It Takes Two to Tango:

How Parents' and Adolescents' Personalities Link to the Quality of Their Mutual Relationship

Jaap J. A. Denissen[1], Marcel A. G. van Aken[2], & Judith S. Dubas[2]

[1]Humboldt-University Berlin
[2]Utrecht University

Abstract

According to Belsky's (1984) process model of parenting, both adolescents' and parents' personality should exert a significant impact on the quality of their mutual relationship. Using multi-informant, symmetric data on the Big Five personality traits and relationship quality of mothers, fathers, and two adolescent children, the current study set out to test this prediction. Adolescents' agreeableness and parents' extraversion emerged as predictors of relationship warmth, whereas parents' openness emerged as a predictor of low restrictive control. In addition, some gender-specific effects emerged. Overall, parents' and adolescents' traits equally predicted the amount of relationship warmth, whereas adolescents' unique personality more strongly predicted the amount of restrictive control. The predictive power of adolescents' personality increased with age. Personality characteristics that affected relationship quality were partly shared between parents and their adolescent children. Findings support Belsky's (1984) notion that both parents' and children's personality predict the quality of their mutual relationship, though the relative predictive power of children and parents depends on the type of outcome variable and the age of the children.

Word count: 170

Keywords: Personality, temperament, parent-child relationship quality, adolescence

According to Belsky and Barends (2002), until the past two decades there was relatively little research into the association between parents' personality and their caregiving behavior. Recently, however, the number of studies has been steadily increasing. Although a great deal of work has examined social contextual influences on parent-child relationships (PCRs, for an overview, see Belsky, 1984) little is known about the characteristics of parents and adolescents that contribute to the quality of their mutual relationship. In the current paper, we address this lacuna by addressing 4 research questions: 1) which personality characteristics of adolescents and their parents are associated with PCR quality?, 2) is the association between PCR quality and adolescents' and parents' personality characteristics moderated by adolescents' and parent's gender?, 3) is the association between adolescents' personality characteristics and PCR quality moderated by their age?, and 4) what is the relative contribution of adolescents' and parents' personality on PCR quality across different adolescent age groups?

The notion of *parent-child relationship quality* is related to the concept of *parenting*, though in the current paper, we prefer the former term because it is symmetrical, whereas the term parenting is unidirectional in nature and already implies a causal primacy on the part of the parents. We distinguish between two classic dimensions of PCR quality (Maccoby & Martin, 1983). *Warmth* refers to the amount of affectionate care that is expressed between parents and children. *Restrictive control* is a dimension that relates to relationships in which members of a dyad try to constrain each other's behavior and goal achievement. In the following, we review empirical evidence and theoretical arguments how both dimensions of PCR quality are related to parents' and children's personality characteristics.

In general terms, the quality of all dyadic relationships is influenced by the personalities of the relationship partners plus their corresponding interaction history (Asendorpf, 2002). This truism should also apply to relationships between parents and adolescents, which are a specific type of dyadic relationship (Maccoby, 1992). According to Belsky's (1984) process model of parenting, parental functioning is determined by three sources: Factors within the child, factors within the parent, and the social context in which the parent-child relationship occurs. Accordingly, models of dyadic relationships in general and child-parent relationships in particular predict that the individual characteristics of both parents and adolescents should affect the quality of their mutual relationship.

Regarding the measurement of parents' personality characteristics, investigators have typically studied the effects of one or two isolated personality variables (e.g., locus of control, self-esteem), leading to a relatively fragmented picture (Belsky & Barends, 2002). Belsky and

Barends (2002) argue that the Five Factor Model (FFM) offers an overarching measurement framework to integrate findings regarding the association between parents' personality and PCR quality, since it is able to map most known personality dimensions onto five broad dimensions: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. Regarding the measurement of children's personality, developmentalists have often focused on a single evaluative dimension called "difficult temperament" (in the literature, individual differences between children are often referred to as temperament instead of personality). However, recent evidence demonstrates that the FFM can also be used to describe adolescents' personality (Kohnstamm, Halverson, Mervielde, & Havill, 1998; Shiner, 1998). Furthermore, at least in adolescence, adolescents are able to rate themselves in terms of the FFM dimensions (Scholte, van Aken, & van Lieshout, 1997).

Associations Between Personality Traits and the Quality of Parent-Child Relationship

For our first research question, we ask how the Big Five personality traits of adolescents and their parents are related to the quality of the PCR. In the paragraphs that follow, we review plausible conceptualizations of the Big Five traits as well as conceptual arguments and empirical evidence regarding the association between each of the Big Five traits and PCR quality, and follow with a set of hypotheses for the current study.

Extraversion

The trait of extraversion has been conceptualized as individual differences in reward sensitivity (Lucas, Diener, Grob, Suh, & Shao, 2000), though it is unclear whether these differences pertain to rewards in general or only to social incentives (Ashton, Lee, & Paunonen, 2002). Extraversion has also been associated with higher levels of positive affect (Watson & Pennebaker, 1989). As such, extraversion can be expected to be associated with more positive relationships between parents and children. Consistent with this prediction, Belsky and Barends (2002) reviewed the association between parents' personality and PCR quality and found that parents' extraversion is related to more sensitive and responsive PCRs. Metsapelto and Pulkkinen (2003) studied 172 Finnish parents of 3-21 old children and found that parental extraversion was positively associated with parental nurturance. Children's extraversion has also been linked with more positive PCR quality. For example, in a study of 637 Chinese adolescents**,** Zhong-Hui, Hui-Lan, and Jian-Xin (2006) found that extraversion, was associated with their perceptions of parental warmth and understanding. Accordingly, we predict that parents' and children's extraversion is positively associated with PCR quality, though we note that the empirical basis for this prediction is much firmer for parents.

Agreeableness

Agreeableness has been conceptualized as individual differences in the coordination (vs. opposition) of joint interests (van Lieshout, 2000), leading to more harmonious relationships. In addition, agreeable individuals should be more likely to "give in" during conflict situations by either abstaining from efforts to control other people's behavior or rebelling against rules and regulations. Accordingly, it can be expected that this factor is associated with lower levels of PCR conflict and higher levels of PCR warmth. Empirical findings are consistent with this prediction. Regarding parents' agreeableness, Belsky and Barends (2002) found that agreeableness is related to sensitive and responsive PCRs. Regarding children's agreeableness, Zhong-Hui et al. (2006) found that agreeableness was associated with adolescents' perceptions of higher parental warmth and understanding, and less paternal punishment and maternal refusal. In the US, O'Connor and Dvorak (2001) studied a large community sample of adolescents and found that in boys, agreeableness was associated with less parental harshness, whereas in girls, agreeableness was associated with increased levels of maternal support and parental monitoring, and reduced levels of maternal harshness. Prinzie et al. (2004) studied the relationships between Dutch mothers and fathers and their 8-year-olds and found children's agreeableness was associated with low levels of parental overcontrol and maternal coercion.

In the same sample used in the current study, Branje, van Lieshout, and van Aken (2004, 2005) investigated associations between FFM factors and support in family relationships (perceptions of restrictive control were not analyzed) and found that parents' and adolescents' agreeableness was the most consistent predictor of perceived support in terms of actor effects (i.e., persons who perceive others as agreeableness also perceive others as supportive), partner effects (i.e., persons who are seen by others as agreeable are also seen by others as supportive), and interpersonal effects (i.e., persons who describe themselves as agreeable have partners who see them as supportive). Branje et al. (2004, 2005) studied bivariate associations between support and personality and did not assess the unique predictive power of individual FFM factors. Furthermore, they only focused on PCR ratings by single individuals, which did not allow for a straightforward comparison of parents' and children's ability to predict dyadic PCR quality. Based on their findings and those of the other studies we predict that both parent and adolescent agreeableness will be positively related to PCR quality.

Conscientiousness

Conscientious has been conceptualized as individual differences in the executive regulation of goal-related performance (van Lieshout, 2000). Individual high in conscientiousness have a tendency to be organized and planful. Accordingly, it can be

expected that conscientious adolescents, who are better able at regulating their own behavior, evoke lower levels of restrictive control by their parents. Empirical evidence is consistent with this prediction. For example, Zhong-Hui et al. (2006) found that adolescents' conscientiousness is associated with their perceptions of parental warmth and understanding. O'Connor and Dvorak (2001) found that in boys, conscientiousness was associated with higher levels of paternal support, paternal reasoning, and parental monitoring, whereas in girls, this factor was associated with reduced paternal control and increased parental consistency. Regarding parents' conscientiousness, it is less clear why this factor should influence PCR quality because parents already have a high level of control over their own lives and are less regulated by family rules. Although scattered evidence does suggest that parental conscientiousness is associated with higher-quality PCR (Belsky & Barends, 2002), the number of studies targeting this variable is too small to inform strong hypotheses.

Emotional stability

Emotional stability (inversely called neuroticism) is a personality trait that has been conceptualized as individual differences in negative affect and stress reactivity (Matthews, 2004). This can partly explain the association between depression and low emotional stability. However, it should be noted that while emotional stability may tap into normal individual differences in depressive affect, it cannot be automatically equated with the pathological syndrome of depression. Finally, a low level of emotional stability has been linked to negative response tendencies in filling out questionnaires (Watson & Pennebaker, 1989). In parents, Belsky and Barends (2002) reviewed extensive evidence that depressive mood (associated with low emotional stability) is related to less competent caregiving (though see Prinzie et al., 2004). In addition, Metsapelto and Pulkkinen (2003) found that parents' emotional stability was positively associated with parental nurturance and knowledge about the child's activities. Accordingly, we hypothesize that parents' emotional stability is positively associated with PCR quality. By comparison, much less is known about the association between children's emotional stability and PCR quality, although O'Connor and Dvorak (2001, Table 1) found a positive association between emotional stability and maternal support in girls. Accordingly, we only predict that that parents' emotional stability is associated with higher PCR quality.

Openness to experience

Finally, openness to experience is a factor that refers to the complexity of an individual's mental life and has been conceptualized as involving a high level of cognitive activity, indicated by having a broad, deep, and permeable consciousness (McCrae & Costa, 1997). High levels of this factor have also been linked to liberal political views and a tendency

to defy conventions (McCrae, 1996b), which may invoke higher levels of parental control when present in children. Scattered evidence suggests that it is associated with higher-quality PCR in parents. For example, Metsapelto and Pulkkinen (2003) found that openness to experience was positively associated with parental nurturance and negatively associated with self-reported levels of restrictiveness. However, because of the small number of empirical studies that have looked at associations between openness and PCR quality, we refrained from postulating hypotheses for this factor.

Gender Differences in the Association Between Personality and the Quality of the Parent-Child Relationship

In our second research question, we first ask whether there are differences between fathers and mothers in the association between their personality characteristics and PCR quality. According to social role theorists (Eagly, 1987; Eagly & Crowley, 1986; Eagly & Johannesen-Schmidt, 2001), women are expected to act in a nurturing, caring fashion, whereas men are expected to take on more agentic roles. Maccoby (1990) has studied the way in which these differences arise during socialization because men and women have different relationship goals: Whereas women are more focused on positive reciprocity (getting along), men are more focused on negative reciprocity (getting ahead). Accordingly, men typically develop a more constrictive, dominant style, whereas women develop a more enabling, communal style. Accordingly, it is possible that the influence of agentic traits, such as conscientiousness (McCrae, 1996a), is less positive in women then in men, whereas the reverse could be true for communal traits such as agreeableness. Unfortunately, the bulk of the empirical research on this issue is limited to mothers (Belsky & Barends, 2002; Putnam, Sanson, & Rothbart, 2002), which seriously limits our ability to draw conclusions about the determinants of fathering. However, scattered results from those studies that did investigate both parents (e.g., Prinzie et al., 2004) indicate that patterns may not generalize across gender.

The second part of this question concerned the gender of the child. A review of corresponding research found that parents seem to be somewhat more accepting of irritable, unregulated behavior in boys than in girls, though some studies have also found the opposite pattern (Putnam et al., 2002). This may be because of the above-described differences in relationship styles, with girls being expected to behave in a more compliant way so as not to disturb the social harmony. Because most of this research is based on younger children, however, existing data could not be used to inform hypotheses for this research question.

Age Differences in the Association Between Children's Personality and the Quality of the Parent-Child Relationship

In our third research question, we investigate whether the predictive power of adolescents' personality on PCR quality varies with adolescents' age. According to Belsky and Barends (2002), most studies focus on the association between PCR quality and personality characteristics of parents with very young children. As pointed out by Putnam et al. (2002), the relationship between parents and very young children is characterized by a high degree of asymmetry: Young infants react primarily to momentary states, whereas parents can exert a much more active influence on the interaction. In addition, childhood temperament is characterized by a lower level of stability at young ages (Roberts & DelVecchio, 2000), making it more difficult to have an impact on relationship quality (Asendorpf & van Aken, 2003). Accordingly, research focusing only on relationships between parents and younger children may underestimate the relative impact of children's personality on PCR quality.

A case in point is provided by Mulsow, Caldera, Pursley, Reifman, and Huston (2002), who studied the effect of difficult child temperament and positive maternal personality on parenting stress. When the children were only one month old, the effect size of parental personality was .42 against .19 for child temperament. When the children were three years of age, however, the relative pattern had changed markedly, with an effect size of .29 for the children and .25 for the mothers. We therefore expect the predictive power of children's personality characteristics in our sample of adolescents to be stronger than the predictive power thus far found in early childhood studies.

The predictive power of adolescent personality characteristics on PCR might be stronger because of the changes in developmental tasks during this period. Parent-child relationships during adolescence can be characterized by the children moving towards more autonomy and less closeness and interdependence (Collins & Steinberg, 2006). Because adolescents can thus be expected to become increasingly agentic in making life decisions that may conflict with their parents' expectations, we hypothesize that the predictive power of the children's personality characteristics on the parent-child relationship increases during adolescence.

Relative Strength of Children's and Parents' Personality to Predict Differences in the Quality of Their Relationship

Thus far, we have reviewed evidence that both children's and parents' personality predict the quality of the parent-child relationship. In our final research question, we investigate the relative predictive power of both determinants. There has long been a debate about the degree to which parents are able to influence their children or merely react to their offspring's characteristics (e.g., Vandell, 2000). For a long time, many socialization

researchers assumed that parents exert a much stronger influence on their children than vice versa. However, Anderson, Lytton, and Romney (1986) used an experimental design to show that mothers become more coercive when interacting with conduct-disordered boys (aged 6 to 11 years), thus reinforcing the position that parenting behaviors at least partly reflect parents' reactions to the characteristics of their children (for detailed discussions, see Kerr & Stattin, 2003; Vandell, 2000). In the current study, we are able to extend this research by quantifying the relative amount of predictive power of parents' and children's personality in explaining differences in PCR quality. Moreover, by studying the moderating role of gender and age, the current study has the potential of adding some additional nuances to this long-standing debate.

From a clinical point of view, it is also of interest to know the relative predictive power of parents and children on the quality of the PCR given the importance of the parent-child relationship for child development (Holden, 1997) and parents' well-being (van Aken, Denissen, Branje, Dubas, & Goossens, 2006). If interventions want to target the quality of the parenting context, it becomes important to know what the most important factors are that affect it. For example, associations between personality and parenting outcomes have been found to be mediated by more malleable variables like emotion, stress, and cognition (Belsky & Barends, 2002), and those mediator variables could be targeted by interventions that would be most effective if they are focused on the individuals with the greatest influence on PCR quality. In addition, concerted efforts could be directed at discovering moderator variables that may attenuate the impact of personality on problematic relational outcomes in those individuals (e.g., if emotionally unstable individuals have poorer-quality relationships because of a tendency to experience and act out feelings of anger, this link could be separated by teaching them anger-management skills).

Belsky's (1984) process model of parenting predicts that parents' personality has a greater impact on the parent-child relationship than children's personality, since "parents must continue to be nurturant and firm even in response to frustrating child behavior" (p. 422). In addition, Belsky (1984) parents' personality may be more important than children's temperament because parents with greater psychological resources cannot only be expected to provide more effective childcare, but should also be better able to muster effective social support networks, which constitute another important determinant of parenting. Because this model was primarily inspired by research with young children, studies focusing on adolescent children may add to a more developmentally complete picture of the relative effects of parent and child personality on PCR quality.

Children and parents may resemble each other's personality characteristics because they mimic each other and share a substantial portion of their genes that affect temperament (Goldsmith, Lemery, Buss, & Campos, 1999). Because of this, it can be expected that PCR quality is influenced by personality traits that are shared between parents and children. Conventional cross-sectional designs focusing on either a single parent or a single child fail to take this similarity into account and may thus produce spurious correlations between PCR quality and either parents' or children's personality characteristics. This is avoided by focusing on the joint association between PCR quality and parents' and children's personality characteristics, which was done in the current study. In addition, this design allows for a direct estimate of the predictive power of personality characteristics that are shared between parents and their children.

In sum, we expect that both parents' and adolescents' personality characteristics predict the quality of the PCR. In addition, because of the existence of personality similarity between parents and children (based on either shared genes or mimicry), we expect that a substantial portion of explained variance in PCR quality cannot be explained uniquely by either parents or children. We refrain from postulating a greater predictive power of parent characteristics, however, because evidence supporting the Belsky (1984) model is primarily based on younger children and may not generalize to relationships with adolescents.

The Present Study

To summarize, the current paper addresses four research questions. First, we ask how the Big Five personality traits adolescents and their parents are related to the quality of the PCR and predict that parents' level of extraversion, agreeableness, and emotional stability, and adolescents' level of extraversion, agreeableness and conscientiousness, are related to positive features of the PCR. Second, we ask whether there are gender differences in the associations between personality and PCR quality. Third, we ask whether there are age differences in the association between adolescents' personality and the quality of the PCR and predict that this association is stronger for earlier-born adolescents. Finally, we ask what the relative predictive power of parents' and adolescents' characteristics is and predict significant predictive power of parents' and offspring's unique personality characteristics, as well as characteristics that are shared between the two.

To be able to draw strong conclusions about the association between PCR quality and adolescents' and parents' personality, the current study employed a number of sophisticated design features. First, we used a multi-informant design, using data from mothers, fathers, and two adolescent children from Dutch families. In addition, our design allows a comparison of

effects between mothers and fathers, sons and daughters, and later- and earlier-born adolescents. Because we focused on adolescent children, we had the unique opportunity to study the relative predictive power of adolescents' and parents' personality during a period of the life span where children begin to make more agentic life choices that may also influence their relationships with others. Also, our design is completely symmetrical, with identical instruments to assess personality and relationship quality in both adolescents and parents. Finally, our methodology allowed us to base these assessments on different observers (see below), thus eliminating individual-specific response biases as an alternative explanation for results.

Method

Sample

The participants were 287 Dutch two-parent families with two adolescent children. Participants were recruited for a larger study, the Family and Personality Research Project (Haselager & van Aken, 1999). A representative selection of 23 municipalities throughout the Netherlands provided lists of families with two adolescents between 11 and 16 years old. After a mailing announcing the study, interviewers called families by phone and invited them to participate, to which 50% of the contacted families agreed. Frequent reasons for not wanting to participate were that the family was not interested in the topic of the study, or a family member did not want to cooperate. The large majority of respondents were of Dutch origin. In 4% of the families parents reported that they were not born in the Netherlands (compared to 9% of the general Dutch population; CIA, 2006). Two parents and two adolescents from each family participated in the study. The two adolescents were distinguished as the earlier- and the later-born adolescent. Concerning birth order, in 224 families (79%) the earlier-born adolescent who participated in the study was actually the oldest child in the nuclear family. Furthermore, in 219 families (77%) the later-born adolescent had only one older sibling. At the beginning of the first measurement wave, the average ages for the fathers and mothers were 43.9 and 41.7 years (ranging from 34.0 to 56.1 and 34.0 to 51.2), respectively. The earlier-born adolescents (144 boys, 144 girls) were 14.5 years of age on average (ranging from 11.4 to 16.0); the later-born adolescents (136 boys, 152 girls) were 12.4 years of age on average (ranging from 11.0 to 14.8).

Procedure

Families were followed over a period of 3 years, with yearly measurement waves. In each measurement wave, trained interviewers visited the families at home and asked the mother, the father, and each of the two target adolescents to fill out the RSI and the Big Five

scales. The presence of the interviewer encouraged complete responding and prevented discussions regarding individual items or the topics in the questionnaires among the family members during completion of the questionnaires. Both adolescents in the family were given a CD gift certificate after completion of the questionnaires. As an additional incentive to participate, a lottery was organized in which 10 families could win a travel voucher of about €900 ($1150).

Measures

PCR quality was assessed with the Relational Support Inventory (RSI; Scholte, van Lieshout, & van Aken, 2001), a self-report questionnaire tapping into the perceived relational support and quality of the overall relationship with significant others. Participants were asked to rate the 27 items on a five-point Likert-scale, ranging from (1) "very untrue for this person" to (5) "very true for this person". The following 9 scales were assessed: *Emotional support* (e.g., "This person shows that he/she loves me"), *Hostility* (e.g., "This person ridicules and humiliates me"), *Respect for Autonomy* (e.g., "This person lets me decide as often as possible"), *Setting Limits* (e.g., "This person takes decisions that I would like to take myself"), *Quality of Information* (e.g., "This person explains or shows how I can make or do something"), *Withholding of Information* (e.g., "This person does not explain why he/she wants me to do or not to do something"), *Convergence of Central Goals* (reverse coded, e.g., "This person criticizes my opinions about religion, philosophy of life, or social engagement"), *Convergence of Peripheral Goals* (reverse coded, e.g., "This person and I have the same opinions about use of drugs, alcohol, or gambling"), and *Acceptance* (e.g., "This person accepts me as I am").

Previous factor analysis of RSI responses carried out within the same dataset (van Tuijl, Branje, Dubas, Vermulst, & van Aken, 2005) resulted in two clearly interpretable factors that are consistent with previous research (Maccoby & Martin, 1983), with the first factor Warmth consisting of Quality of Information, Warmth, Acceptance, and Respect for Autonomy, and the second factor Restrictive Control consisting of Setting Limits, Convergence of Central Goals, and Convergence of Peripheral Goals. Based on these results, we created separate scales of Warmth and Restrictive Control, with average internal consistencies (Cronbach's alpha using scale scores as items) of .82 and .76 (range .79-.85 and .71-.84), respectively (the Hostility and Withholding of Information scales were characterized by high loadings on both factors and were not considered further).

The *Big Five* traits of Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness were assessed with a Dutch adaptation (Gerris et al., 1998) of 30

adjective Big Five personality markers selected from Goldberg (1992). Sample items include "talkative", "reserved" (reverse coded) for Extraversion; "sympathetic", "kind" for Agreeableness; "careful", "organized" for Conscientiousness; "anxious" (reverse coded), "nervous" (reverse coded) for Emotional Stability; and "imaginative", "creative" for Openness to Experience. Family members judged their own personalities and the personalities of the other three participating family members. The participants used a 7-point Likert scale ranging from (1) "very untrue of this person" to (7) "very true of this person". The internal consistencies for the different dimensions of personality ranged from .81 to .92 for ratings by fathers, from .76 to .93 for ratings by mothers, from .68 to .90 for ratings by earlier-born adolescents, and from .63 to .87 for ratings by later-born adolescents.

Data Aggregation

To test whether it was possible to aggregate PCR quality ratings across dyadic partners, we calculated correlations between parents and adolescents. In all but one cases (between fathers' and youngest adolescents' ratings of restrictive control), correlations were significant, with an average value of .23 (range .05 - .32). This level of agreement is not uncommon in research using dyadic designs (e.g., Neyer & Voigt, 2004) because relationship perceptions are often subjective, with each dyadic partner perceiving the relationship in part from an idiosyncratic perspective. However, the significant correlations between raters indicates there is a common core of agreement (captured by the dyadic mean), which is why we aggregated relationship ratings across both relationship partners.

To avoid overlapping rating bias with the PCR ratings, we tested whether it was possible to base the personality assessments on the ratings of the non-involved parent-child pair. For example, if the focus was on the relationship between the mother and the later-born child, we calculated the interrater agreement between the father and the earlier-born child. Results indicated that all correlations were significant except in one case (between father and earlier-born child regarding mother's agreeableness), with an average of .35 (range .07 - .59). This figure is similar to the average agreement of .37 between self and parental personality ratings reported by Funder, Kolar, and Blackman (1995) and points to a common core of agreement regarding dyad members' personality. Accordingly, we aggregated all personality assessments across the non-involved parent-child rating pairs. This means that the quality of the parent-child relationship was rated by a different pair of individuals than the personality variables, ruling out individual-specific response biases as an explanation for the current results.

Analysis Strategy

Because of the nested structure of the data, we ran a series of multilevel models (see the appendix for the corresponding equations). To address Research Questions 1-3, we tested models that specified families as the highest-level unit (Level III), in which dyads (i.e., within-family; Level II) and up to 3 measurement occasions (i.e., within-dyad type; Level I) were nested. The inclusion of this latter level was preferred over analyzing each measurement occasion separately in order to a) disentangle age and birth-order effects, b) reduce measurement error by aggregation, and c) reduce the number of significance tests. To address Research Question 1, we tried to predict PCR quality by child and parent Big Five personality characteristics. Additional predictors included parents' and adolescents' gender (dummy-coded 0 if male and 1 if female), adolescents' birth order (dummy-coded 0 if later-born and 1 if earlier-born), and adolescents' age at each of the three measurement occasions (because age differed between the two adolescents within each family, the main effect of age does not tap into a kind of mean-level change that would normally be captured by a growth model slope). We did not include quadratic age effects because of power constraints (3 measurement occasions is the absolute minimum to test such effects) and because we did not hypothesize their existence. Initially, interactions between adolescents' age and birth order were also tested, but these were not statistically significant and were therefore dropped from the models. To address Research Question 2 we included interactions between parents' and adolescents' personality and their gender. To address Research Question 3, we included interactions between adolescents' personality and their age while at the same time controlling for interactions between adolescents' personality and their birth-order (to unconfound the two).

All effects were specified as fixed and all continuous variables were standardized before running the analyses, so associations between them can be interpreted as standardized regression weights. By comparison, associations between PCR quality and dummy variables can be interpreted in an additive way, adding a fixed effect to either the overall mean (in the case of the main effects) or the overall slope of parents' and children's personality (in the case of the moderator effects). For example, if a slope is .15 for fathers and the moderating effect of parental (female) gender is -.20, then the slope for mothers becomes .15 - .20 = -.05. On all levels of analysis, random error terms were inserted into the model. These error terms indicate the variance between measurement points (Level I), dyads (Level II), and families (Level III) that is not explained by the predictors of the corresponding model.

To address Research Question 4, we compared the amount of variance predicted by parents' and children's personality traits across age. Specifically, a series of two-level models

(dyads nested within families) was tested separately for thirteen year olds, fourteen year olds, and fifteen year olds. At these ages, models were based on both siblings in the great majority of families (albeit at different measurement waves), whereas including younger and/or older ages would result in samples of only later-born and/or earlier-born individuals, respectively. A first set of (intercept-only models) models included only random error terms between dyads (Level I) and families (Level II). In a second set of models, personality characteristics were added as (fixed) predictors. The corresponding reduction of between-dyad variance in PCR quality can be treated as an index of explained variance (i.e., akin to R^2; Murray, Griffin, Rose, & Bellavia, 2003). By varying the composition of predictor blocks, it is possible to compare the relative predictive power of adolescents' and parents' personality as a whole (i.e., even if the effects are not specific to any particular FFM factor). Specifically, by subtracting the R^2 of a model including only children's characteristics from the R^2 of a model including both children's and parents' characteristics, an estimate of the unique contribution (i.e., the ΔR^2) of parents' characteristics is obtained. By the same token, the portion of predictive validity that cannot be uniquely explained by either predictor blocks can be interpreted as associated with personality characteristics that are shared between parents and offspring.

<div align="center">Results</div>

Descriptive Statistics and Correlations Between Aggregated Measures

Before running the multilevel models in which independent and dependent variables are based on different observers, we calculated descriptive statistics and intercorrelations for all variables based on a single observer. For this purpose, we aggregated the personality and parenting outcomes across waves and relationships. As can be seen in Table 1, levels of warmth exceeded levels of control. In addition, the variability of children's control ratings was somewhat inflated when compared to their ratings of warmth, which may have attenuated some of the associations between children's personality and warmth. We also conducted a Levene test of the homogeneity of variance in PCR quality and personality between sons and daughters. Despite some small to moderate differences in mean-level (e.g., higher agreeableness and conscientiousness reported by daughters, higher restrictive control reported by sons), the variance only differed significantly in the case of extraversion rated by later-born children.

Table 1 also shows the correlations between single observers' personality and PCR quality ratings. As can be seen, positive correlations ($\geq .20$) emerged between parent-rated warmth and parental extraversion, agreeableness, and openness, and between child-rated warmth and agreeableness, conscientiousness, and openness. Negative correlations ($\geq .20$)

were found between parent-rated restrictive control and agreeableness and emotional stability, and between child-rated restrictive control and agreeableness and conscientiousness.

Multiple Regression Analyses

Results from the multilevel regression analyses are presented in three separate tables. Table 2 displays the standardized regression coefficients indicating the association between demographic variables and PCR quality (controlling for parents' and adolescents' personality). As can be seen, the only significant effect was that relationships with daughters were characterized by less restrictive control.

In Table 3, coefficients indicating the association between parents' personality traits and PCR quality (controlling for demographic variables and adolescents' personality) are displayed. In this table, the "parent intercept" refers to the effect of fathers' personality, with the corresponding gender moderator ("x mother") indicating whether these coefficients are different for mothers. As can be seen, parental extraversion was associated with higher levels of PCR warmth. In addition, parental openness was associated with lower levels of restrictive control. In both cases, the nonsignificant moderator effect of parental gender indicates that the effects did not differ between mothers and fathers. Finally, there was a significant moderator effect of gender on the association between conscientiousness and warmth. Whereas the intercept indicating the effect of fathers' personality was significant and positive (.06), mothers were characterized by a significantly more negative association (.06 + -.15 = -.09).

Finally, Table 4 displays the effect of adolescents' personality characteristics, controlling for the effect of demographic variables and parents' personality characteristics. As can be seen, adolescent's agreeableness was positively associated with more PCR warmth. In addition, the significant moderator effect of age indicates that this association was stronger in older (vs. younger) children. In addition, two gender-specific effects on PCR warmth emerged. First, gender moderated the association between conscientiousness and warmth, indicating that the corresponding association was only positive in girls. Second, the link between openness and warmth was significantly moderated by gender, indicating that this factor was negatively (though not significantly) associated with warmth in sons (-.06, $p = .13$) but not in daughters (.02).

With regard to children's personality effects on restrictive control, a significantly positive relationship was found for openness. However, this main effect was qualified by significant interactions with gender, birth-order, and age. Specifically, the intercept indicated that this factor was associated with more restrictive control (.08;). The way the variables in the current study were coded, this positive association refers to the personality traits of later-born

sons of average age. The interaction effects indicated that this association was significantly less positive in earlier-born children and daughters. In fact, when adding the interaction effect to the main effect, the effect of openness was close to zero in both cases (-.03 and .00, respectively). In addition, the effect of openness was qualified by a significantly positive interaction with age, indicating the positive association between openness and restrictive control was more pronounced in older children. A similar "deepening" of personality effects with increasing age was also found for two other factors: Whereas the intercept for extraversion and conscientiousness indicated that these factors were not yet associated with restrictive control at average ages (though a marginally significantly negative effect was found for conscientiousness), the significant interaction effects indicated that the associations became increasingly negative when children grew older.

Variance Partitioning

Research Question 4 addressed the relative contribution of adolescents' and parents' (overall) personality on PCR quality across different adolescent age groups. Tables 1-3 only report unique associations between single personality traits and PCR quality. This represents a very strict test of the associations between personality and PCR quality, as all coefficients are controlled for 1) all other traits of the focal person, and 2) all traits of the dyadic partner. As a result, the regression weights likely underestimate the predictive power of single personality traits because non-specific effects (i.e., shared between two or more traits) and effects that are shared between dyadic partners are ignored in the outcome of a regression analysis. This likely explains the relatively small effect sizes in Tables 2-4 when compared to Table 1. In addition, these coefficients do not allow for a comparison of the total variance in PCR quality explained by unique child, unique parent, and shared child-parent characteristics as a block. For this reason, a variance partitioning was carried out.

Table 5 displays the random variance between dyads when no personality predictors are included (intercept-only model) vs. the variance after adding a regression block of adolescents' personality characteristics, a block of parents' personality characteristics, and a block with both adolescents' and parents' characteristics included as predictors. The comparison of these figures indicates how much of between-dyad differences in PCR quality can be explained by the personality characteristics of both dyadic partners. In addition, Table 5 displays the reduction in random (residual) between-dyad variance after including the different predictor blocks. As stated above, the relative decrease in random variance after inserting each of these three sets of predictors allows a partitioning of the relative predictive power of each. For example, among thirteen year olds, adding child and parent personality characteristics was

associated with a 21% reduction in random variance around the intercept, whereas adding only child or parent personality was associated with reductions of 15% and 11%, respectively. Accordingly, child characteristics uniquely accounted for 21% - 11% = 10% of the variance, whereas parent characteristics uniquely accounted for 21% - 15% = 6% of the variance, leaving 21% - 10% - 6% = 5% accounted for by factors that are shared between parents and children.

Figures 1 and 2 display the absolute explained variance in warmth and restrictive control for the age groups 13, 14, and 15 year olds. Even though we are not aware of the existence of formal statistical procedures to test differences between the percentage of explained variance of different (non-nested) multilevel models, the results suggest some interesting patterns. For warmth, parents and adolescents explained roughly equal amounts of variance, though for 14 and 15 year olds, the largest bulk of the variance was explained by factors that are shared by parents and their offspring. For restrictive control, by comparison, personality factors that are unique to the adolescent child explained the largest amount of variance, especially for 14-year-old adolescents (unfortunately, we were unable to test the statistical significance of this seemingly quadratic trend). In contrast, parents' personality factors explained relatively little unique variance in this PCR dimension.

Discussion

The current study featured a multi-informant design using fathers', mothers', and adolescent siblings' symmetrical assessments of Big Five personality traits as well as parent-child relationship quality. Our first research question focused on the association between PCR quality and adolescents' and parents' Big Five traits. Parents' extraversion was found to be positively associated with PCR warmth. This is consistent with previous research (Belsky & Barends, 2002; Metsapelto & Pulkkinen, 2003) and with notions of this trait as tapping into individual differences in positive emotionality. In addition, parental openness was negatively associated with restrictive control. Although we did not hypothesize this effect, it replicates a finding by Metsapelto and Pulkkinen (2003) and is consistent with scattered evidence indicating a positive association between this trait and PCR quality (Belsky & Barends, 2002). This may reflect the fact that low openness is associated with authoritarian family attitudes calling for "a hierarchical structure in which parents command and children obey" (McCrae, 1996b, p. 329).

Disconfirming our hypotheses, parents' emotional stability was not associated with higher PCR quality. This may be due to the fact that emotional stability is associated with individual response tendencies (Watson & Pennebaker, 1989), which may account for previous findings of a positive association between this factor and PCR quality (Belsky & Barends,

2002). In the current study, such spurious associations were precluded by employing different observers for independent and dependent variables. In addition, much of the available evidence cited by Belsky and Barends (2002) has looked at associations between PCR quality and depressed affect, which is a correlate of low emotional stability but may also be a qualitatively different symptom of clinical depression.

The lack of association for parents' agreeableness may be due to the fact that, as previous analyses of the current dataset have shown, there is a substantial degree of family resemblance in this factor (Branje, van Aken, van Lieshout, & Mathijssen, 2003), so that associations between parents' agreeableness levels may be spurious with regard to the confounding effect of adolescents' agreeableness level on PCR warmth (see below). This illustrates the need to take into account multiple observers and family members in assessing the association between PCR quality and parents' personality traits.

With regards to the predictive power of adolescents´ personality traits, we hypothesized that agreeableness and conscientiousness would be associated with higher PCR quality. In line with our prediction based on the notion that agreeableness is involved in individual differences in the tendency to respond cooperatively (vs. selfishly) in resource conflicts, adolescents' agreeableness emerged as a strong predictor of PCR warmth. Similar associations were also reported by O'Connor and Dvorak (2001), Zhong-Hui et al. (2006) and (based on the current dataset) Branje et al. (2004, 2005). Adolescents' conscientiousness, on the other hand, was only marginally significantly related to lower levels of restrictive control, which only partially supports our hypothesis based on the notion that this trait is involved in individual differences in self-regulation (Caspi, 1998). It should be noted, however, that the strength of the association between this personality factor and PCR quality increased with age (see below), supporting the idea that older children, who are increasingly able to regulate their own behavior, face less restrictive control by their parents.

Our second research question concerned the moderator role of gender on the association between personality and PCR quality. The fruitfulness of this gender-sensitive approach was highlighted by the fact that for fathers, conscientiousness was positively associated with warmth, whereas this association was negative for mothers. According to social role theorists, women are expected to act in a communal, nurturing way, whereas men are expected to behave in an agentic way (Eagly, 1987; Eagly & Crowley, 1986; Eagly & Johannesen-Schmidt, 2001). This may be one reason why the effect of an agentic trait like conscientiousness was positive in fathers but negative in mothers.

Adolescents' gender had a number of main and moderating effects on PCR quality. First of all, relationships with daughters were characterized by a lower degree of restrictive control, which is inconsistent with meta-analytic findings (Lytton & Romney, 1991) that there is no gender difference in the amount of parental restrictiveness between boys and girls. One factor contributing to this inconsistency could be that these meta-analytic estimates are mostly based on pre-adolescent children (< 13 years), whereas the current study included adolescents.

Adolescent gender also moderated the effects of a number of personality traits on PCR quality. For example, for daughters, a positive association was found between daughters' conscientiousness and PCR warmth, an effect opposite from the one found for mothers' conscientiousness and warmth. Because low levels of conscientiousness are associated with less adequate behavior regulation during childhood and adolescence (Shiner & Caspi, 2003), this resembles scattered findings of lower parental acceptance of difficult, unregulated behavior in girls than in boys (Putnam et al., 2002). This may reflect a change in the lifespan correlates of conscientiousness, with this trait being associated with the suppression of one's own impulses to comply with adults' expectations in childhood (more consistent with the female stereotype), whereas it may be more related to the agentic pursuit of one's goals in adulthood (more consistent with the male stereotype).

Finally, gender moderated the association between adolescents' openness and PCR warmth. Specially, for sons, the openness was negatively (though not significantly) associated with warmth, whereas the association was significantly more positive for daughters. This effect was paralleled by a positive association between openness and restrictive control for sons (i.e., a detrimental effect) but not for daughters. Perhaps a higher level of curiosity and exploration is welcomed by parents in girls, whereas in boys, such possible positive reactions by parents may be counteracted by concerns about acting out this curiosity by getting involved in externalizing behaviors (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999).

Our third research question concerned the existence of age effects on the association between adolescents' personality and PCR quality. Consistent with our prediction that this association would increase with age, a significant interaction between agreeableness and age predicting PCR warmth indicated that the positive role of agreeableness becomes stronger with age. Perhaps because children are able to behave in an increasingly autonomous manner, their willingness to compromise and find consensus solutions in conflicts with parents becomes increasingly important in determining PCR.

For restrictive control, evidence for an increasing predictive power of adolescents' personality characteristics was even stronger than for warmth. When adolescent personality

was studied as a block, results suggest that its unique predictive power increased with age. Consistent with this, the (marginally significantly) negative association between conscientiousness and restrictive control became stronger with age. This may be because more conscientious individuals (vs. less conscientious individuals) are more adept at self-regulation, which is required to deal with increasing expectations to act more autonomously (Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). If adolescents' levels of self-regulation do not match these expectations, parents may react by exerting more restrictive control.

Another personality factor that is increasingly negatively associated with restrictive control is extraversion. This may be due to the fact that extraversion is positively associated with social skills (Gurtman, 1999). As adolescents grow older and relationships with parents become more symmetrical, it can be expected that children's social skills play an increasingly important role in negotiating rules and expectations, decreasing the need for mutually restrictive behaviors.

Finally, adolescents' openness was associated with increased levels of restrictive control for older children, even when controlling for the fact that the association between openness and restrictive control was less negative for earlier-born children. This effect may be due to the fact that open individuals like to experiment more with rules and conventions (McCrae, 1996b), which may prompt parents to be more controlling in order to avoid missteps of their children. It should be noted, however, that the positive association between openness and restrictive control was limited to sons (see above).

Our final research question focused on a comparison of the portion of uniquely explained variance of adolescents' and parents' personality traits as a block. Based on general models of dyadic relationships in general (Asendorpf, 2002), and parent-child relationships in particular (Belsky, 1984), we predicted that both parents and adolescents would be substantially associated with the quality of their mutual relationship. Results confirmed this pattern in demonstrating substantial associations between PCR quality and both adolescents' and parents' personality. Thus, it can be concluded that differences in PCR quality are not only driven by parents' characteristics, but also by individual differences of their children.

With regard to the relative predictive power of parents' and children's personalities, Belsky (1984) predicted that parents have a greater influence on PCR quality because they exert both direct and indirect effects. In addition, the relationships between parents and their children is initially characterized by asymmetry, with parents having both greater opportunities and responsibilities to make rules and influence their children's life situations. In contrast, a relative parity between the size of adolescents' and parents' predictive power was found when

the warmth of the parent-child relationship was the outcome variable, with personality characteristics that are shared between parents and children (e.g., because they share a part of their genes or because they mimic each other) being the largest source of explained variance.

When the focus was on restrictive control, regression analyses showed that a higher percentage of the predictive variance can be explained by adolescents' personality, as opposed to parents' personality. When averaged across all three ages, uniquely adolescent factors explained no less than 12% of the variance in PCR control, compared to "only" 3% for uniquely parent factors and 5% for characteristics that are shared between parents and their offspring. The relative superiority of adolescents' personality in predicting patterns of restrictive control between parents and adolescents is interesting from a theoretical standpoint. One possibility is that "difficult" adolescents somehow evoke high levels of parental restriction (Anderson et al., 1986; Deater-Deckard, 1996). This is reminiscent of developmental theories of conduct problems, which regard adolescents as active agents in evoking coercive reactions from their parents (Patterson, 1982). Similarly, Kerr and Stattin (e.g., 2000), demonstrated that differences in parents' knowledge of their adolescent children are mainly driven by children's spontaneous disclosures rather than parents' supervision and surveillance efforts.

Strengths of the Current Study

The design of the current study has a number of important strengths, allowing for relatively strong conclusions regarding the association between personality and PCR quality. We used different informants to assess personality and PCR quality, so individual-specific differences in scale anchoring or cognitive dissonance processes cannot explain our results. In addition, because we could control for the personality of the parents when assessing the unique predictive power of adolescents' personality (and vice versa), the current design was able to quantify the effect of shared personality factors that may be genetically inherited from parents to offspring, though they could also be passed on by mimicry. Furthermore, the current sample included both mothers and fathers, as well as well as adolescents of varying ages, which allowed for a more complete picture of the determinants of the PCR, compared with many other studies focusing only on mothers and/or very young children.

Limitations of the Current Study

In spite of these strengths, at least three limitations of the current study are worth mentioning. First, agreement between raters of personality and PCR quality (though statistically significant) was far from perfect. Accordingly, it would have been better to include assessments by additional raters in order to achieve more reliable indicators of personality characteristics and PCR quality. It must be noted, however, that the typical (Dutch) nuclear

family consists of two parents and two children, so it would be very difficult to collect ratings by a large number of people with equally privileged access to behaviors that can inform valid personality impressions.

A second limitation concerns the fact that we carried out our study in the Netherlands, a highly affluent, industrialized society with a relatively individualistic culture. Research with culturally diverse samples is needed, especially when studying the moderating effects of age and gender on the association between personality and PCR quality. Regarding the former factor, we have hypothesized that society expects adolescents to act increasingly autonomous with age, but these expectations may not be widely shared in collectivistic cultures, which place a higher value on conformity (Bond & Smith, 1996). Similarly, not all cultures may expect women to act in a nurturing way, and men to act in an agentic way, and within western cultures, such gender-specific expectations are under societal pressure to change (Kite, 2001).

Finally, it should be noted that we opted for statistical models that cannot distinguish within-dyad (time-varying) from between-dyad (stable individual difference) effects. This means that significant effects of a Big Five factor could indicate that a) within-dyad changes in PCR quality are associated with corresponding timely fluctuations in personality, or b) that stable personality traits are associated with stable dyadic differences in PCR quality. The same is true for age effects, though we did control for stable "age" differences by including birth order as a predictor of PCR quality. Future studies should investigate whether our conclusions regarding the correlates of the Big Five are equally valid for state and trait measures of these personality factors.

Future directions

We suggest at least two directions for future research on the association between parents' and children's personality traits and PCR quality. First, more research is needed to better understand the mediating processes that link individual differences in personality to dyadic differences in PCR quality. For example, Belsky, Crnic, and Woodworth (1995) demonstrated that parent's mood and levels of stress mediate the association between personality traits and their parental behavior (see also Belsky & Barends, 2002, for a review). In addition, Patterson's (1982) model of coercive parenting specifies a detailed sequence of transactional processes between parents and adolescents that links difficult adolescents' initial ignoring of parental requests to increasingly hostile but ineffective patterns of parental control. Cross-lagged longitudinal designs that focus on changes within families may be the method of choice to investigate such questions.

Second, more research is needed that investigates possible moderators of the association between personality and PCR quality. One interesting possibility would be to study the moderating role of parents' personality on the association between their children's personality and PCR quality (and vice versa). For example, Clark, Kochanska, and Ready (2000) found that only mothers who are low in perspective taking and high on extraversion adopt a power-assertive style with children who are high in negative emotionality, whereas highly empathic and introverted mothers did not. Similar interactions may be found between parents' and children's Big Five factors. It would also be interesting to study 3-way interactions between personality and parents' and their children's gender (i.e., to study mothers-daughter, mother-son, father-daughter, and father-son differences). In the present paper, we did not look at such interactions because we did not want to inflate the already large number of statistical analyses. In addition, results would have been difficult to interpret given that most of the literature on Big Five has focused on main effects.

<div align="center">Conclusion</div>

Although there is a relative paucity of studies that study the ability of personality to predict the quality of relationships between parents and their adolescent children (Belsky & Barends, 2002; Putnam et al., 2002), studies that compare the unique predictive power of these sources are even rarer. This is unfortunate, because many important determinants of relationship quality are likely shared between children and parents (e.g., due to genes, family climate), so focusing on either parents or children may lead to biased conclusions. The present findings demonstrate that the relative contribution of adolescent children's and their parents' personality depends on the outcome variable that is being studied, with a relatively equal contribution in the prediction of warmth and a larger contribution of adolescent children in the prediction of restrictive control. In terms of intervention, this implies that clinicians who want to alter overcontrolling patterns of interaction between parents and their adolescent children should not only look at the parents' contribution, but should also focus on the impact of the children. To fully understand the complex determinants of parent-child relationship quality, however, more research is needed that compares the dynamic of parent-child relationships across different age periods.

References

Anderson, K. E., Lytton, H., & Romney, D. M. (1986). Mothers' interactions with normal and conduct-disordered boys: Who affects whom? *Developmental Psychology, 22*, 604-609.

Asendorpf, J. B. (2002). Personality effects on personal relationships over the life span. In A. L. Vangelisti, H. T. Reis & M. A. Fitzpatrick (Eds.), *Stability and change in relationships* (pp. 35–56). Cambridge: Cambridge University Press.

Ashton, M. C., Lee, K., & Paunonen, S. V. (2002). What is the central feature of extraversion?: Social attention versus reward sensitivity. *Journal of Personality and Social Psychology, 83*, 245-251.

Belsky, J. (1984). The determinants of parenting: A Process model. *Child Development, 55*, 83-96.

Belsky, J., & Barends, N. (2002). Personality and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting* (pp. 415-438). Mahwah: Lawrence Erlbaum Associates Inc.

Belsky, J., Crnic, K., & Woodworth, S. (1995). Personality and parenting: Exploring the mediating role of transient mood and daily hassles. *Journal of Personality, 63*, 905-929.

Bond, R., & Smith, P. B. (1996). Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin, 119*, 111-137.

Branje, S. J. T., van Aken, M. A. G., van Lieshout, C. F. M., & Mathijssen, J. J. J. P. (2003). Personality judgments in adolescents' families: The perceiver, the target, their relationship, and the family. *Journal of Personality, 71*, 49-81.

Branje, S. J. T., van Lieshout, C. F. M., & van Aken, M. A. G. (2004). Relations between Big Five personality characteristics and perceived support in adolescents' families. *Journal of Personality and Social Psychology, 86*, 615-628.

Branje, S. J. T., van Lieshout, C. F. M., & van Aken, M. A. G. (2005). Relations between Agreeableness and perceived support in family relationships: Why nice people are not always supportive. *International Journal of Behavioral Development, 29*, 120-128.

Caspi, A. (1998). Personality development across the life course. In W. Damon & N. Eisenberg (Eds.), *Handbook of Child Psychology: Social, emotional, and personality development* (pp. 311-388). New York.: Wiley.

CIA. (2006). World fact book. Retrieved 26 April, 2006, from http://www.cia.gov/cia/publications/factbook/

Clark, L. A., Kochanska, G., & Ready, R. (2000). Mothers' personality and its interaction with child temperament as predictors of parenting behavior. *Journal of Personality and Social Psychology, 79*, 274-285.

Collins, W. A., & Steinberg, L. (2006). Adolescent development in interpersonal context. In N. Eisenberg, W. Damon & R. Lerner (Eds.), *Handbook of child psychology: Vol. 3, Social, emotional and personality development* (pp. 1003-1067). Hoboken: John Wiley & Sons.

Deater-Deckard, K. (1996). Within family variability in parental negativity and control. *Journal of Applied Developmental Psychology, 17*, 407-422.

Eagly, A. H. (1987). *Sex differences in social behavior: A social-role interpretation*. Hillsdale: Erlbaum.

Eagly, A. H., & Crowley, M. (1986). Gender and helping behavior: A meta-analytic review of the social psychological literature. *Psychological Bulletin, 100*, 283-306.

Eagly, A. H., & Johannesen-Schmidt, Mary C. (2001). The leadership styles of women and men. *Journal of Social Issues, 57*, 781-797.

Funder, D. C., Kolar, D. C., & Blackman, M. C. (1995). Agreement among judges of personality: Interpersonal relations, similarity, and acquaintanceship. *Journal of Personality and Social Psychology, 69*, 656-672.

Gerris, J. R. M., Houtmans, M. J. M., Kwaaitaal-Roosen, E. M. G., Schipper, J. C., Vermulst, A. A., & Janssens, J. M. A. M. (1998). *Parents, adolescents, and young adults in Dutch*

families: A longitudinal study. Nijmegen: Institute of Family Studies, University of Nijmegen.

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4*, 26-42.

Goldsmith, H. H., Lemery, K. S., Buss, K. A., & Campos, J. J. (1999). Genetic analyses of focal aspects of infant temperament. *Developmental Psychology, 35*, 972-985.

Gurtman, M. B. (1999). Social competence: An interpersonal analysis and reformulation. *European Journal of Psychological Assessment, 15*, 233-245.

Haselager, G. J. T., & van Aken, M. A. G. (1999). *Family and personality: First measurement wave*. Nijmegen: University of Nijmegen, Faculty of Social Sciences.

Holden, G. W. (1997). *Parents and the dynamics of child rearing*. Boulder: Westview Press.

Kerr, M., & Stattin, H. (2000). What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology, 36*, 366-380.

Kerr, M., & Stattin, H. (2003). Parenting of adolescents: Action or reaction? In A. C. Crouter & A. Booth (Eds.), *Children's influence on family dynamics: The neglected side of family relationships.* (pp. 121-151). Mahwah: Lawrence Erlbaum.

Kite, M. E. (2001). Changing times, changing gender roles: Who do we want women and men to be? In R. K. Unger (Ed.), *Handbook of the Psychology of Women and Gender* (pp. 215-227). New York: Wiley.

Kohnstamm, G. A., Halverson, C. F. J., Mervielde, I., & Havill, V. (1998). *Parental descriptions of child psychology: Developmental antecedents of the Big Five? .* Mahwah: Erlbaum.

Leadbeater, B. J., Kuperminc, G. P., Blatt, S. J., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology, 35*, 1268-1282.

Lucas, R. E., Diener, E., Grob, A., Suh, E. M., & Shao, L. (2000). Cross-cultural evidence for the fundamental features of extraversion. *Journal of Personality and Social Psychology, 79*, 452-468.

Lytton, H., & Romney, D. (1991). Parents' differential socialization of boys and girls: A meta-analysis. *Psychological Bulletin, 109*, 267-296.

Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist, 45*, 513-520.

Maccoby, E. E. (1992). The role of parents in the socialization of children: An historical overview. *Developmental Psychology, 28*, 106-117.

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parent-child interaction. In P. H. Mussen (Ed.), *Handbook of child psychology* (pp. 1-101). New York: John Wiley & Sons.

Matthews, G. (2004). Neuroticism from the top down: Psychophysiology and negative emotionality. In R. M. Stelmack (Ed.), *On the psychobiology of personality: Essays in honor of Marvin Zuckerman* (pp. 249-266). New York: Elsevier Science.

McCrae, R. R. (1996a). Integrating the levels of personality. *Psychological Inquiry, 7*, 353-356.

McCrae, R. R. (1996b). Social consequences of experiential openness. *Psychological Bulletin, 120*, 323-337.

Metsapelto, R.-L., & Pulkkinen, L. (2003). Personality traits and parenting: Neuroticism, extraversion, and openness to experience as discriminative factors. *European Journal of Personality, 17*, 59-78.

Murray, S. L., Griffin, D. W., Rose, P., & Bellavia, G. M. (2003). Calibrating the sociometer: The relational contingencies of self-esteem. *Journal of Personality and Social Psychology, 85*, 63-84.

Neyer, F. J., & Voigt, D. (2004). Personality and social network effects on romantic relationships: A dyadic approach. *European Journal of Personality, 18*, 279-299.

O'Connor, B. P., & Dvorak, T. (2001). Conditional associations between parental behavior and adolescent problems: A search for personality-environment interactions. *Journal of Research in Personality, 35*, 1-26.

Patterson, G. R. (1982). *Coercive family process.* Eugene: Castalia.

Porter, C. L., Hart, C. H., Yang, C., Robinson, C. C., Olsen, S. F., Zeng, Q., et al. (2005). A comparative study of child temperament and parenting in Beijing, China and the western United States. *International Journal of Behavioral Development, 29*, 541-551.

Prinzie, P., Onghena, P., Hellinckx, W., Grietens, H., Ghesquiere, P., & Colpin, H. (2004). Parent and child personality characteristics as predictors of negative discipline and externalizing problem behaviour in children. *European Journal of Personality, 18*, 73-102.

Putnam, S. P., Sanson, A. V., & Rothbart, M. K. (2002). Child temperament and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting* (pp. 255–277). Mahwah: Lawrence Erlbaum Associates Inc.

Scholte, R. H. J., van Aken, M. A. G., & van Lieshout, C. F. M. (1997). Adolescent personality factors in self-ratings and peer nominations and their prediction of peer acceptance and peer rejection. *Journal of Personality Assessment, 69*, 534–554.

Scholte, R. H. J., van Lieshout, C. F. M., & van Aken, M. A. G. (2001). Perceived relational support in adolescence: Dimensions, configurations, and adolescent adjustment. *Journal of Research on Adolescence, 11*, 71–94.

Shiner, R. L. (1998). How shall we speak of children's personalities in middle childhood? A preliminary taxonomy. *Psychological Bulletin, 124*, 308-332.

Shiner, R. L., & Caspi, A. (2003). Personality differences in childhood and adolescence: measurement, development, and consequences. *Journal of Child Psychology and Psychiatry, 44* 2–32.

Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbusch, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 65*, 754-770.

van Aken, M. A. G., Denissen, J. J. A., Branje, S. J. T., Dubas, J. S., & Goossens, L. (2006). Midlife concerns and short-term personality change in middle adulthood. *European Journal of Personality, 20*, 497–513.

van Lieshout, C. F. M. (2000). Lifespan personality development: Self-organising goal-oriented agents and developmental outcome. *International Journal of Behavioral Development, 24*, 276-288.

van Tuijl, C., Branje, S. J. T., Dubas, J. S., Vermulst, A. A., & van Aken, M. A. G. (2005). Parent-offspring similarity in personality and adolescents problem behaviour. *European Journal of Personality, 19*, 51-68.

Vandell, D. L. (2000). Parents, peer groups, and other socializing influences. *Developmental Psychology, 36*, 699-710.

Watson, D., & Pennebaker, J. W. (1989). Health complaints, stress, and distress: Exploring the central role of negative affectivity. *Psychological Review, 96*, 234-254.

Zhong-Hui, W., Hui-Lan, L., & Jian-Xin, Z. (2006). The relationship between parental rearing and adolescent personality traits. *Chinese Journal of Clinical Psychology, 14*, 315-317.

Tables

Table 1

Descriptive Statistics and Within-Rater Correlations Between Aggregated Measures of Personality and PCR Quality

	Mothers				Fathers				Earlier-Borns				Later-Borns			
	r(W)	*r*(R)	*M*	*SD*	*r*(W)	*r*(R)	*M*	*SD*	*r*(W)	*r*(R)	*M*	*SD*	*r*(W)	*r*(R)	*M*	*SD*
E	.25	-.12	4.78	1.14	.23	-.18	4.54	1.12	.18	.04	4.84	1.04	.27	-.21	5.09	0.90
A	.36	-.23	5.68	0.51	.30	-.20	5.53	0.56	.43	-.32	5.55	0.57	.44	-.29	5.48	0.59
C	.24	-.13	5.18	0.97	.16	-.12	5.07	0.93	.26	-.47	4.44	1.09	.24	-.25	4.25	1.03
S	.19	-.20	4.21	0.97	.08	-.23	4.67	0.97	.16	-.16	4.36	0.86	.19	-.24	4.53	0.82
O	.30	-.05	4.55	1.00	.25	-.06	4.83	0.92	.20	.06	4.93	0.80	.27	-.11	4.90	0.74
W		-.50	3.86	0.37		-.45	3.84	0.38		-.57	4.13	0.43		-.44	4.17	0.39
R			1.95	0.36			2.01	0.37			2.39	0.58			2.26	0.52

Note. E = Extraversion, A = Agreeableness, C = Conscientiousness, S = Emotional Stability, O = Openness to Experience, W = Warmth, R = Restrictive Control. Big Five self-ratings were aggregated across waves, PCR quality ratings were aggregated across waves and relationships. Correlations are statistically significant if $r \geq .12$ ($N = 287$)

Table 2

Multilevel Regression Coefficients and Confidence Intervals of Main Effects of Demographic Variables on Parent-Child Relationship Quality

	Warmth		Control	
	B	*CI*	*β*	*CI*
Child gender [a]	-.01	(-.10-.08)	-.10*	(-.19--.01)
Child birth order	.00	(-.09-.09)	.00	(-.09-.08)
Child age	-.02	(-.06-.02)	.00	(-.03-.04)
Parent gender [a]	.02	(-.06-.09)	.02	(-.05-.09)

Note: Results were controlled for the association between PCR quality and adolescent and parent personality.

* *p* < .05

[a] Dummy-coded 0 = male, 1 = female

Table 3

Multilevel Regression Coefficients and Confidence Intervals of Main Effects and Moderated Effects of Parent Personality on Parent-Child Relationship Quality

| | Warmth | | | | Restrictive Control | | | |
| | Parent intercept | | x mother | | Parent intercept | | x mother | |
	β	CI	β	CI	β	CI	β	CI
Extraversion	.06*	(.01-.12)	-.02	(-.10-.06)	-.02	(-.07-.03)	.03	(-.05-.11)
Agreeableness	-.03	(-.09-.02)	.07	(.00-.15)	.03	(-.02-.09)	-.07	(-.14-.01)
Conscientiousness	.06*	(.01-.11)	-.15**	(-.23--.07)	.00	(-.05-.05)	-.01	(-.09-.07)
Stability	.01	(-.05-.07)	.06	(-.02-.13)	.03	(-.03-.09)	-.06	(-.13-.02)
Openness	.05	(-.01-.10)	-.05	(-.13-.03)	-.06*	(-.11-.00)	.02	(-.06-.10)

Note. Intercept = Personality of fathers.

* *p* < .05

Table 4

Multilevel Regression Coefficients and Confidence Intervals of Main Effects and Moderated Effects of Child Personality on Parent-Child Relationship Quality

	Child intercept		x earlier-born		x daughter		x child age	
	B	*CI*	*β*	*CI*	*β*	*CI*	*β*	*CI*
Warmth								
Extraversion	.04	(-.03-.11)	-.09	(-.18-.01)	-.01	(-.09-.06)	.02	(-.02-.06)
Agreeableness	.13**	(.06-.21)	-.09	(-.18-.00)	-.04	(-.11-.04)	.05*	(.01-.09)
Conscientiousness	.01	(-.06-.08)	.07	(-.02-.16)	.08*	(.01-.16)	.00	(-.03-.04)
Emotional stability	.00	(-.07-.07)	.07	(-.02-.16)	-.06	(-.13-.01)	-.03	(-.06-.01)
Openness	-.06	(-.13-.02)	-.01	(-.10-.08)	.08*	(.00-.15)	.02	(-.02-.06)
Restrictive Control								
Extraversion	-.01	(-.08-.05)	.08	(-.01-.17)	.07	(-.01-.14)	-.05*	(-.09--.01)
Agreeableness	-.05	(-.12-.03)	.04	(-.05-.13)	-.04	(-.11-.04)	-.03	(-.07-.01)
Conscientiousness	-.07	(-.14-.00)	.00	(-.10-.09)	.00	(-.08-.07)	-.04*	(-.08--.01)
Emotional stability	-.03	(-.10-.04)	-.02	(-.11-.06)	.06	(-.01-.13)	.01	(-.02-.05)
Openness	.08*	(.01-.16)	-.11*	(-.20--.02)	-.08*	(-.15-.00)	.04*	(.00-.08)

Note. Intercept = Personality of later-born sons of average age.

* *p* < .05

Table 5

Partitioning of Variance Percentage Explained by Parents' and Adolescents' Personality in Parent-Child Relationship Quality Across Age Groups

	Age 13				Age 14				Age 15			
	Var	Se	-%	VP	Var	se	-%	VP	Var	se	-%	VP
WA												
Intercept only	.52	.06			.47	.06			.69	.08		
Parent + adolescent	.41	.06	21	5	.35	.06	25	14	.50	.07	27	15
Adolescent	.44	.06	15	10	.37	.06	22	8	.54	.07	23	7
Parent	.47	.06	11	6	.41	.06	18	4	.59	.07	20	5
RC												
Intercept only	.54	.06			.42	.06			.60	.07		
Parent + adolescent	.46	.06	14	3	.33	.06	23	4	.47	.07	22	8
Adolescent	.49	.06	09	7	.33	.05	22	18	.49	.07	19	12
Parent	.50	.06	07	5	.41	.06	05	1	.55	.07	10	3

Note. All random effects were statistically significant. Var = Random between-dyad variance; -% = reduction in random between-dyad variance after adding predictors (compared to the intercept-only model). Sample sizes (Level 1/Level 2) were 704/279, 748/267, and 670/275 for age 13, 14, and 15, respectively. Var = Variance; se = Standard error; -% = Variance reduction (in percentage) when compared to intercept only model; VP = Variance partitioning (in percentage). Due to rounding, the sum of the VP columns may not correspond perfectly to the variance reduction (-%) after including parent + adolescent predictors. Figure Captions

Figure Captions

Figure 1. Partitioning of the percentage of total variance in PCR warmth that can be uniquely explained by children's personality (C), parents' personality (P), and by shared factors (P+C) for children aged 13, 14, and 15years old.

Figure 2. Partitioning of the percentage of total variance in PCR restrictive control that can be uniquely explained by children's personality (C), parents' personality (P), and by shared factors (P+C) for children aged 13, 14, and 15 years old.
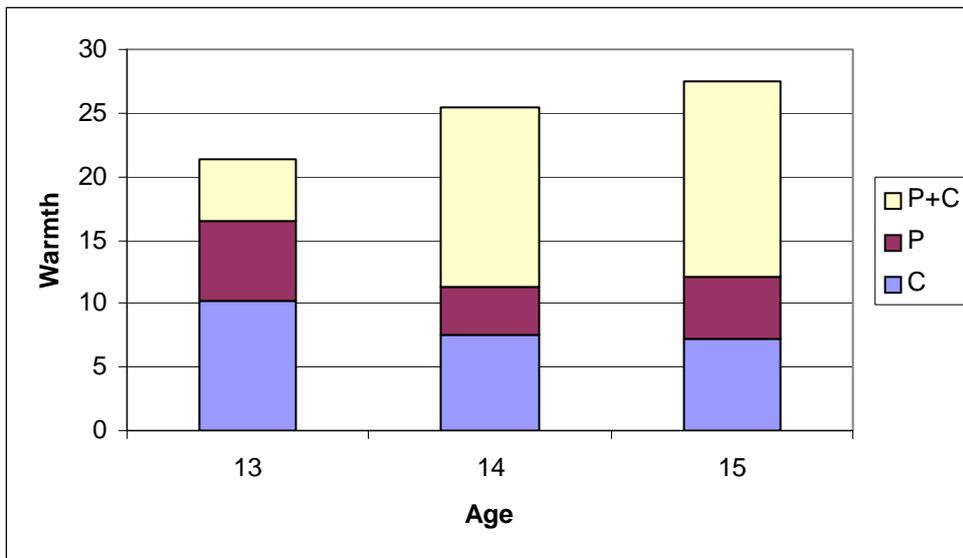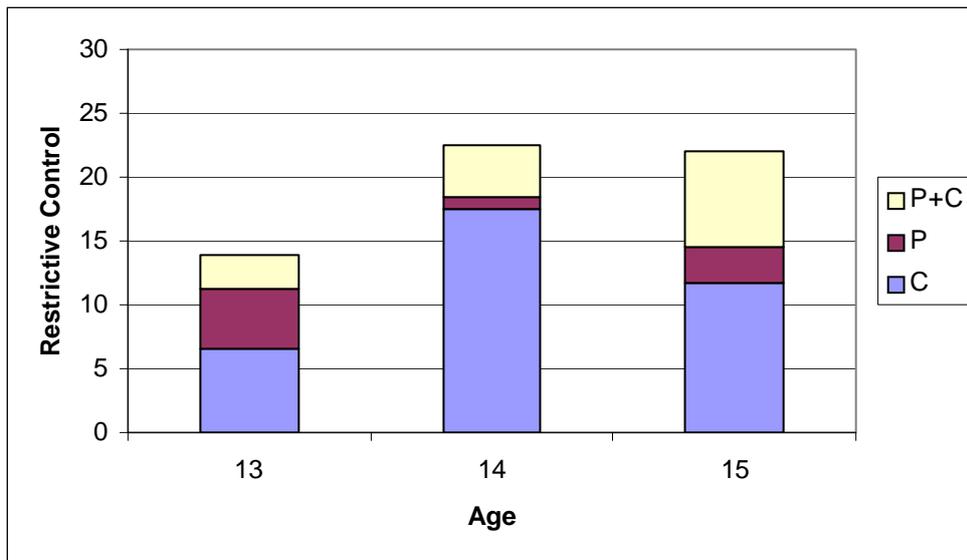
Figure 1

Figure 2

Appendix

To address Research Questions 1-3, the following model was tested on all data (Equation 1):

$PCR_{ijk} = \beta_{0jk} + u_{0jk} + u_{00k} + r_{ijk}$

$\beta_{1jk}(c\_fem) + \beta_{2jk}(c\_earlier) + \beta_{3ijk}(zc\_age) + \beta_{4jk}(p\_fem) +$	(Table 2)
$\beta_{5ijk}(zp\_e) + \beta_{6ijk}(zp\_e*p\_fem) +$	(Table 3)
$\beta_{7ijk}(zc\_e) + \beta_{8ijk}(zc\_e*c\_earlier) + \beta_{9ijk}(zc\_e*c\_fem) + \beta_{10ijk}(zc\_e*zc\_age)$	(Table 4)

Where PCR = Parent-child relationship quality (i.e., warmth or restrictive control), i = measurement point, j = dyad, k = family, c_ = pertaining to adolescent children, p_ = pertaining to parents, β_{0jk} = PCR intercept, u_{0jk} = random between-dyad variation, u_{00k} = random between-family variation, r_{ijk} = residual variance, c_earlier = children's birth order (0 = later-born, 1 = earlier-born), c/p_fem = gender (0 = male, 1 = female), zc_age = children's age (standardized), zc/p_e = extraversion (standardized), β_1 - β_{10} = fixed effects of demographics, personality, and demographics x personality interactions. To simplify presentation, only extraversion is included as a factor in the model; the actual models also included the other 4 Big Five factors.

To address Research Question 2, the following model was tested on separate samples of children aged 13, 14, or 15 (Equation 2):

$PCR_{jk} = \beta_{0k} + u_{0k} + r_{jk}$	(Intercept-only)
$\beta_{1k}(p\_fem) + \beta_{2k}(zp\_e) + \beta_{3k}(zp\_e*p\_fem)$	(Parents)
$B_{4k}(c\_fem) + \beta_{5k}(zc\_e) + \beta_{6k}(zc\_e*c\_fem)$	(Children)

Where PCR = Parent-child relationship quality (i.e., warmth or restrictive control), j = dyad, k = family, c_ = pertaining to adolescent children, p_ = pertaining to parents, β_{0k} = PCR intercept, u_{0k} = random between-family variation, r_{jk} = residual variance, c/p_fem = gender (0 = male, 1 = female), zc/p_e = extraversion (standardized), $\beta_1 - \beta_6$ = fixed effects of demographics, personality, and demographics x personality interactions. To simplify presentation, only extraversion is included as a factor in the model; the actual models also included the other 4 Big Five factors.