. The results demonstrated a pattern of influences similar to previous descriptions for mothers in relation to personality traits, peer relationships and self-esteem. Regarding paternal bonding, care positively influenced Satisfaction with life, Vigor and Social Cheerfulness; overprotection, in turn, promoted both social dimensions (Table 5). Similar to mothers, in fathers, self-esteem was positively influenced by extraversion ($\beta = .344, p < .001$) and peer relationships ($\beta = .195, p < .001$) and negatively affected by neuroticism ($\beta = -.234, p < .001$) and paternal overprotection ($\beta = -.132, p < .001$). However, the effect of paternal care on self-esteem was substantially lower ($\beta = .066, p = .015$) compared with maternal care.

Indirect effects. Self-esteem produced indirect effects for all variables on four of the five dimensions of PPF. In particular, the highest indirect effects were identified in relation to Mastery, which was indirectly and negatively affected by neuroticism and positively affected by extraversion, and, to a lesser extent, by environmental factors (Table 5). The important mediating role of self-esteem emerged for both paternal

bonding. Interestingly, paternal overprotection, which directly affected only social dimensions, exhibited modest but significant indirect effects on Satisfaction with life, Mastery and Vigor. Moreover, although it exhibited a direct positive influence on Social Cheerfulness, paternal overprotection hindered this PPF's dimension by self-esteem (Table 5).

Discussion

In the present study, we considered aspects of personality (extraversion and neuroticism) and perceived environment (maternal, paternal and peer-relationships) that influence PPF dimensions (Satisfaction with life, Mastery, Vigor, Social Interest, and Social Cheerfulness) in young individuals through the mediation of self-esteem. The results of our comparison between the one-sided and multidimensional models indicated the advantages of a multidimensional model and provided us the opportunity to refine and better qualify the results from previous studies.

Regarding personal predictors, as we expected based on the literature, extraversion (positively) and neuroticism (negatively) influenced Satisfaction with life, Mastery and Vigor (Diener & Lucas, 1999; Schmutte & Ryff, 1997; Wood et al., 1990). In particular, extraverts could be considered, by nature, highly likely to seek social situations, and our results showed that extraversion exhibited direct influences on both PPF social dimensions. An unexpected result concerned a positive direct influence of neuroticism on Social Interest. Theoretically, the orientation of individuals with high levels of neuroticism towards social relationships should be associated only with a high index of extraversion, like it happens in hysterical individuals (characterized by high level of neuroticism and extraversion), which are inclined to show their discomfort outside (Eysenck 1953; 1957). It should also be noted that this scale of OHI concerns an interest

toward other people and not a real behavior of sociability. Therefore, in adolescents with high levels of neuroticism, social interest could be enhanced to balance the real difficulties in interpersonal relationships. However, this result requires further examination in future studies.

Regarding environmental variables, the results of multidimensional models support the theory, often suggested in previous studies, that peer friendship provides an important direct contribution to psychosocial adaptation in early, middle, and late adolescent samples (e.g., Yarcheski et al., 1997; 2001). The benefit of a social network through reciprocal rewards is explained by shared interests and enjoyable activities, as well as positive feedback and social support (Argyle, 2001). Moreover, as suggested in the literature, social support may influence PPF by providing guidance and information in socially supportive relationships, such as how to take care of oneself (Mechanic & Cleary, 1980).

The importance of supportive relationships also emerges for parental relationships (e.g., Gray & Steinberg, 1999) and, in particular, the mother-child relationship (e.g., Holmbeck, et al., 1995). Although current research indicates that mothers and fathers adopt different approaches to parenting their children, literature in the area often tested a general parenting style (Conrade & Ho, 2001; Durbin, Darling, Steinberg, & Brown, 1993; Glasgow, Dornbusch, Troyer, Steinberg, & Ritter, 1997). In contrast, in the present study, we considered the unique contribution of maternal and paternal bonding separately. As demonstrated in previous studies (e.g., Stocker, 1994), our results indicated a more important role of maternal compared with paternal care. Maternal care promoted all PPF dimensions, whereas the influence of paternal care was limited to Satisfaction with life, Vigor and Social Cheerfulness. Maternal overprotection exhibited

a negative direct effect on Mastery. Paternal overprotection exhibited a positive direct influence on interest and enjoyment in social group activities. We believe that this finding could be the result of lower chances of participating in social activities for young individuals with overprotective fathers, which may lead them to yearn for social events and exhibit an overly positive attitude towards them when they have the opportunity to experience them. Nonetheless, because of the lack of literature regarding child-father relationships, our conclusions regarding these dynamics are necessarily speculative.

The relevant role of self-esteem as a determinant of PPF dimensions was confirmed in our study. Self-esteem exhibited an important influence on dimensions related to the Mastery, Satisfaction with life, energy and Vigor required to engage in activities, as well as achievements and fun in social group activities. The lack of an effect of self-esteem on Social Interest is consistent with the findings reported by Meleddu et al. (2012). Moreover, the typical increment in the interest for social relationships during adolescence, might suggest that adolescents' levels of self-esteem may play a role in the type of relationship dynamics they attempt to create, rather than in the active pursuit of close relationships and warm feelings toward other individuals.

The results of our study also suggest that self-esteem is not only a direct predictor of PPF but also a crucial mediator for personal and environmental factors. Previous studies have suggested this role (e.g., Furnham & Cheng, 2000; Yarcheski et al., 2001). For example, self-esteem has been positively associated with high extraversion and low neuroticism in adolescent samples (Erdle et al., 2009), and Furnham and Cheng (2000) stated that self-esteem can mediate the relationship between traits and PPF in adolescence. Furthermore, it has been noted that when adolescents experience high

social support from significant others, such as parents and peers, they will express positive regard for themselves in the form of high self-esteem (Yarcheski et al., 2001). Our results confirmed the mediating role of self-esteem for personal and environmental variables, in relation to Satisfaction with life, Mastery, Vigor and Social Cheerfulness, which thus highlights the critical role of self-esteem in adolescent PPF.

In the present study, the importance of considering the mediation of self-esteem emerged in relation to parental overprotection. Maternal overprotection appears to hinder the Satisfaction with Life, Vigor and Social Cheerfulness of their children, not directly, but via a decrement of their self-esteem. Paternal overprotection negatively affected self-esteem, which, in turn, decreased the PPF dimensions of Satisfaction with life, Mastery, Vigor and Social Cheerfulness. It has been suggested that the development of a secure relationship between child and parents may impact an individual's interaction with the environment, development of skills, and self-confidence (Ainsworth, 1985). Thus, parental bonding may contribute to an individual's self-esteem (Miller, Warner, Wickramaratne, & Weissman, 1999). Regarding overprotection, Barber and Harmon (2002) emphasized that aspects of overprotection related to psychological control not only stifle independence but have a broader and more fundamental detrimental effect on an adolescent's development of a stable and secure sense of self. Consistent with previous research (Buri et al., 1988), parental overprotection negatively affected self-esteem. This finding is relevant because many researchers, such as Herz and Gullone (1999), have argued that the quality of the parent-child relationships has a significant impact on the long-term confidence, resilience and PPF of the individual. Moreover, clinical studies have demonstrated that depressed patients are highly likely to remember their parents as providing low care and being

overprotective (Blatt, Wein, Chevron, & Quinlan, 1979). Particularly during adolescence, the overprotection of parents limits their independence and hinders the achievement of important developmental tasks, such as emotional and behavioral autonomy from parents (Stone et al., 2013). The early to middle adolescent years represent a time of heightened orientation toward peers, and children of this age often desire less parental control over their lives so that they can increase their involvement with their friends (Steinberg & Silverberg, 1986).

Another aspect to take into account in our study is that Italy is characterized by close, often intense, familial relationships (Claes, 1998). In Italian families, parent-child relationships tend to be very intense, and the family, in general, is more central to daily life compared with other European countries and the United States. Previous cross-national studies have suggested that Southern European countries, such as Italy, are more focused on familial togetherness and closeness and less focused on individual choice and self-direction compared with Northern European countries (e.g., Manzi, Vignoles, Regalia, & Scabini, 2006). In Italian adolescents, major life transitions to adulthood are postponed (Bonino et al., 2005). Adolescents typically live with their families until early adulthood because of, in part, the delayed age of marriage, low rates of pre-marital cohabitation, and difficulties finding employment. It has also been demonstrated that a considerable portion of young Italian adults who have economic opportunities to live independently or cohabit with a partner still prefer to reside with their parents (Buzzi, Cavalli, & De Lillo, 2007). The transition to adulthood extends into the late twenties and leads Italian adolescents to exhibit a more unstable identity development compared with their Dutch peers (Crocetti, Schwartz, Fermani, & Meeus,

2010). Furthermore, Currie et al. (2008) have identified lower levels of PPF reported by Italian adolescents compared with Dutch adolescents.

Study Limitations

Although our results are encouraging, there are several limitations to the current study that future work in this area should address. First, this study did not aim to provide an exhaustive model compared with the multiplicity of variables involved in the PPF process. The study was limited to the analysis of the factors that, by careful examination of previous literature, appeared more influential during the delicate period of adolescent life. Second, to fully contextualize the interconnections between the personal and environmental determinants of PPF, these results await further examination from a longitudinal perspective. Third, we used observed variables; future studies should be conducted with latent variables to take into account measurement error. Finally, our results must be replicated in samples of different cultures.

Conclusions

Overall, our study enabled an improved qualification of the role of personal and environmental predictors within a multidimensional perspective of PPF determinants in adolescence. Moreover, our results suggest that to fully understand PPF in adolescence, it is critical to consider several dimensions of PPF rather than a total score, which could camouflage the multidimensional nature of this construct and its interconnections with other constructs. Finally, our results suggest that the presence of high self-esteem is a factor that can significantly facilitate adolescent PPF as a direct predictor, as well as a mediating variable. Nonetheless, things might work differently for narcissistic adolescents (see Thomaes, Bushman, de Castro, Cohen, & Denissen, 2009). Therefore,

with some exceptions, the promotion of self-esteem in young individuals could be useful in the context of clinical intervention.

Footnote

1. No distinction was made between married-cohabitating families, separated parents, and divorced parents because we assumed active relations between the adolescents and both their parents; when different, the adolescents simply did not complete the section regarding one of the parents, and we treated the lack of data as missing values.

A small number of parents were deceased; this resulted in missing values when the participants had to complete questionnaires regarding the deceased parent. These missing values were treated as any other type of missing values.

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Table 1
Descriptive Statistics and Reliability of the Used Instruments

Scale	N° Items	Range	<i>M</i>	<i>SD</i>	<i>α</i>
OHI Satisfaction with life	6	1-4	2.59	.52	.78
OHI Mastery	10	1-4	2.50	.45	.76
OHI Vigor	5	1-4	2.52	.54	.64
OHI Social Interest	2	1-4	2.85	.66	.57
OHI Social Cheerfulness	5	1-4	3.10	.49	.74
BIG FIVE Extraversion	24	1-5	3.29	.46	.74
BIG FIVE Neuroticism	24	1-5	3.20	.57	.84
RSE	10	1-4	3.16	.57	.84
Peer relationships*	3	-	-	-	.58
PBI Maternal care	11	1-4	3.30	.64	.91
PBI Paternal care	11	1-4	2.96	.76	.92
PBI Maternal overprotection	10	1-4	1.87	.56	.80
PBI Paternal overprotection	10	1-4	1.88	.58	.80

Note. OHI = Oxford Happiness Inventory; RSE = Rosenberg Self-esteem Scale; PBI = Parental Bonding Instrument. Range, mean and standard deviation do not appear in the table, because the three items concerning relationships with peers used different response formats (see the Measures section)

Table 2

SEM. Models Fit Indices and Explained Variance of PPF Dimensions

Model	AIC	BIC	adj-BIC	R^2				
				Satisfaction with life	Mastery	Vigor	Social Interest	Social Cheerfulness
Maternal relationships model								
1	32420.621	32720.590	32533.184	.27**	.46**	.24**	.03**	.18**
2	32545.634	32876.109	32669.644	.27**	.43**	.21**	.11**	.26**
3	32072.535	32464.021	32219.439	.31**	.48**	.26**	.13**	.29**
Paternal relationships model								
1	32212.424	32512.344	32324.938	.27**	.46**	.24**	.03**	.18**
2	32328.676	32659.096	32452.631	.28**	.43**	.22**	.11**	.26**
3	31882.726	32274.147	32029.566	.32**	.48**	.27**	.12**	.29**

Note. 1 = personal predictors model; 2 = environmental predictors model; 3 = multidimensional model; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; adj-BIC = sample-size adjusted Bayesian Information Criterion.

** $p < .01$.

Table 3

Multidimensional Models: Correlations Between Personal and Environmental Predictors

Variable	1	2	3	4	5
Maternal relationships model					
1. Extraversion	1				
2. Neuroticism	-.126**	1			
3. Peer relationships	.295**	-.129**	1		
4. Maternal care	.095**	-.114**	.190**	1	
5. Maternal overprotection	-.116**	.115**	-.157**	-.433**	1
Paternal relationships model					
1. Extraversion	1				
2. Neuroticism	-.126**	1			
3. Peer relationships	.295**	-.129**	1		
4. Paternal care	.135**	-.138**	.224**	1	
5. Paternal overprotection	-.141**	.161**	-.134**	-.345**	1

Note. ** $p < .01$.

Table 4

Multidimensional Model with Maternal Relationships: Direct and Indirect Effects on PPF Dimensions

Variable	Satisfaction with life	Mastery	Vigor	Social interest	Social cheerfulness
Direct effects					
Extraversion	.10**	.22**	.16**	.12**	.20**
Neuroticism	-.20**	-.12**	-.20**	.07*	-
Self-esteem	.27**	.41**	.23**	-	.11**
Peer relationships	.17**	.14**	.11**	.30**	.35**
Maternal care	.12**	.05*	.08**	.12**	.10**
Maternal overprotection	-	-.05*	-	-	-
Indirect effects mediated by self-esteem					
Extraversion	.09**	.14**	.08**	-	.04**
Neuroticism	-.06**	-.10**	-.05**	-	-.03**
Peer relationships	.05**	.08**	.04**	-	.02**
Maternal care	.03**	.05**	.03**	-	.01**
Maternal overprotection	-.03**	-.05**	-.03**	-	-.01*

Note. Only significant beta coefficients are reported in this table.

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

Table 5

Multidimensional Model with Paternal Relationships: Direct and Indirect Effects on PPF Dimensions

Variable	Satisfaction with life	Mastery	Vigour	Social interest	Social cheerfulness
Direct effects					
Extraversion	.091**	.214**	.152**	.112**	.190**
Neuroticism	-.195**	-.124**	-.198**	.068*	-.054*
Self-esteem	.284**	.428**	.226**	-	.130**
Peer relationships	.167**	.145**	.103**	.310**	.345**
Paternal care	.139**	-	.101**	-	.087**
Paternal overprotection	-	-	-	.082*	.098**
Indirect effects mediated by self-esteem					
Extraversion	.098**	.147**	.077**	-	.045**
Neuroticism	-.066**	-.100**	-.053**	-	-.030**
Peer relationships	.055**	.084**	.044**	-	.025**
Paternal care	.019*	.028*	.015*	-	.009*
Paternal overprotection	-.037**	-.057**	-.030**	-	-.017**

Note. In table are reported only significant beta coefficients.

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

Figure 1. Description of the Models Tested

Fig. 1a: Multidimensional Predictors Model

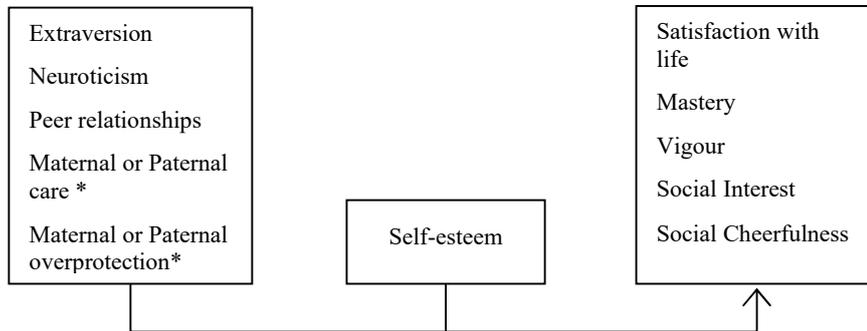


Fig. 1b: Personal Predictors Model

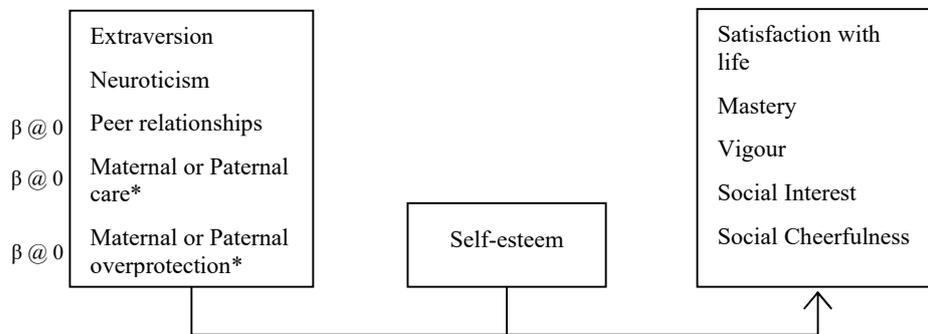
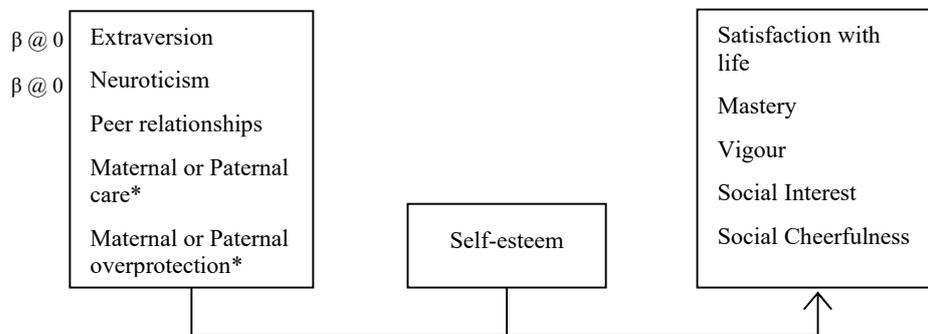


Fig. 1c: Environmental Predictors Model



Note. $\beta @ 0$ = beta effect on self-esteem and PPF dimensions fixed at zero. We have included correlations between all the independent variables in our models.

*Maternal and Paternal bonding have been examined in two different and separate set of models