

LONGITUDINAL RELATIONS BETWEEN PARENTING AND CHILD BIG FIVE
PERSONALITY TRAITS

BY

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DISSERTATION

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ABSTRACT

The goal of this research was to examine the relationships between parenting practices and child personality development. There is some lack of consensus on whether and to what extent parenting practices do affect child personality development. For example, social learning and attachment theories assume that parenting practices influence child personality development. Also, a third theory, the psychological resources principle, holds similar assumptions and provides specific predictions about relations between parenting and personality traits. In contrast, some perspectives derived from research in behavior genetics minimize the role of parenting practices on children's personality development. In order to shed some empirical light on these issues, I examined the long-term relations between parenting and child Big Five personality traits through fitting cross-lagged panel models and bivariate latent growth models in two datasets. Unlike previous studies, I used large samples ($N=3850$; $N=674$), examined multiple parenting measures, and used data from multiple raters. Results from cross lagged models showed a preponderance of insignificant relations between parenting and child personality. A different approach to interpreting the results is to focus on the magnitudes of the associations rather than their statistical significance. In this light, I found that the average regression coefficient between parenting and child personality was .04 in both studies. The average regression coefficient between child personality and parenting was .04 in Study 1 and .06 in Study 2. Results from growth models showed decreasing trends in parenting and child personality across time. The growth models also revealed a preponderance of null relations between parenting and child personality, and especially between changes in parenting and changes in child personality. Focusing on the magnitudes of the associations, we found that the average correlation between the initial levels of parenting and child personality was .08 in Study1 and .10 in Study 2. The

average correlation between initial levels of parenting and changes in child personality was .04 in Study 1 and .10 in Study 2. The average correlation between changes in child personality and initial levels of parenting was .04 in both studies. The average correlation between changes in parenting and changes in child personality was .08 in Study 1 and .13 in Study 2. In general, the obtained associations between parenting and child personality were comparable in magnitude to those between factors such as SES, birth order, and child personality—that is, small. The small associations between environmental factors and personality suggest that personality developmental in childhood and adolescence is driven by multiple factors, each of which makes a small contribution.

*This is for you mama and baba
For your immense love and countless sacrifices*

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CHAPTER 1: INTRODUCTION

Personality traits are stable, but also amenable to change (Roberts, Walton, & Viechtbauer, 2006; Roberts, Luo, Briley, Chow, Su, & Hill, 2017). Starting from early childhood, several factors can influence personality development, such as random life events and long-term person-environment transactions (Fraley & Roberts, 2005). Influences on personality extend from family to peers, schools, neighborhoods and cultures. Due to the amount of energy, time, and emotions invested, it is logical to consider parent-child relationships to be central to the development of child personality. Starting from infancy, parents meet the physical, emotional, and social requirements of children. They help them regulate their affect and moral actions. They interact with them socially. They teach, describe, and provide opportunities for children to learn. They organize the child's home and environment. Parents are the most consistent people with whom children spend time. They provide an encompassing ecology for the development of children's personality. Therefore, examining the relation between parenting and child personality is crucial for understanding how children's personalities develop.

Using longitudinal designs to study the relation between parenting and child personality is highly regarded because they provide information above and beyond that provided by cross-sectional designs. Assessing parenting and child personality across years allows us to understand their development trajectories, and whether parenting and child personality trajectories are related to each other. Longitudinal designs are also capable of delineating the bidirectional associations, which are characteristics of the parent-child relationship. Very few studies have employed longitudinal methods to examine relations between parenting and child personality. Yet, the few longitudinal studies that have been conducted were limited in that they only

examined unidirectional influence of parents on children, were inadequately powered, or had a limited choice of parenting dimensions.

Our research aims to further examine the co-development of parenting and child personality traits using two longitudinal studies of adolescents. Our focus on adolescence is important because it is a period characterized by significant changes such as tendency toward autonomy, and diminishing time spent with parents compared to peers (Galambos, & Costigan, 2003). We extend past research in important ways. Our studies use sample sizes with adequate statistical power, use multiple parenting dimensions, and use data from multiple informants to avoid common rater bias. We focus on the Big Five personality traits, which are relatively enduring, automatic patterns of thoughts, feelings, and behaviors manifested in specific contexts (Roberts, 2009). The Big Five model is among the most widely used and best established in personality psychology; therefore, it is a useful framework for conducting systematic research. Moreover, the Big Five are used to explore child, adolescent, and adult personality, which facilitates comparisons across developmental spans. Furthermore, we know very little about the factors associated with differential development of the Big Five traits during childhood and adolescence; therefore, using them will help fill a gap in the personality literature. Before describing the method of the studies, we will review literature on parenting assessment, theoretical models of parent-child relationships, statistical models for examining parent-child relationships, and existing literature on parenting and child personality associations.

What is Parenting?

Parenting refers to the process of nurturing and supporting the emotional, social, intellectual, and physical development of a child (Brooks, 2013). It encompasses parental sets of beliefs and behaviors. Parenting beliefs include the perceptions, goals, expectations, attributions,

values, attitudes, and ideas that parents have about parenting and child development, while parenting behaviors comprise the tangible practices that parents direct toward their children (Bornstein, 2001). Parenting beliefs and behaviors are related to each other, such that parenting beliefs tend to create and form parenting behaviors (Bornstein, 2001). In addition to the distinction between parenting beliefs and behaviors, parenting can also be perceived to have affective, behavioral, and cognitive components (Pomerantz & Thompson, 2008).

Generally, researchers are interested in parenting patterns, rather than specific behaviors (Schofield & Atherton, in press). Therefore, it is popular in parenting research to use parenting dimensions that aim to capture broad variations in parenting. Widely used parenting dimensions were identified using factor analytic methods on self-report and observational parenting data (Power, 2013). These dimensions are parental warmth, psychological control, and behavioral control (Pomerantz & Thompson, 2008). Parental warmth refers to parental activities such as showing physical affection, praising, encouraging, and attending to a child. Psychological control refers to the extent to which parents promote or suppress their children's autonomy. Parents with high psychological control are highly critical, directive as they threaten, command, and restrict their children. On the other hand, parents with low psychological control give choices, provide suggestions, and cooperate with their children. Parental behavioral control refers to the extent to which parents provide consistency, organization, and predictability in the child's environment. Parents with high behavioral control provide clear and consistent rules, guidelines, and expectations to their children, while parents with low behavioral control have chaotic rules and routines. It is important to note that it is a common practice in parenting research to interchangeably use these dimensions with overlapping parenting constructs. For example, warmth can be referred to as responsiveness, love, support, or involvement.

Psychological control can be specified as demandingness or support for individuation.

Behavioral control can be named regulation, monitoring, structure, or discipline.

Regarding the methods used to assess parenting, a survey of the literature reveals that researchers use a wide variety of approaches. The most popular method is self-reports about parenting from parents or children. Another popular method is observing parent-child interactions in natural settings such as the child's house. A less common method is using laboratory procedures that afford observation of discrete parent-child interactions. Each method has strengths and weaknesses. The best approach to assessing parenting could be incorporating assessments from different methods as suggested by Schofield and Atherton (in press).

Theoretical Models of Parent-Child Relationships

It was common to think of the parent-child relationship to be solely driven by the parent. After all, parents have more resources, and can exercise unlimited power over their children. However, thinking started to shift in the 1960s when the influence of child characteristics on parenting was acknowledged (e.g., Bell, 1968). Today, it is widely assumed that both parents and children exert influence on each other, and bidirectional models of parent-child relationships largely reflect this assumption. To gain a deep understanding of the relationship between parents and children, literature on both directions of influence will be reviewed.

Influence of Parenting on Child Outcomes

Stimulus-Response Model. No theory exists yet about the influence of parenting on child personality traits specifically. Therefore, we draw from theories in the socialization literature that tackled the effect of parenting on various child outcomes. For example, the stimulus-response model was used to explain how parents contribute to child's habit acquisition. The model, which has roots in Skinnerian learning theory (Skinner, 1966), suggests that children

acquire skills, behaviors, and cognitions through parents reinforcing or punishing their behaviors. If a child does a favorable behavior, parents offer rewards to motivate the child to repeat and eventually internalize it. If the behavior is unfavorable, parents punish the child in hopes that he/she refrains from repeating it. A recent study which built on this model found that giving children rewards were helpful in acquiring healthy eating habits (Cooke, Chambers, Añez, & Wardle, 2011). Interestingly, a meta-analysis found that punishment tends to increase, rather than decrease, child's behavioral problems (Gershoff, 2002). In relation to child's personality traits, it is conceivable that parental rewards may play a role in their development. Children may acquire agreeableness-related behaviors, such as being polite, through rewards offered by parents exerting behavioral control on their children.

Social Learning Theory. Another useful model for understanding the influence of parents on children's characteristics is Social Learning Theory (Bandura 1963; Bandura, 1971), which proposed that children learn behaviors through observation and imitation. Bandura suggested that children tend to observe behaviors, encode them, and imitate them consequently. However, contemporary work on the theory poses that observation and imitation mechanisms are more cognitively complex than initially thought, and they comprise sophisticated analyses of the model's intentions and goals. Interest in Social Learning Theory is still burgeoning as recent studies alluded to the importance of imitation for the child's development. For example, Forman, Aksan, and Kochanska (2004) found that willingness to imitate the mothers predicted child moral development two years later. Moreover, Olineck and Poulin-Dubois (2007) found that children's imitation of others was associated with the development of the theory of mind. In relation to child's Big Five development, observation and imitation can play a role too. A child

may become agreeable as a result of observing and imitating agreeableness-related behaviors of his/her warm parents.

Attachment Theory. Attachment Theory (Bowlby, 1969) proposes that the child's early experiences with parents (or caregivers in general) shape their mental representations of the self and others. If the parents are sensitive and responsive to the child's needs, the child will learn that others are trustworthy, and the world is safe. In contrary, parent's unavailability or insensitive responding will make the child think of others as untrustworthy, and the world as a dangerous place. The theory further proposes that early bonding experiences will have an impact on the individual's behavior, adjustment, and interpersonal relationships later in life (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1980). The proposed associations between parenting and attachment styles were supported through empirical studies. For example, Schimmenti and Bifulco (2013) found that cold and critical parenting predicted anxious-ambivalent attachment styles in adolescents and young adults. In addition, Gallarin and Alonso-Arbiol (2012) found that involved parenting predicted secure attachment styles in adolescents, while coercive parenting predicted negative attachment styles. Although attachment theory is mute on the development of the Big Five personality traits, it can be extrapolated to predict that parental warmth or responsiveness will give rise to positive mental representations about others, which, in turn, will shape the child's agreeableness.

Psychological Resources Principle. Besides the aforementioned models, the Psychological Resources Principle (Pomerantz & Thompson, 2008) provides a more comprehensive framework for understanding parents' effect on children. The principle posits that parents influence children's development through promoting or hindering the growth of their psychological resources. Children's psychological resources are categorized into affective,

behavioral, and cognitive resources. Affective resources refer to the elevated experiences of positive emotions and reduced experiences of negative emotions. Behavioral resources refer to strategies for accomplishing goals, such as dealing with challenges. Cognitive resources refer to the mental representations that the child has about himself/herself, others, and the world. It is assumed that parenting influences child's resources through the corresponding parenting dimension (e.g., behavioral dimension of parenting influence child's behavioral resources) or through other parenting dimensions.

There is evidence that the affective dimension of parenting (e.g., warmth, involvement) is associated with child's emotions, behaviors, and cognitions. Affective parenting predicts child's emotions through transmitting positive or negative affect. For example, Markova and Legerslee (2006) found that maternal affective responsiveness was associated with infant's affective behaviors such as smiling, gazing, and vocalizing. Also, children of depressed mothers, who exhibit unresponsive and still-face behaviors, were less responsive to faces and voices compared to children of nondepressed mothers (Field, Diego, & Hernandez-Reif, 2009). Affective parenting also influences child's behaviors. It was found that maternal sensitivity to child's distress at six months was predictive of child's internalizing behaviors, externalizing behaviors, and positive social behaviors at 24 and 36 months (Leerkes, Blankson, & O'Brien, 2009). Moreover, Davidov and Grusec (2006) found that parental warmth and responsiveness predicted children's prosocial responses and affect regulation. Besides its relations with children's affective and behavioral resources, affective parenting also influences children's cognitive resources. For example, mothers' affect during assisting their children with homework predicted children's mastery orientation and their intrinsic motivation six months later (Pomerantz, Wang, & Ng, 2005).

Regarding the behavioral dimension of parenting, which comprises parental psychological control (vs autonomy support) and behavioral control, there is evidence that it is associated with child's psychological resources. Parental psychological control has a negative effect on child's affect, while parental autonomy supportiveness has positive effects. For example, it was found that parental psychological control was associated with children's depression across different cultures (Kenny-Benson & Pomerantz, 2005; Soenens, Luyckx, Vansteenkiste, Luyten, Duriez, & Goossens, 2008; Soenens, Park, Vansteenkiste, & Mouratidis, 2012). Behavioral aspects of parenting were also associated with child's behavior. For example, parental autonomy support and behavioral control predicted children's enhanced learning strategies such as planning, rehearsal, and monitoring (Wang, Pomerantz, & Chen, 2007). Autonomy control was also predicted better performance of children in challenging tasks (Ng, Kenry-Benson, & Pomerantz, 2004). Furthermore, family routines, which is a proxy for parental behavioral control, was associated with children's culturally acceptable behaviors (Spagnola & Fiese, 2007). On the other hand, family chaos was associated with child's low effortful control, which, in turn, was associated with child problem behaviors (Valiente, Lemery-Chalfant, & Reiser, 2007). In addition to its associations with child's cognitive and behavioral resources, parental autonomy support is linked to children's cognitive resources. As found by Ginsburg and Bronstein (1993), parental autonomy support predicted children's intrinsic motivation toward success. Furthermore, it was argued that children develop a sense of control when parents exert behavioral control as they set clear expectations and guidelines for the children (Skinner, Johnson, & Snyder, 2005).

Besides the affective and behavioral dimensions of parenting, the cognitive dimension of parenting has influence on children's psychological resources as well. Parents beliefs,

expectations, and perceptions of their children influence children's affective, behavioral, and cognitive resources. For example, Pomerantz and Dong (2006) found that mother's perceptions of child's competence were associated with children's affective functioning, such as self-esteem and depressive symptoms. Moreover, it was found that children's drinking behaviors were influenced by their mothers' expectations about their children's drinking through self-fulfilling prophecies (Madon, Guyll, Spoth, & Hilbert, 2003). Furthermore, the psychological functioning of children with negative perceptions of their academic performance was associated with mothers' mastery-orientation (Pomerantz, Ng, & Wang, 2006).

To tie things together, the Psychological Resources Principle posits that parenting impacts children's feelings, behaviors, and thoughts. There is empirical evidence that supports its propositions. While the principle did not make specific predictions about parenting influence on child Big Five personality traits per se, it is reasonable to extrapolate its predictions to them. After all, the Big Five personality traits are enduring automatic patterns of thoughts, feelings, and behaviors that are manifested in specific contexts (Roberts, 2009). It is conceivable that parental warmth would affect child's context specific aspects of extraversion, agreeableness, conscientiousness, and neuroticism. In turn, psychological and behavioral control would influence child's context specific aspects of conscientiousness and neuroticism. Similarly, parental expectations and perceptions would influence child's conscientiousness and neuroticism. Over time, it would be reasonable to hypothesize that changing the specific aspects of each trait would then generalize to the broader domain.

Alternative Point of View. Psychologist Judith Harris proposed a revolutionary theory that challenged traditional views of parental influence on children. In her book "The Nurture Assumption", Harris (2011) downplayed the role of parents in shaping child personality. She

argued that previous studies which found considerable influence of parenting on children were deeply flawed, and that evidence from studies of better quality pointed to little influence of parenting on child personality. She also argued that when similarities exist between parent personality and child personality, they should be attributed to shared genes rather than parenting styles. Also, she noted that parents might influence child's behavior, but only in the parents' presence. In short, Harris warned against considering parents to be all of the child's environment, and emphasized that genes and other environmental factors, such as peer relations, are more influential in shaping child personality than parenting. Based on this perspective, we might expect little or no relation between parenting, changes in parenting, and child personality development.

Influence of Child Characteristics on Parenting

Not only parents influence child's characteristics, but also children influence the parenting they receive. Prior to the 1960s, most parenting research was devoted to examining the unidirectional influences of parents on children. Interest in child-parent relationships was spurred by Bell's (1968) paper in which he reinterpreted research of parent-child effects (Pettit & Arsiwalla, 2008). Subsequent models of parenting acknowledged children's role on parenting and incorporated its effects. For example, Belksy's (1984) process model of parenting enlisted child characteristics among the factors that determine parenting. Regarding the mechanisms of children's influence on parents, it was suggested that it happens directly through reinforcement and punishment mechanisms, or through changing parental cognitions, which in turn, influence parental behavior (Karraker & Coleman, 2005).

Evidence for child effects on parenting has been drawn from experimental, longitudinal, and behavior genetic studies. Experimental or quasi-experimental studies manipulate child's

characteristics or contrast parents' interactions of children with various characteristics. For example, it was found that mothers acted less aversively when children with ADHD were medicated, and showed fewer ADHD symptoms (Barkley et al, cited in Patterson & Fisher, 2002). It was also found that parents' feelings of inadequacy and depression were higher in conditions where they interacted with children confederates who were instructed to act in a deviant manner compared to children who acted normally (Pelham et al., 1997). Furthermore, it was shown that mothers' levels of positivity, reciprocity, and aggressiveness varied when they interacted with competent children compared to aggressive children (Dumas and LaFreniere, 1993). In addition to experimental methods, longitudinal studies provide insights about child influences on parents' parenting. For example, child's negative emotionality was predictive of maternal power assertion measured five months later (Clark, Kochanska, &Ready, 2000).

Behavior genetic methods have also provided evidence for child effects on parenting. Twin-based studies can partition variance in a variable to that due to genetic and environmental effects. It was demonstrated through these studies that parenting, which is a putatively environmental measure, is heritable. Its heritability is due to its association with child's genetically influenced characteristics (Scarr, & McCartney, 1983). These child characteristics evoke certain parenting responses. An example of the studies which provided evidence for this gene-environment correlation is a meta-analysis of child-based twin studies on parenting. Avinun and Knafo (2014) found that 23% of parenting is heritable, which indicated that child's genetically influenced characteristics shape parenting practices. All in all, experiments, longitudinal, and behavior genetic studies provide indisputable evidence of child's influence on parenting.

Bidirectional Relations between Parenting and Child Characteristics

Rather than thinking of parent-child relationships to be driven by either the parents or children, there is consensus that they are bidirectional. Parenting shapes and gets shaped by children's characteristics. There exist theoretical models which emphasized the mutual influence of parents and children. For example, Sameroff (1983, 2009) proposed a transactional model where child development should be viewed as resulting from continuous bidirectional interactions between parents and children, where each individual's behavior is modified by the other. Another model that underscored the bidirectional nature of the parent-child relationship is the Coercion Model (Patterson, Reid, & Dishion, 1992). This model describes the series of parent-child transactions that lead to child's antisocial behavior. A coercive cycle typically starts with the parent scolding a misbehaving child. The scolding exacerbates the child's misbehavior, and the parent attacks back. The child keeps the aversive behavior until the parent disengages. The child's misbehavior was negatively reinforced, resulting in a feedback loop that increases misbehavior over time.

There is a plethora of studies which have examined the bidirectional relations between different parenting dimensions and child characteristics. Cross-lagged models, or bivariate latent growth models followed by cross-lagged models, are usually the methods of choice for investigating the reciprocal parent-child effects (Pettit & Arsiwalla, 2008). These methods were used to investigate, for example, the relations between authoritative parenting and child's prosocial behavior (Padilla-Walker, Carlo, Christensen, & Yorgason, 2012), parental sensitivity and child's prosocial behavior (Newton, Laible, Carlo, Steele, & McGinley, 2014), parenting styles and child's self-regulation (Moilanen, Rasmussen, & Padilla-Walker, 2015), parenting quality and child externalizing behavior (Pearl, French, Dumas, Moreland, & Prinz, 2014), and parenting and child's behavior problems (Lansford et al., 2018). In general, the findings of these

studies lend support to parent-child bidirectional relationships model, with evidence favoring influence of child characteristics on parenting rather than the opposite.

Existing Studies on the Relations between Parenting and Child Big Five Personality Traits

Although the associations between parenting and a wide range of child characteristics and outcomes were investigated, little has been done on the relations between parenting and child Big Five personality traits. Some studies have examined these relations using cross-sectional methods. For example, it was found that parental care was positively associated with child's extraversion and negatively associated with child's neuroticism, while parental overprotection was negatively linked to child's extraversion and positively linked to child's neuroticism (Fadda, Scalas, & Meleddu, 2015). Additionally, Lianos (2015) found associations between parental warmth, overprotection, rejection, and child's Big Five personality traits. Moreover, it was found that adolescents' perception of parental psychological control was negatively correlated with their extraversion, agreeableness, conscientiousness, and emotional stability (Mabbe, Soenens, Vansteenkiste, & van Leeuwen, 2015). Furthermore, Nyhus and Webley (2013) found that child's conscientiousness was positively associated with parental warmth, behavioral control, and autonomy granting, but negatively associated with parental psychological control.

On the other hand, only handful of studies have looked at the associations between parenting and child personality traits using longitudinal data. Three of these studies have used prospective designs where early parenting is associated with later child personality, while one study examined the links between early child temperament and later parenting. Heaven and Ciarrochi (2008) found that child conscientiousness at age 14 was positively correlated with family authoritativeness, and negatively correlated with family permissiveness at age 13. Furthermore, it was found that positive parenting at 8th grade, defined as a combination of high

warmth and low coercion, predicted greater agreeableness, conscientiousness, and lower neuroticism after controlling for prior personality levels (Schofield, Conger, Donnellan, Jochem, Keith, 2012). The same results were found when examining relations between parenting at 10th grade and child personality at 12th grade. Despite the positive findings in the aforementioned studies, Baardstu, Karevold, and von Soest (2017) found insignificant relations between parental reasoning, warmth, and punishment at age 8.5, and child agreeableness at age 16.5. As for the influence of child's personality on parenting, it was found that adolescents' Big Five personality traits predicted parental warmth, overreaction, and psychological control 5 years later (Egberts, Prinzie, Dekovic', de Haan, & van den Akker, 2015). Although these longitudinal designs provide useful information about parent-child relations, they focused on one direction of the relationship without taking into consideration its bidirectional nature.

In addition to these four studies, we are aware of two studies only which used structural equation modeling techniques to study longitudinal relations between parenting and child personality traits. The first one used bivariate latent growth models to examine the correlated change between overreactive parenting and child personality (van den Akker, Dekovic', & Prinzie, 2010). Positive correlations were found between initial levels of child agreeableness and changes in overreactive parenting, as well as positive correlations between initial levels of overreactive parenting and changes in child's agreeableness and emotional stability. Also, it was found that changes in overreactive parenting negatively correlated with changes in child's agreeableness and emotional stability. Despite its relatively sophisticated design, the main limitation of the study was that it included only 290 participants, which may not provide adequate statistical power to detect complex, multivariate associations such as these. The second study used a latent difference score model to investigate bidirectional relations between parental

warmth, overactivity, and child's Big Five traits (van den Akker, Deković, Asscher, & Prinzie, 2014). It was found that changes in parental warmth were positively associated with changes in child's extraversion, agreeableness, conscientiousness, and openness to experience. On the other hand, changes in overreactivity were negatively associated with changes in agreeableness, conscientiousness, and openness to experience. Moreover, child personality predicted changes in parenting and, to a lesser extent, parenting predicted changes in child traits. Specifically, parental warmth negatively predicted changes in child's emotional stability, and parental overreactivity negatively predicted changes in child's conscientiousness. On the other hand, changes in child's extraversion and agreeableness predicted changes in parental overreactivity, while changes in child's extraversion, agreeableness, and openness to experience predicted changes in warmth. The sample size for the second study ranged between 400 and 500 participants, and it looked at parent-child relations across multiple waves. It would be interesting though to examine parent-child relations using a wider range of parenting constructs, and to check the robustness of the results using other ways of modeling longitudinal data.

Longitudinal Methods for Examining Relations between Parenting and Child Personality

There is no single statistical procedure for analyzing change in longitudinal data. Each statistical method and model provide different information about the data. Based on our interest in understanding the co-development of parenting and child personality, we focus on two statistical procedures that are useful for answering our research questions. These procedures are cross-lagged panel models, and bivariate latent growth models.

Cross-Lagged Panel Models. Cross-lagged panel models are statistical methods that describe the stability and relationships between variables. They are comprised of autoregressive effects and cross-lagged effects. Autoregressive effects capture the stability of variables from

wave to wave. Cross-lagged effects capture the extent to which X_1 predicts Y_2 and Y_1 predicts X_2 in the simplest two-wave form of the model. Prior levels of the variable are controlled for when computing the cross-lagged effect to ensure that these effects are not due to correlation of X and Y at Time 1. The model assumes that the association of one variable on another is due to time between two assessments, although it does not incorporate time in the model or the specification of the time+1 variables.

Despite their widespread use in developmental research, there are limitations to the models that should be considered before using them. Cross-lagged panel models do not emphasize the way X and Y are changing across time. They do not provide information about the trajectory of change in the variables, or how one variable can induce change in another (Selig & Little, 2012). The cross-lagged coefficients inform us that levels of variable X at Time 1 predict levels of variable Y at Time 2, but they do not inform us whether X at Time 1 predicts increases or decreases in Y at Time 2. Another issue with these models is that autoregressive coefficients do not account for differences in the stability in constructs between individuals over time (Hamaker, Kuiper, & Grasman, 2015). When interindividual differences in stability exist, this tends to create bias in the results (Berry & Willoughby, 2017).

The limitations of the cross-lagged panel models should warrant caution when interpreting their results. We are going to fit these models to our data to identify the structural relations between multiple parenting variables and child Big Five personality traits. The results will be treated as providing a touch stone to prior research that has used this approach to test the associations between parenting and child personality but will not be considered a final destination (Selig & Little, 2012).

Latent Growth Models. Latent growth models allow for the estimation of between-person differences in within person change (Curran, Obeidat, & Losardo, 2010). They capture the general aspects of growth for individuals within a group and for the group as a whole. They are composed of fixed effects and random effects. Fixed effects refer to the estimates of the means of the starting point (i.e., intercept) and rate of change (i.e., slope). Random effects refer to the estimates of between-person variability in intercepts and slopes. If the variances of the intercept and the slope are small, then this implies that growth trajectories are similar across the individuals in the group and that there are not reliable individual differences in these estimates. If the variances are large, then this implies that there are greater individual differences in the growth trajectories across the individuals. Latent growth models are considered optimal models for estimating and understanding change in constructs over time (Duncan & Duncan, 2004).

Fitting latent growth models to parenting and child personality data will provide valuable information about their development. Univariate models will allow us to learn about the shape of the growth trajectories of multiple parenting variables, child personality variables, and the amount of inter-individual variability in them. Bivariate models will allow us to understand the bidirectional relations between parenting and child personality. This can be done through examining the correlations between a) initial levels of parenting and changes in child personality, and b) initial levels of child personality and changes in parenting. Bivariate growth models also provide information about correlations between c) initial levels of parenting and child personality, and correlations between d) changes in parenting and change in child personality.

Proposed Studies

It is well-established that parenting elicits changes in child characteristics, and child characteristics elicit changes in parenting characteristics. The general aim of the proposed two

studies was to further examine the bidirectional relations between parenting and child characteristics through incorporating multiple parenting dimensions and child Big Five personality traits. We fitted cross-lagged panel models to the data to explore structural relations between variables across time. This was done for exploratory purposes only. We also fitted bivariate growth models to the data to examine the changes in parenting, changes in personality, and relations between them. This way, our studies attempted to clarify the static and dynamic aspects of parenting, child personality, and the relations between them. Parent-child effects were examined through correlating parenting at Time 1 with later changes in child personality, while child-parent effects were examined through correlating personality at time 1 with later changes in parenting.

The studies used data from the Tradition and Innovation in Educational Systems (TRAIN) longitudinal study, and California Families Project (CFP). The TRAIN dataset comprises of German participants, and the CFP dataset comprises of American participants of Mexican origin. The participants were in a period transitioning between childhood and adolescence. Our emphasis on this life stage is not arbitrary, as it is characterized by changes in physical functioning, personality, and parenting characteristics (Galambos, & Costigan, 2003). The parenting dimensions that were assessed in the TRAIN dataset were parental involvement, parental structure, parental cultural stimulation, and parental goals related to child success. The parenting dimensions that were assessed in the CFP dataset were parental involvement, parental warmth/hostility, parental monitoring, parental routines, and parental goals related to child success. Based on the Psychological Resources Principle and the findings of past studies, we hypothesized that parent-child and child-parent associations would be the strongest between the following: a) affective dimensions of parenting such as parental warmth/hostility/involvement

and child's extraversion, agreeableness, conscientiousness, neuroticism, b) behavioral control dimensions of parenting such as parental structure/monitoring/routine and child's conscientiousness, neuroticism. We also hypothesized that there would be associations between relevant parental goals and child personality traits (e.g., responsibility goals associated with child's conscientiousness, sociability goals associated with child's extraversion). Moreover, we hypothesized that parental cultural stimulation and child's openness to experience will be related to each other due to the fact that openness to experience and culture are used interchangeably in the literature. In addition to testing those hypotheses, our data allowed us to explore whether some parenting dimensions were susceptible to change than others, and whether some parenting dimensions have stronger correlations with child personality than others.

CHAPTER 2: STUDY 1 METHOD

Participants

Data were obtained from the Tradition and Innovation in Educational Systems (TRAIN) longitudinal study. The sampling procedure followed two steps. First, 99 schools were randomly selected in two federal states in Germany. Second, one or two classes were selected from each of these schools, resulting in a total of 136 classes. The total number of participants in the study was 3880 students who were in their fifth grade during the first assessment. Follow up assessments took place when students were in grades 6, 7, and 8. Assessments took place in the first 6 weeks of school. The mean age of the participants was $M = 11.10$ ($SD = .56$). The gender distribution in the sample was: 45% female, and 54.8% male. The students were enrolled in one of three school tracks. There were 1595 students in Hauptschule, (non-academic track school), 878 students in Realschule (intermediate-track school), and 1311 students in Mittelschule (school that combines Hauptschule and Realschule).

Instruments

Cronbach's alpha reliabilities of the scales at each assessment wave, and a list of the items of the parenting measures are provided in Appendix A.

Child Personality. Participants' Big Five personality traits were assessed in each of the four assessment occasions (grades 5, 6, 7, and 8) using the German version of the Big Five Inventory (BFI). Participants rated themselves using a 5- point scale (1=Strongly disagree, 5=Strongly agree). The number of items per trait were: extraversion (8), agreeableness (8), conscientiousness (9), neuroticism (8), and openness to experience (11). However, a closer examination of the items showed that they had very low reliabilities (see Göllner, Roberts, Damian, Lüdtke, Jonkmann, & Trautwein, 2017 for details). Therefore, we decided to omit the

reverse coded items in the data analyses to improve the reliabilities of the scales. Cronbach's alpha reliabilities of the scales after omitting these items ranged between .66 (Agreeableness Time 3) and .83 (openness to experience Time 2 and Time 3).

Parent Personality. Both mothers and fathers rated their personalities in the four assessment waves using the Ten Item Personality Inventory. This instrument assessed each of the Big Five personality traits using two items. Items were rated using a 5-point scale (1=Strongly disagree, 5= Strongly agree).

Parental Involvement. Parents rated the extent of involvement in their child's school using a 4- point scale (1=not true, 4=very true). The scale consisted of six items such as "I have enough time and energy to get involved in my child's school". Parental involvement was assessed in the first and fourth waves of the study. Cronbach's alpha reliability of the scale was .81 at both assessments.

Parental Structure. Parents rated the extent to which they enforce structure in their child's life using a 4-point scale (1=not true, 4=very true). Parental structure was assessed in the four waves of the study. However, only data from waves 1 and 4 were used to be consistent with other parenting measures. A sample item of this scale was: "I make sure that my child does his homework at fixed times every day". The total number of eight items were used to assess parental structure. Cronbach's alpha reliabilities of the scale were .64 and .75 at Time 1 and Time 4 respectively.

Parental Cultural Stimulation. The extent to which parents exposed their children to cultural stimulation, such as taking them to museums, concerts, and book readings, was captured using a five item scale that was rated by the parents. The scale was administered in the first and fourth waves of the study. A sample item of the scale was "How often do you go to a museum

with your child?”, and the ratings were 1 (never) to 4 (more than three times a year). Cronbach’s alpha reliabilities of the scale was .64 and .68 at Time 1 and Time 4 respectively.

Child Success Parental Goals. In the first and fourth assessment waves, participants' parents were inquired about the importance they placed on raising children who have skills that help them become successful in various domains. Using a scale from 1(less important) to 4 (extremely important), they were asked to rate 17 items based on the importance they think that the family should teach them. Sample items include: "order and discipline", " intellectual curiosity", and "righteous and helpful behavior”. Cronbach’s alpha reliabilities of the scale was .89 and .90 at Time 1 and Time 4 respectively.

Analytic Plan

A series of cross-lagged panel models and latent growth models were fit to the data to examine the longitudinal associations between parenting and child personality. Before that, the factor structure of the parenting constructs and measurement invariance over time were examined.

Factor Structure of Parenting Variables. A series of exploratory factor analyses were conducted to determine the underlying factor structure of the parenting constructs using *Mplus*. The default GEOMIN rotation was applied. The number of retained factors was decided based on the examination of the scree plot and using common sense to interpret the factors’ meaning. One-factor solutions were decided for parental involvement, structure, and cultural stimulation. Regarding parental goals, it was clear from the scree plot that multiple factors underlie the items. However, the two or three factor structures did not make sense; therefore, a one-factor solution was decided for parental goals as well. This one factor was called “Success Parental Goals” and includes a list of skills that parents think they are important for the child to have to be successful.

Because parental structure and parental goals scales had more than six items, a parceling technique was used to reduce the number of items when the cross-lag and growth models were estimated. Parceling was conducted through the following steps. First, factor loadings of the items were arranged in descending order. Second, the highest loading item was assigned to parcel 1, the second highest loading to parcel 2, and the third highest loading to parcel 3. Third, the remaining items were assigned to parcels in the reverse order to achieve item-content balancing. Each parcel constituted the average score of the included items. Exploratory factor analyses were followed by a series of confirmatory factor analyses to test the robustness of the chosen models. Model fit was inspected using χ^2 , RMSEA, and CFI statistics. Good model fit is inferred when χ^2 is low and not statistically significant, RMSEA is below .06, and CFI is above .95 (Hu & Bentler, 1999).

Measurement Invariance. Measurement equivalence of latent factors across the study waves was tested before running the longitudinal models. This was done to make sure that changes in the latent factors represent real changes in the constructs rather than changes in the relations between the factor and its indicators across time (Meredith & Horn, 2001). Measurement invariance was tested through analyzing a series of models that varied in the level of imposed invariance. The first model (Baseline Model) was the least restrictive as it had no invariance constraints on any parameters. The second model (Metric Model) constrained the factor loadings to be invariant. The third model (Scalar Model) fixed the factor loadings and the intercepts to be invariant. The CFI, RMSEA, and SRMR fit indices of the different models were compared to each other. Measurement invariance was concluded if there was no or little change in these indices. We followed the recommendations by Chen (2007) suggesting changes in CFI ($-.01$), RMSEA ($-.02$), and SRMR ($-.01$) to indicate no substantial change in model fit.

Longitudinal Analyses. The longitudinal associations between parenting and child personality were examined through fitting cross-lagged panel models (Figure 1) and latent growth models (Figure 2). Each model constituted a latent parenting variable and a child personality variable. All parenting variables were rated by parents, whereas all child personality variables were rated by the child. Table A1 in Appendix A reports the waves at which each parenting and personality measure was assessed.

Cross-Lagged Panel Models. Using cross-lagged panel models, the structural relationships between parenting and child personality can be examined. Four latent factors were defined using the occasion-specific items. The factors corresponded to parenting at Time 1, parenting at Time 4, child personality at Time 1, and child personality at Time 4. Parenting at Time 4 was regressed on Parenting at Time 1 to examine the autoregressive associations of parenting across time. Similarly, child personality at Time 4 was regressed on child personality at Time 1 to examine the autoregressive relations of child personality across time. Cross-lagged relations were investigated through regressing child personality at Time 4 on parenting at Time 1, and parenting at Time 4 on child personality at Time 1. Residual variances of each indicator were allowed to correlate with each other across the different assessment points.

Latent Growth Models. Using latent growth models, change can be analyzed at the latent level, rather than the observed level. This allows for distinguishing structural relationships from measurement error (Bollen & Curran, 2006). For each of the parenting and personality variables, two latent factors were defined using the occasion-specific factors. A latent intercept was identified by fixing all loadings to one. As a result, the mean of the intercept represents the mean of parenting or child personality at Time 1. The variance of the intercept represents the amount of individual differences in parenting or child personality at Time 1. A latent slope was identified

through fixing its loadings at Time 1 to zero, and its loading at Time 2, Time 3, and Time 4 to 1, 2, 3 respectively. Consequently, the mean of the slope reflects the mean change between Time 1 and Time 4, and the variance of the slope indicates the individual differences in the amount of change. In addition to these parameters, latent change models allow for the estimation of the a) concurrent correlations between parenting and child personality, b) correlations between initial level of latent parenting and change in latent child personality, and c) correlations between latent changes in parenting and latent changes in child personality. Residual variances of each indicator were allowed to correlate with each other across the different assessment points.

It is important to note that univariate growth models were fit to child personality variables to examine whether they exhibited linear or quadratic growth before fitting the bivariate growth models. If the fit indices of the quadratic growth models did not show significant improvement, the more parsimonious linear growth models were selected. Improvement in model fit was decided based on Chen's (2007) criteria. If changes in CFI, RMNSEA, and SRMR were less than .01, .02, and .01, then they were considered insignificant.

All models controlled for child gender, SES, and age through adding paths from these variables to the parenting and child personality latent variables. To examine the associations of parent's personality with parenting and child personality, additional paths were added from parent's personality to the latent parenting and child personality variables). Multiple testing was also controlled for through adjusting the alpha level of statistical significance using Bonferroni's correction. The conventional alpha level was divided by the total number of tests ($.05 / 20 = .003$).

A sensitivity power analysis was conducted to compute effect sizes that can be detected for power of .80. The analysis revealed that effect sizes with magnitudes of .06 can be detected, given our sample size and adjusted alpha level.

All longitudinal analyses were conducted using *Mplus* software. The script was tested using 30 cases to ensure that there were no problems before preregistering it on the Open Science Framework (<https://osf.io/qnjp3/>). However, the sample size was very small such that models could not converge; therefore, the tested scripts were not useful.

Missing values were handled using full information maximum likelihood (FIML) procedure, which is believed to give less biased parameter estimates compared to listwise or pairwise deletion methods (Graham, 2009). FIML estimates the model parameters using all available data. The function COMPLEX was used to account for the nested structure of the data. Model fit was inspected using three statistics. The χ^2 statistic evaluates the difference between the fitted and sample covariances matrices. RMSEA evaluates how well the model fits the population's covariance matrix. CFI compares the fit of the model to the fit of a model that specifies all regressions and covariances to be zero. Good model fit was inferred when χ^2 is low and not statistically significant, RMSEA is below .06, and CFI is above .95 (Hu & Bentler, 1999).

CHAPTER 3: STUDY 1 RESULTS

We begin this section with reporting the means and standard deviations of parenting, child personality and demographic variables. In the next step, we report the correlations between these variables. Next, we report the results of the measurement invariance tests. We follow that with reporting results of cross-lagged panel models and bivariate latent growth models.

We follow two approaches for interpreting the results of the longitudinal analyses. In the first approach, we highlight the statistically significant results only, and ignore statistically insignificant ones. In the second approach, we interpret the effect sizes regardless of whether they reached statistical significance or not.

Descriptive Statistics

Table 1 provides the means and standard deviations of parenting child personality, and control variables. Scores on parental involvement and parental structure were above the midpoint, which means that most parents in the sample perceived themselves as involved in the academic lives of their children and provided them with structure. Also, most parents found it important that their children learn various skills that help them become successful in different realms. Fewer parents provided opportunities of cultural stimulation for their children as parents' scores on parental cultural stimulation were lower than the midpoint of the scale. Except for parental goals, all scores on parenting variables decreased from Time 1 to Time 4. This means that, as children moved from late childhood to adolescence, parents became less involved in their children's academic lives, provided less structure, and less cultural stimulation. Scores on parental goals remained essentially unchanged across time.

Examining the scores of children's self-rated Big Five traits reveal that most children in the sample rated themselves well above the midpoint on extraversion, agreeableness,

conscientiousness, and openness to experience, but slightly above the midpoint on neuroticism. From Time 1 to Time 4 children decreased in conscientiousness and openness to experience. There were no clear patterns of increase or decrease for extraversion, agreeableness, and neuroticism.

Table 2 shows correlations between parenting and child personality variables across time. There were 14 correlations out of 160 that reached statistical significance at $p < .001$ level. Seven of these correlations were between parental involvement and child conscientiousness. There were two other statistically significant correlations between parental structure and child conscientiousness. The other correlations were between parental involvement, child extraversion, and child agreeableness, parental structure and child neuroticism, parental cultural stimulation and child openness to experience. Furthermore, there was one statistically significant correlation between parental goals and child extraversion. In total though, the magnitudes of the correlations between parenting variables and child personality were small, averaging .05.

Results of Measurement Invariance Tests

To test for measurement invariance, a baseline, metric, and scalar invariance models were fit to the data of each variable. Then, the fit statistics of the metric model, where factor loadings were constrained to be equal, were compared to the fit statistics of the baseline model, where no constraints were imposed. Similarly, the fit statistics of the scalar model, where factor loadings and item intercepts were constrained to unity, were compared to those of the metric model. Measurement invariance was established when the changes in CFI, RMSEA, and SRMR were less than -.01, -.02, and -.01 respectively. When change in one of the fit indices was larger than the cutoffs, then one or more factor loadings and/or item intercepts were freely estimated after

consulting the modification indices output. In these cases, partial metric and/or scalar invariance was assumed.

Examining the results of measurement invariance tests (Table 3) showed that changes in model fit indices of child personality variables across the nested models were not larger than the recommended cutoffs. As for the parenting variables, changes in the fit indices between metric and scalar models were slightly larger than the recommended cutoffs, except for parental goals. This means that full scalar invariance was not supported. Instead, partial scalar invariance was assumed after freeing one or more parameters in each model.

Results of Cross-Lagged Panel Models

After measurement invariance was tested, cross lagged panel models were fit to the data, using partial invariance models when necessary. Table 4 shows the model fit indices of the models, while Table 5 shows the standardized coefficients of autoregressive and cross-lagged paths.

All models demonstrated good fit. All RMSEA values were below .06. They ranged between .01 and .03. CFI values were above .95 or a value very close to .95.

The first column of Table 5 shows the autoregressive associations of parenting variables. All the coefficients were statistically significant. Interestingly, the magnitudes of all coefficients were large, indicating high stability in parenting across time. Cultural stimulation showed the highest stability ($\beta = .71$) among the parenting constructs, while parental goals showed the lowest stability ($\beta = .50$). The second column of the table shows the autoregressive associations of child personality. Across time, all Big Five personality traits showed moderate stability. Coefficients were similar in size across the constructs, ranging between .27 and .33.

The third and fourth columns of Table 5 show cross-lagged associations of parenting and child personality, and child personality and parenting, respectively. The first thing to note is that none of the associations were statistically significant at $p < .003$. Focusing on the magnitude of the associations regardless of whether they reached statistical significance or not, we note that all regression coefficients were very small in column 3. One notable association was between cultural stimulation and child extraversion. Its magnitude was .10, which was relatively big compared to other parent-child coefficients. Similarly, all regression coefficients were very small in column 4, except for three notable associations. They were between child extraversion, agreeableness, neuroticism, and parental goals. Their magnitudes ranged between .10 and .11.

Results of Bivariate Latent Growth Models

Univariate growth models were fit to the child personality variables to examine whether linear or quadratic trends were a better representation of the data. None of the quadratic models showed significant improvement over the linear models based on Chen's (2007) criteria. Therefore, linear models for personality variables were retained. Results of the univariate analyses are reported in Appendix B. Following that, bivariate latent growth models were fit to the data, using partial invariance models when necessary. Table 6 shows the model fit indices of the latent growth models. Table 7 provides the means and variances of the intercepts and slopes of parenting and child personality variables. Table 8 shows the correlations between intercepts and slopes of parenting and child personality variables.

Each model consisted of a single parenting and a single child personality variable. Parenting ratings were provided by parents at Time 1 and Time 4. Child personality ratings were provided by children at Time 1, Time 2, Time 3, and Time 4. These models are referred to as second-order factor models, and they assess change at the latent level, which allows for

distinguishing structural relations from measurement error. Items of parental structure, parental goals, and child openness to experience were assigned to three parcels, which acted as the manifest variables of the latent variables.

Table 6 provides model fit indices for each model. All models demonstrated good fit. After testing model fit, the means and variances of the growth models were examined. The first and second columns of Table 7 provides the means and variances of initial levels of parenting and child personality variables. I also formally tested for change over time by examining the average slope values for each variable, as shown in the third and fourth columns of Table 7. Results show that parental involvement and parental structure decreased across time as shown by the statistically significant negative slopes. This means that as children were growing up, parents were becoming less involved in their children's lives, and provided them with less structure. The magnitude of the rates of change in these parenting dimensions was small-to-medium, corresponding to .45 and .60 standardized units of change across time respectively. The variances of the parenting slopes represent the existence of interindividual differences in changes in parenting. The variance of the slope of parental involvement was relatively larger than the variance of parental structure, which means that there was more variation in changes in parental involvement trajectories across the two assessment points. Notably, the mean slopes of parental cultural stimulation and parental goals were not statistically significantly different from zero.

In addition to providing information about changes in parenting, Table 7 shows the results of changes in children's Big Five traits across time. As children were growing up, they became less conscientious and less open to experience, as shown by the statistically significant negative slopes. The rates of change were small, ranging between -.05 and -.08. These numbers

correspond to .37 and .31 standardized units of change across time. Interestingly, the mean slopes of child extraversion, agreeableness, and neuroticism were not statistically significant.

It is important to note that the examination of individual differences in change necessitates the existence of reliable variance in change. The slope variance parameter is typically inspected for statistically significant variance to justify examining the correlations of change over time. In the current case, all parenting and child personality variables exhibited statistically significant variance in slopes over time, justifying the examination of predictors and correlates of individual differences in change.

Next, we tested the associations between the stable aspects of parenting and child personality (intercept to intercept correlation) and the associations between changes in parenting dimensions and changes in child personality over time. Column 1 in Table 8 shows the correlations between parenting and child personality intercepts at Time 1. Only three correlations were significant at the adjusted alpha level of $p < .003$. As hypothesized, there was a significant positive association between parental involvement and child conscientiousness. Contrary to expectations, the associations between parental involvement and child extraversion, agreeableness and neuroticism were not significant. Also, contrary to expectations, there were no significant associations between parental structure and child conscientiousness or neuroticism. However, there was a significant positive association between parental structure and child agreeableness. Our hypotheses regarding associations between parental cultural stimulation and child personality were also not confirmed. There were no significant associations between parental cultural stimulation and child openness to experience, but rather with child conscientiousness. Regarding parenting goals, none of the correlations with child personality

were statistically significant. In general, the three statistically significant results were small in size, ranging between .13 and .15.

To understand the associations between changes in parenting and changes in child personality, we examined the correlations between intercepts and slopes and between slopes as shown in Table 8. Surprisingly, none of the correlations were statistically significant at $p < .003$.

We found that all correlations were small or very small. The average correlation between parenting and child personality intercepts was .08. Few correlations had a magnitude that was equal or above .10. These were the following: parental involvement and child agreeableness, parental structure and child conscientiousness, parental cultural stimulation and child agreeableness, parental goals and child agreeableness.

The correlations between parenting at Time 1 and changes in personality between Time 1 and Time 4 were also very small in size in all models. They ranged between .02 and .07. Similarly, the correlations between personality at Time 1 and changes in parenting were also very small. Only the correlation between changes in parental involvement and neuroticism was relatively larger, exceeding .10.

Regarding the correlations between changes in parenting and changes in child personality, there were few correlations worth noting. These correlations are the following: changes in parental involvement and changes in child conscientiousness, neuroticism, openness to experience; changes in parental structure and changes in agreeableness, neuroticism; changes in parental cultural stimulation and changes in extraversion; changes in parental goals and changes in extraversion. These correlations stood out because their magnitudes were relatively larger than the magnitudes of the other correlations.

CHAPTER 4: STUDY 2 METHOD

Participants

Data for this study were obtained from the California Families project (CFP), which is an ongoing longitudinal study of families of Mexican origin in the USA. The total number of participants in CFP is 674 children who were in fifth grade in wave 1 of the study in 2006. The mean age of the participants was 10.8 ($SD = .61$), and 50% were female. To collect data for this study, two school districts in California with mostly Mexican-American populations were chosen for the study. The participants were randomly selected from the school rosters of these districts. Recruitment took place by telephone, or by a recruiter going to the family's home when a telephone number was not listed. To be eligible for the study, the family needed to be of Mexican origin, and the focal child should be living with his or her biological mother.

Instruments

Cronbach's alpha reliabilities of the scales at each assessment occasion, and a list of the items of the parenting measures are provided in Appendix A.

Child Personality. Child's Big Five personality traits were assessed using the 44-item Big Five Inventory (BFI). Children provided assessments of their personality in the fifth and seventh waves of the study. They rated each item using a 4-point scale (1=Strongly disagree, 4=Strongly agree). Cronbach's alpha reliabilities of the scales ranged between .64 (agreeableness at Time 7) and .75 (extraversion at Time 7).

Parents' Personality. Mothers and fathers assessed their personalities using the Big Five Inventory (BFI). Assessments provided at the fifth wave were used in the study. Each item was rated using a 4-point scale (1=Strongly disagree, 4= Strongly agree). Only assessments in the fifth and seventh waves were used.

Parenting Variables. Several parenting variables were assessed by multiple raters. For this study, we used parenting ratings provided by children to mother and father parenting separately. No child ratings of parental warmth and hostility existed, therefore; we used parent-ratings of these constructs. To facilitate the flow of ideas in the manuscript, we moved results related to parental warmth and hostility to the supplement.

Parental Involvement. This scale consisted of four items that were related to school context. Each item was rated by mother/fathers using a 4-point scale (1= never; 4= many times). An example item is "...help with homework or school project". Cronbach's alpha reliabilities of the scales ranged between .65 and .73.

Parental Monitoring. This 14-item scale measured the extent to which mothers/fathers know who their child spends time with, know their whereabouts after school, and discuss their social plans. The scale's items were rated on a 4-point scale (1=almost never or never; 4= almost always or always). Reliabilities of the scales ranged between $\alpha = .81$ and $\alpha = .91$.

Family Routines. Mothers and fathers assessed the extent to which they maintain routine activities for the family using eight items that were rated on a 4-point scale (1= almost never or never, 4= everyday). An example item is: "How often do you make sure that child goes to bed at the same time?". Reliabilities of the scales ranged between $\alpha = .45$ and $\alpha = .70$.

Child Success Parental Goals. Parents rated the importance they placed on raising a child who is successful in various domains. There were 11 parenting goals, and they were rated using a 4-point scale (1=not at all important, 4=very important). Example items are: "How important... child does well in school? /does chores at home? /is courteous towards others?". Cronbach's alpha reliabilities of the scales ranged between .54 and .80.

Parental Warmth. This measure was constructed using nine items from the Behavioral Affect Rating Scale, and nine items from the Iowa Parenting Scales. Items were rated by children using a 4-point scale (1=almost never or never, 4=almost always or always). An example item is “How often does your mom/dad act lovingly and affectionate toward you?”. Cronbach’s alpha reliabilities of the scales ranged between .89 and .94.

Parental Hostility. This measure comprised 13 items from the Behavioral Affect Rating Scale that were rated by children using a 4-point scale (1= almost never or never; 4= almost always or always). An example item is: “How often does your mom/dad call you bad names?”. Cronbach’s alpha reliabilities of the scales ranged between .70 and .89.

Analytic Plan

The same analytic plan of Study 1 was followed here. First, the factor structure of the parenting variables was examined. One-factor Models were selected for all the variables. Items of parental monitoring, routines, and goals were assigned to three parcels. Similarly, items of the child personality traits were assigned to parcels to reduce their number. The same parceling procedure in Study 1 was used. Second, measurement invariance across the waves was tested. Third, cross-lagged models and latent growth models were fit to the data. In these models, latent child personality variables were defined using self-ratings of child personality in the fifth and seventh waves of the study. Latent parenting variables were defined using parents’ ratings in waves 1,3,5, and 7. Models were run for father and mother ratings separately. Table A2 in the Appendix A reports the waves at which each parenting and personality measure were assessed.

As in study 1, models controlled for child age and gender. To examine the associations of parent’s personality with parenting and child personality, additional paths were added from parent’s personality at Time 5 to the parenting and child personality latent variables. Multiple

testing was adjusted for using Bonferroni's correction. The conventional alpha level was divided by the total number of tests ($.05 / 40 = .00125$). Power analysis revealed that effect sizes of .15 magnitude can be detected with .80 power, given our sample size and adjusted alpha level.

Also, missing data was handled using the FIML procedure as in Study 1. Model fit was evaluated using the χ^2 statistic, RMSEA, and CFI indices. All analyses were done using *Mplus*.

CHAPTER 5: STUDY 2 RESULTS

Similar to the order of reporting results of Study 1, we first report results of descriptive statistics. Then, we provide the results of measurement invariance tests, followed by the results of the cross-lagged panel models and latent bivariate growth models.

Descriptive Statistics

Table 9 provides the means and the standard deviations of the parenting, child personality, and control variables in the CFP dataset. Parenting variables were rated by parents at the first, third, fifth, and seventh waves of the study, while child personality was rated by children at the fifth and seventh waves only.

The mean scores show that mothers in the sample were involved in their children's lives, monitored their whereabouts closely, and provided them with routines as shown by the above-midpoint scores on the involvement, monitoring, and routines scales. They also considered it important that their children are successful in various domains, such as professional and social realms. Across the four assessment waves, mothers' involvement and providing of routine decreased with time. The importance that mothers placed on child success goals also decreased. Only mother monitoring did not show a clear increasing or decreasing pattern with time.

Regarding fathers' scores on the parenting measures, they also showed the same change pattern across the four waves. Paternal involvement, routines, and parental goals decreased with time. However, there was no clear change pattern for parental monitoring, as it fluctuated across the different assessment waves. Fathers in the sample showed high involvement and monitoring, provided routines to their children, and placed high importance to their children's success. Interestingly though, their scores on parenting measures were lower than the mothers' scores, except for parental goals, where their scores were almost the same.

As for the means and standard deviations of child-rated Big Five personality measures, our results show that children in the sample viewed themselves to be extraverted, agreeable, conscientious, neurotic, and open to experience as their scores on the five measures were above the midpoints of the corresponding scales. At the seventh assessment point, children considered themselves to be less extraverted and conscientious than at the fifth assessment point. They also showed some signs of increasing in neuroticism. There were very slight decreases in agreeableness and openness to experience.

Tables 10 provide the correlations between parenting and child personality variables. All the parenting variables in Table 8 were rated by parents, while child personality variables were rated by children. There were almost no significant correlations between mother involvement, mother routines, mother parental goals, and child personality. There were few significant correlations between mother monitoring, and child personality. The largest correlations involved child agreeableness, conscientiousness, and neuroticism. Almost the same pattern occurred for the relations between paternal parenting and child personality. There were almost no significant relations between father involvement, father routines, father parental goals and child personality. However, significant associations existed between father monitoring, and child personality. There were fewer significant correlations between father parenting and child personality than mother parenting and child personality. In general, the magnitudes of the correlations between parenting and child personality ranged between .00 and .25, with the average correlation being .04.

Results of Measurement Invariance Tests

Partial rather than full measurement invariance held for most of the parenting measures. Partial invariance was established after setting few parameters estimates to be free in order to

meet the recommendations of Chen (2007) regarding changes in model fit indices. On the other hand, full measurement invariance held for most personality measures. In general, establishing measurement invariance ensured that change in our results was due to real change rather than change in measurement models across time. Results of measurement invariance tests are provided in Table 11.

Results of Cross-Lagged Panel Models

Each model constituted of four latent variables: parenting at Time 5, parenting at Time 7, child personality at Time 5, and child personality at Time 7. Table 12 provides the CFI and RMSEA values of the fitted cross-lagged models. RMSEA values were below .06, and CFI values were above or close to .95. The fit indices demonstrate good model fit.

Table 13 provides results of autoregressive and cross-lagged effects. The first column of the table shows that parenting showed high stability from Time 5 to Time 7 as the magnitudes of the autoregressive paths were large. The stability coefficients of mother parenting ranged between .50 (mother monitoring), and .76 (mother involvement), while those of father parenting ranged between .63 (parental goals) and .73 (father involvement). Child personality also showed high stability, comparable to stability in parenting. All autoregressive coefficients across the five personality traits were high, ranging between .56 (extraversion) and .62 (agreeableness). All autoregressive coefficients were statistically significant at $p < .0008$. The third column shows results of parenting-child cross-lagged paths. Interestingly, no paths were statistically significant. The fourth column shows child personality-parenting cross-lagged coefficients. Again, all coefficients were statistically insignificant.

We found that the regression coefficients between parenting and child personality were very small. The average association between parenting and child personality was .04, and the

average association between child personality and parenting was .06. Few associations were relatively bigger than others. The associations were between mother routines and child extraversion; mother routines and child openness to experience; father monitoring and child conscientiousness; father routines and child conscientiousness; father parental goals and child extraversion; father parental goals and child openness to experience.

Results of Bivariate Latent Growth Models

Second-order bivariate latent growth models were fit to the data to examine the intercepts and slopes of parenting dimensions and child personality over time. Each model tested one parenting and one child personality variable at a time. Parenting measures were rated by fathers and mothers separately, while child personality assessments were provided by children. A parceling technique was used when the variable was assessed using more than six items.

Univariate growth analyses were performed for the parenting measures. Linear and quadratic models were fit to each variable. Results of univariate analyses are reported in Appendix B. In all cases, the quadratic model did not show a significant improvement in the model fit based on Chen's (2007) recommendations. Therefore, linear models were used throughout.

Following that, bivariate growth models were fit to the data. As shown in Table 14, all models demonstrated good fit.

Table 15 shows the means and variances of the intercepts and slopes of the models. The means of the parenting variables reveal that parents in the sample were involved in their children's lives, monitored them, and provided them with routine activities, consistent with the raw estimates reported above. In general, mothers scored higher on most parenting dimensions than fathers.

Across the four assessment occasions, there was a statistically significant decrease in all parenting dimensions, except for mother monitoring. The magnitude of the decrease was not uniform across all parenting dimensions. The parenting dimension which decreased the most was mother involvement (slope = $-.26$, $p < .0008$). It corresponds to -1.15 standardized change units across the four assessment points. This means that as children grew up, mothers became less involved in children's academic lives. The other parenting dimensions which showed considerable decreases were father involvement, mother routines, and father routines. The slopes ranged between $-.11$ (father routines) and $-.17$ (father involvement). The parenting dimensions which showed less considerable decrease were father monitoring, mother and father parental goals. The range of the decreases ranged between $-.02$ (mother and father parental goals) to $-.05$ (father monitoring). These results mean that the level of parental monitoring, and the importance that parents placed on their parental goals changed only slightly over time. Another important finding to note are the slope variances. The bigger the variance, the higher the heterogeneity in the change trajectories. Interestingly, the variances of the slopes of the parenting variables in this study were very small. They ranged between 0.001 (mother parental goals) and $.03$ (father involvement), and all but mother involvement were not statistically significant.

It is important to emphasize that the examination of individual differences in change necessitates the existence of reliable variance in change. When parenting slopes do not exhibit statistically significant variance over time, their use to examine predictors and correlates of individual differences in change is not justified. Therefore, correlations involving change in mother involvement will be examined, while correlations involving change in the other parenting variables will be excluded.

Regarding children's personality traits, the means of the intercepts show that children initially viewed themselves to be high on extraversion, agreeableness, conscientiousness, openness to experience, and low on neuroticism. As they aged, they became less extraverted, and less conscientious, as revealed by the statistically significant negative slopes. The trait which showed the highest decrease was extraversion (slope = $-.12$, $p < .0008$), which is equivalent to a decrease in .35 standardized change units across time. The decrease in agreeableness and conscientiousness was almost the same. There were no significant changes in children's neuroticism or openness to experience. Notably, the variances in the slopes were statistically significant indicating the existence of individual differences in personality trait change over time. They were relatively bigger than the variances of the parenting slopes, which reveals more interindividual changes in personality than in parenting.

In general, results reveal a decreasing pattern in parenting dimensions. This pattern is consistent with the one I found in Study 1. Parental involvement decreased in both datasets. Parental structure and its parallel construct, parental routines, also decreased in both datasets. Although changes in parental goals were not statistically significant in Study 1, there were negative as in Study 2. On the other hand, the changes in child-rated personality dimensions were less consistent across the two studies. Children in both samples viewed themselves as decreasing in conscientiousness as they transition from late childhoods to adolescence. However, there was no agreement on the change trajectories of the other Big Five traits. This could be due to the fact that personality assessments of the Big Five in Study 1 spanned a larger period than in Study 2.

After examining the developmental trajectories of parenting and child personality separately, Table 16 provides information about the correlations of the intercepts and slopes.

Although I expected to find significant long-term correlations, between parenting and child personality, none of the 160 correlations was statistically significant at $p < .0008$. None of the correlations between parenting at Time 1 and child personality at Time 5 (intercepts for parents and children, respectively) were significant. Similarly, none of the correlations between parenting at Time 1 and changes in child personality between Time 5 and Time 7 were statistically significant. As for the correlations between changes in mother involvement and child personality at Time 5, none of the correlations reached significance level. Furthermore, none of the correlations between changes in mother involvement and changes in child personality traits were statistically significant.

We note that the average magnitude of the correlations between parenting and child personality was .10. The range was between .009 and .29. The average correlation between parenting at Time 5 and changes in child personality between Time 5 and Time 7 was also .10. Furthermore, the average correlation between changes in child personality and parenting (mother involvement only) was .04, while the correlation between changes in parenting (mother involvement only) and changes in child personality was .13.

CHAPTER 6: DISCUSSION

Psychologists hold a wide range of perspectives on the role of parenting and child's personality development. On one hand, it can be inferred from theories such as social learning theory and attachment theory that parenting strongly matters for shaping child's personality. On the other hand, it was argued by psychologist Judith Harris that the shared effect of parents on their children matters much less than is typically assumed when it comes to determining child's personality (Harris, 2011). The main goal of our research was to test the relations between parenting practices, change in parenting practices and how these factors are associated with their children's developing personality. The two studies attempted to overcome the limitations of past research on parenting and child personality in several ways. First, they used large datasets (N=3850; N=674) that provide adequate statistical power to detect relations when they exist. Second, they examined the relations between multiple parenting measures and multiple dimensions of child personality. Third, they went beyond traditional correlational methods through fitting cross-lagged panel models and bivariate latent growth models. Cross-lagged panel models provided information about the structural relations between parenting and child personality, such as the reciprocal associations between them. On the other hand, bivariate latent growth models captured an important aspect about parenting and child personality, which is their changeability across time, and allowed for examining the correlations between these changes. Furthermore, bivariate latent growth models provided information about the extent to which change trajectories were uniform or variable between individuals.

Despite the existence of contradictory opinions about the relations between parenting and child personality, we based our hypotheses on social learning theory, attachment theory, and the psychological resources principle which implied the existence of strong associations between

parenting practices and child personality. The parenting dimensions in the first dataset were parental involvement, parental structure, parental cultural stimulation, and child success parental goals. The parenting dimensions in the second dataset were parental involvement, parental monitoring, parental routines, and child success parental goals. The presence of similar parenting constructs in the two datasets, such as parental involvement and parental goals, allowed for the comparison of results between them. Whenever possible, we made predictions about relations between specific parenting dimensions and specific Big Five personality traits based on relevant theories. For example, we expected to find positive correlations between parental involvement and child extraversion, agreeableness, conscientiousness, and neuroticism. We also expected to find positive correlations between parental structure or routines and child's conscientiousness and neuroticism. The models controlled for child age, gender, socioeconomic status (Study 1 only), and parents Big Five personality traits. Multiple testing was also controlled for through adjusting the alpha level of statistical significance using Bonferroni's correction.

Regarding the results obtained from fitting cross-lagged panel models to the data, there are three points to emphasize. First, parenting and child personality showed high stability across time in both studies. Second, there were largely insignificant cross-lagged relations. And, cross-lagged regression coefficients were very small in both studies. Third, parent paths to child personality and child paths to parenting were comparable in magnitude. The child paths were not significantly bigger than parent cross-lag coefficients. This finding is consistent with past studies which found similar parent and child paths, and inconsistent with others which found bigger child paths than parenting paths.

The information we learned about relations between parenting and child personality from the cross-lagged panel models was useful and argues for further investigation. Yet, these models

are limited in providing information about change. The ways parenting and child personality changed across time were not well assessed in these models. It is assumed that associations between the variables are a function of a lag of time between the assessment waves, yet they are represented as static. Furthermore, the coefficients of the cross-lagged models do not provide information about intraindividual change, despite being affected by them. Autoregressive and cross-lagged coefficients are fixed, such that same regression weights apply to all individuals.

We overcame the limitations of the cross-lagged models through fitting latent growth models, which provide information about the trajectories of change and the how change varies across individuals. There are several important points to highlight from latent bivariate growth model results. First, parenting changed across time, which is consistent with results of previous studies (van den Akker, Dekovic', & Prinzie, 2010). The general trend was a decrease in parenting dimensions. As children were entering adolescence, parents became less involved in their children's academic lives, provided less structure, and monitored their children less often. It is understandable that parents' role change during this period because adolescence is characterized by children's striving for autonomy and independence (Galambos, & Costigan, 2003). The strongest decrease was in parental involvement, a result that was consistent across the two studies. While they showed a slight decrease in Study 2, parental goals remained essentially the same across time. An important finding to note is that only the variance of mother involvement slope was statistically significant in the CFP dataset. The other variances were very small, ranging between .001 and .03. This means that there were no variations in the decreasing patterns of parenting across time.

Second, child personality also changed across time. Children perceived themselves as less conscientious and open to experience in the TRAIN sample over time. They perceived

themselves as less extraverted, and conscientious in the CFP dataset over time. The decrease in child conscientious was a result that replicated across the two studies. In general, the decrease in child conscientiousness in both datasets shows that adolescents were not developing in the direction of maturation, which is consistent with findings of previous research (Van den Akker, Deković, Asscher, & Prinzie, 2014). Another thing to note is that the rates of changes were modest, which is also consistent with past studies. The mean slopes ranged between .05 and .12. The amount of variance in change was also modest, which alludes to little variation in the developmental trajectories of personality traits.

Third, there was, surprisingly, a preponderance of statistically insignificant results in both datasets when examining the relation between parenting practices and child personality. After adjusting the alpha level using the conservative Bonferroni's adjustment, only three correlations were statistically significant in the TRAIN dataset, and no correlation was statistically significant in the CFP dataset. The three significant correlations in the TRAIN dataset were between initial levels of parenting and initial levels of child personality. The correlations were between parental involvement and child conscientiousness; parental structure and child agreeableness; parental cultural stimulation and child conscientiousness. Their magnitudes ranged between .13 and .15. It is important to note that the direction of the relations between parenting and child personality cannot be inferred from these correlations. The correlations mean that parenting could be affecting child personality, child personality affecting parenting, or both processes affecting each other simultaneously.

Regarding the correlations between initial levels of parenting and changes in child personality, results showed small correlations between parenting at Time 1 and changes in child personality between Time 1 and Time 4 in the TRAIN dataset. None of these reached standard

levels of statistical significance. In the CFP dataset, the relations between parenting at Time 1 and changes in child personality between Time 5 and Time 7 were also small, except for a handful of relations that were relatively bigger than others, such as between mother routine and child agreeableness. Regarding the relations between child personality at Time 1 changes in child personality between Time 1 and Time 4, there was one notable positive correlation in the TRAIN dataset between child neuroticism and increases in parental involvement. As for the correlations between changes in parenting and changes in child personality, none of them mattered in the CFP dataset due to the very small variances in the slopes of parenting variables.

Because focusing on statistical significance only can obscure important information about the phenomenon under investigation (Fraley and Markes, 2007), we also interpreted the magnitudes of the associations regardless of their statistical significance. In general, the associations between initial levels or changes in parenting and child personality were small or very small. The average correlations between the initial levels of parenting and child personality was .08 in Study 1 and .10 in Study 2. The average correlation between initial levels of parenting and changes in child personality was .04 in Study 1 and .10 in Study 2. The average correlation between changes in child personality and initial levels of parenting was .04 in both studies. The average correlation between changes in parenting and changes in child personality was .08 in Study 1 and .13 in Study 2.

Theoretical and Practical Implications

What do the pervasively small and insignificant associations between parenting and child personality mean for the debate about the relation between parenting and child personality? Using Cohen's (1988) standards, most of the obtained correlations between parenting and child personality are considered very small or small. The average correlation between parenting and

child personality was .05 in TRAIN dataset, and .04 in CFP dataset. However, Funder and Ozer (2019) have warned against dismissing small effect sizes. They argued that magnitudes of effect sizes are better evaluated when compared against “benchmarks” such as correlations that are believed to be well-understood or average correlations in psychology research. Following their recommendations, it becomes clear that correlations between parenting and child personality are comparable to relations found between other environmental factors and child personality such as parental socioeconomic status (Ayoub, Gosling, Potter, Shanahan, & Roberts, 2018), and birth order (Damian & Roberts, 2015).

On a related note, the fact that the cumulative evidence appears to point to a preponderance of small relations between different environmental factors and personality should modify our thinking about personality development. Instead of searching for a few large environmental factors that make or break our personalities, whether it is parenting, peers, or birth order, we should acknowledge that such factors do not exist. Rather, evidence points to the fact that personality development is influenced by a large number of environmental factors, each of which makes a small contribution to children’s personality development. This framework of personality development parallels the infinitesimal model in genetics, which is currently widely used in behavior genetics research. Consensus is growing in the field that phenotypes are influenced by a very large number of genes, that each has an infinitesimal contribution, rather than “candidate genes” that explain large amount of variance in the phenotype. It appears that an analogous situation holds for personality development in childhood and adolescence. Much like the threads of a tapestry, environmental factors combine in an intricate and complex way to drive personality development, and each factor is an essential, yet small thread that contributes to the outcome.

On a practical level, our findings about the relations between parenting dimensions and child personality could be used to relieve parents of some of the anxiety and guilt they feel as a result of societal pressure and parenting books which assume that parents can and do affect large changes in their children's character (Sanguras, 2018). It could also be comforting for parents to realize that parenting goes both ways. In some cases, changes in a child's personality predicted changes in parenting practices. The relation between parenting and child personality is complex, transactional, and dynamic and it is unlikely that one wrong move would ruin a child's personality forever. Furthermore, our findings should not discourage the implementation of parenting interventions. Effect sizes that are modest at the individual level could be consequential at the population level. The modest change in parenting and child personality that parenting interventions can do are important when multiplying the effect by the number of people who underwent the interventions.

Limitations and Future Directions

The two studies have important strengths such as large sample sizes, multiple parenting measures, different raters for parenting and child personality measures. Yet, no study is perfect. There are limitations that should be drawn attention to. First, the two studies examined longitudinal relations between parenting and child personality between late childhood and adolescence. Therefore, the conclusions we can draw from them are limited to this age group. It would be interesting to examine the strengths of these relations in younger children and compare them to our age groups. Second, there was not a lot to learn about the shape of the developmental trajectories of parenting in Study 1 or child personality in Study 2 because they were assessed across two waves only. It is preferable that future studies have at least four assessment points for both parenting and child personality. Third, there were issues with some of the measures in the

studies. For example, the reverse coded items of child personality variables were omitted from the TRAIN dataset because children's misunderstanding of them grossly reduced the scales' Cronbach's alpha reliabilities. Furthermore, parenting measures such as parental involvement were specific to academic domains; yet it is unknown what the relations between broad parental involvement and child personality would be. This is analogous to examining relations at the facet level vs broad level of the variable. Therefore, future studies that involve broad personality traits should include broad parenting measures, so that both parenting and child personality are examined at the same level of granularity. Moreover, it would be useful if the parenting scales in future studies were designed to capture more variation in parenting. Fourth, no causal conclusions can be drawn from our findings. Despite using relatively sophisticated design, our studies are correlational in nature. Experimental designs are the golden method to infer causality; however, it is unfeasible to do experimental studies that examine relations between parenting and child personality longitudinally. Fifth, it should be taken into consideration that the associations between parenting and child personality, despite being small, could be attributed to shared genes between parents and children.

Conclusion

The longitudinal relations between multiple parenting dimensions such as parental involvement, structure, monitoring, goals, and children's Big Five personality traits were examined using two large datasets. Specifically, cross lagged models were fit to the data to investigate reciprocal relations between parenting and child personality, followed by bivariate latent growth models which are the models of choice for examining the correlations between changes in parenting and changes in child personality across time. Interestingly, results on the whole replicated across the two studies. The reciprocal associations between parenting and child

personality were statistically insignificant. Similarly, the correlations between initial levels of parenting and child personality, or changes in parenting and changes in child personality were essentially non-existent. Very few associations reached significance level after adjusting for multiple testing. The obtained small associations were comparable in magnitude to ones between other environmental factors and child personality, such as parental socioeconomic status and birth order. The recurrent small effects between environmental factors and child personality provokes thoughts about personality development in childhood and adolescence. Instead of assuming that there is one factor that makes or breaks personality, evidence shows that each environmental factor, including parenting, has little contribution to make towards personality development.

CHAPTER 7: TABLES AND FIGURES

Table 1

Means and Standard Deviations of Variables in TRAIN Dataset

	P Inv T1	P Inv T4	P Str T1	P Str T4	P CS T1	P CS T4	PG T1	PG T4	C Ex T1
Mean	3.26	3.10	3.74	3.56	1.43	1.38	3.07	3.07	3.46
(SD)	(.54)	(.57)	(.28)	(.40)	(.42)	(.41)	(.47)	(.49)	(.82)
	C Ex T2	C Ex T3	C Ex T4	C Ag T1	C Ag T2	C Ag T3	C Ag T4	C Con T1	C Con T2
Mean	3.48	3.51	3.47	3.58	3.59	3.54	3.53	3.65	3.58
(SD)	(.79)	(.77)	(.77)	(.85)	(.81)	(.76)	(.76)	(.82)	(.81)
	C Con T3	C Con T4	C Neu T1	C Neu T2	C Neu T3	C Neu T4	C Op T1	C Op T2	C Op T3
Mean	3.53	3.42	2.84	2.79	2.74	2.78	3.54	3.53	3.47
(SD)	(.80)	(.77)	(.88)	(.82)	(.80)	(.79)	(.80)	(.78)	(.76)
	C Op T4	M Ex T1	F Ex T1	M Ag T1	F Ag T1	M Con T1	F Con T1	M Neu T1	F Neu T1
Mean	3.39	3.80	3.59	3.42	3.12	4.37	4.23	2.60	2.36
(SD)	(.73)	(.88)	(.99)	(.76)	(.87)	(.68)	(.83)	(.85)	(.88)
	M Op T1	F Op T1	SES						
Mean	3.60	3.28	47.16						
(SD)	(.93)	(.96)	(12.46)						

P=Parental; M=Mother; F= Father; C= Child; Inv=Involvement; Str= Structure; CS=Cultural Stimulation; PG=Parental Goals; Ex=Extraversion; Ag=Agreeableness; Con=Conscientiousness; Neu=Neuroticism; Op=Openness to Experience

Table 2

Correlations between Parenting and Child Personality Variables in TRAIN Dataset

	Ex1	Ex2	Ex3	Ex4	Ag1	Ag2	Ag3	Ag4	Cn1	Cn2	Cn3	Cn4	Nu1	Nu2	Nu3	Nu4	Op1	Op2	Op3	Op4
Inv1	.09	.03	.07	.07	.06	.06	.06	.03	.12	.12	.07	.10	.01	-.03	-.06	-.03	.07	.04	.03	.02
Inv4	.10	.06	.08	.09	.08	.11	.05	.08	.12	.12	.11	.12	.08	-.02	-.03	-.04	.08	.05	.06	.07
Str1	.03	.03	.05	.007	.03	.05	.08	.03	.06	.07	.09	.05	-.001	-.001	-.04	-.03	.04	.03	.03	.009
Str4	.04	.009	.03	.04	.03	.02	.03	.07	.07	.08	.12	.11	.03	-.04	-.11	-.09	.03	.05	.04	.04
CS1	.07	.005	.03	.09	.09	.02	.03	.06	.07	.04	.05	.07	.02	.003	-.05	-.01	.08	.03	.08	.11
CS4	.08	.03	.007	.05	.10	.07	.03	.04	.05	.04	.04	.05	.002	-.09	-.07	-.05	.10	.09	.07	.09
PG1	.09	.05	.09	.07	.10	.05	.05	.07	.09	.06	.06	.07	.02	.03	.02	.021	.09	.06	.10	.03
PG4	.13	.10	.09	.06	.10	.11	.05	.07	.07	.09	.07	.08	.08	.02	-.02	-.02	.10	.08	.10	.08

Inv=Involvement; Str=Structure; CS=Cultural Stimulation; PG= Parental Goals; Ex=Extraversion; Ag=Agreeableness; Cn=Conscientiousness; Nu=Neuroticism; Op=Openness to Experience
 Bold Font: statistically significant at $p < .001$

Table 3

Results of Measurement Invariance Tests in TRAIN Dataset

	Parental Involvement			Parental Structure			Parental Cultural Stimulation		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	.97	.04	.04	1	.02	.02	.95	.04	.04
Metric	.97	.04	.04	1	.02	.03	.95	.04	.04
P Metric	---	---	---	---	---	---	---	---	---
Scalar	.95	.04	.04	.98	.04	.06	.93	.04	.04
P Scalar	.96	.04	.05	1	.03	.04	.94	.04	.04
	Parental Goals			Child Extraversion			Child Agreeableness		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	1	0	.009	.97	.03	.03	.99	.02	.02
Metric	1	.005	.02	.97	.03	.03	.99	.02	.02
P Metric	---	---	---	---	---	---	---	---	---
Scalar	1	.007	.02	.96	.03	.03	.99	.02	.03
P Scalar	---	---	---	---	---	---	---	---	---
	Child Conscientiousness			Child Neuroticism			Child Openness to Experience		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR

Table 3 (continued)

	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	.98	.03	.02	.97	.03	.03	1	.01	.01
Metric	.98	.02	.03	.97	.03	.03	1	.01	.02
P Metric	---	---	---	---	---	---	---	---	---
Scalar	.97	.03	.03	.96	.03	.03	1	.01	.02
P Scalar	---	---	---	---	---	---	---	---	---

P Metric= Partial Metric; P Scalar= Partial Scalar

Table 4

Model Fit Indices of Cross-lagged Models fitted to TRAIN dataset

	Parental Involvement		Parental Structure		Parental Cultural Stimulation		Parental Goals	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
C Extraversion	.92	.03	.94	.03	.92	.03	.97	.03
C Agreeableness	.93	.03	.99	.01	.94	.02	.99	.01
C Conscientiousness	.93	.03	.96	.02	.93	.03	.97	.03
C Neuroticism	.92	.03	.94	.02	.95	.02	.97	.02
C Openness to Experience	.94	.03	.99	.02	.99	.01	.95	.03

C=Child

Table 5

Results of Structural Paths of the Cross-Lagged Models Fitted to TRAIN Dataset

Parental Involvement				
	Inv1 → Inv4	X1 → X4	Inv1 → X4	X1 → Inv4
Extraversion	.57 [.50,.63]	.29 [.22,.37]	.02[-.03,.08]	.03[-.04,.09]
Agreeableness	.57 [.51,.64]	.29 [.20,.38]	.01[-.05,.08]	.04[-.03,.11]
Conscientiousness	.56 [.49,.63]	.28 [.21,.35]	.07[.01,.13]	.02[-.05,.08]
Neuroticism	.57 [.50,.63]	.27 [.20,.35]	-.02[-.09,.04]	.09[.03,.16]
Openness to Experience	.57 [.50,.64]	.33 [.27,.40]	-.02[-.07,.04]	.01[-.05,.08]
Parental Structure				
	Str1 → Str4	X1 → X4	Str1 → X4	X1 → Str4
Extraversion	.56 [.44,.68]	.31 [.23,.38]	-.02[-.09,.05]	.02[-.05,.08]
Agreeableness	.57 [.45,.69]	.29 [.20,.38]	.03[-.05,.10]	.009[-.07,.09]
Conscientiousness	.53 [.39,.66]	.29 [.22,.36]	.03[-.05,.11]	.02[-.06,.10]
Neuroticism	.56 [.45,.68]	.28 [.20,.36]	-.03[-.10,.04]	.04[-.03,.12]
Openness to Experience	.56 [.44,.67]	.33 [.27,.40]	-.03[-.10,.04]	.02[-.05,.08]

Table 5 (continued)

	Parental Cultural Stimulation			
	CS1 → CS4	X1 → X4	CS1 → X4	X1 → CS4
Extraversion	.70[.60,.79]	.29[.21,.37]	.10[.02,.18]	.07[-.003,.14]
Agreeableness	.71[.61,.81]	.29[.19,.38]	.06[-.03,.15]	.02[-.05,.09]
Conscientiousness	.71[.61,.80]	.28[.21,.35]	.08[.008,.14]	.003[-.06,.07]
Neuroticism	.71[.61,.81]	.28[.20,.35]	-.01[-.08,.06]	-.02[-.10,.07]
Openness to Experience	.68[.58,.79]	.33[.26,.39]	.09[.01,.16]	.04[-.02,.10]
	Parental Goals			
	PG1 → PG4	X1 → X4	PG1 → X4	X1 → PG4
Extraversion	.49[.43,.56]	.30[.22,.37]	.02[-.04,.08]	.10[.03,.17]
Agreeableness	.50[.44,.57]	.29[.20,.38]	.05[-.005,.11]	.10[.03,.18]
Conscientiousness	.50[.43,.57]	.29[.22,.36]	.02[-.05,.09]	.03[-.04,.10]
Neuroticism	.51[.44,.57]	.27[.20,.35]	.03[-.04,.10]	.11[.04,.17]
Openness to Experience	.49[.42,.56]	.33[.27,.40]	-.003[-.07,.06]	.06[-.01,.13]

X1= Personality at Time 1; X4= Personality at Time 4
 Bold font: significant at $p < .003$

Table 6

Model Fit Indices of Latent Growth Models Fitted to TRAIN Dataset

	Parental Involvement		Parental Structure		Parental Cultural Stimulation	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
Extraversion	.94	.02	.95	.02	.93	.02
Agreeableness	.96	.02	.99	.01	.96	.02
Conscientiousness	.96	.02	.95	.02	.96	.02
Neuroticism	.94	.02	.95	.02	.93	.02
Openness to Experience	.97	.02	.99	.01	.97	.02
Parental Goals						
	CFI	RMSEA				
Extraversion	.96	.02				
Agreeableness	.99	.01				
Conscientiousness	.98	.02				
Neuroticism	.95	.02				
Openness to Experience	.99	.01				

Table 7

Means and Variances of Intercepts and Slopes in TRAIN Dataset

	Intercept		Slope	
	Mean	Variance	Mean	Variance
Parental Involvement	3.35	.24	-.21	.22
Parental Structure	3.78	.05	-.17	.08
Parental Cultural Stimulation	1.52	.23	-.05	.13
Parental Goals	3.79	.36	-.08	.04
Child Extraversion	3.73	.21	.002	.02
Child Agreeableness	3.71	.26	-.02	.03
Child Conscientiousness	3.79	.37	-.08	.04
Child Neuroticism	2.26	.32	-.02	.03
Child Openness to Experience	3.44	.32	-.05	.03

Bold font: statistically significant at $p < .003$

Table 8

Results of Correlations between Intercepts and Slopes of Parenting and Child Personality Variables in TRAIN Dataset

	Parental Involvement			
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.09[.02,.16]	-.04[-.11,.04]	-.01[-.11,.08]	.08[-.02,.18]
Agreeableness	.11[.03,.19]	-.06[-.17,.04]	.01[-.09,.11]	.06[-.07,.19]
Conscientiousness	.13[.07,.19]	-.03[-.11,.05]	-.02[-.10,.07]	.12 [0,.23]
Neuroticism	-.02[-.09,.04]	-.04[-.15,.07]	.13[.04,.22]	-.14[-.27, -.01]
Openness to Experience	.05[-.02,.12]	-.07[-.15,.02]	-.002[-.09,.09]	.10[-.01,.21]
	Parental Structure			
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.08[-.006,.16]	-.06[-.16,.04]	-.003[-.10,.10]	.04[-.08,.17]
Agreeableness	.13[.05, .21]	-.03[-.14,.07]	-.03[-.14,.08]	.12[-.009, .26]
Conscientiousness	.10[.02,.18]	-.02[-.12,.09]	.05[-.06,.16]	.09[-.03,.22]
Neuroticism	.02 [-.06,.10]	-.06[-.18,.06]	.03[-.08,.13]	-.19[-.34, -.04]
Openness to Experience	.04[-.04,.12]	-.06[-.17,.05]	.03[-.07,.14]	.05[-.08,.18]

Table 8 (continued)

Parental Cultural Stimulation				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.08[.008,.15]	.04[-.08,.15]	.09[-.03,.22]	-.15[-.30,.002]
Agreeableness	.11[.03,.19]	-.02[-.14,.10]	.02[-.09,.13]	-.04[-.20,.12]
Conscientiousness	.15[.08,.21]	-.02[-.12,.08]	-.02[-.12,.09]	-.002[-.13,.13]
Neuroticism	.01[-.07,.10]	-.05[-.17,.06]	-.09[-.22,.04]	.09[-.09,.26]
Openness to Experience	.08[.01,.14]	.04[-.07,.15]	.06[-.04,.16]	-.05[-.20,.10]
Parental Goals				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.09[.03,.15]	-.02[-.09,.06]	.07[-.02,.15]	-.05[-.17,.07]
Agreeableness	.10[.04,.16]	.06[-.03,.16]	-.001[-.08,.08]	-.02[-.15,.11]
Conscientiousness	.08[.01,.14]	-.03[-.12,.06]	.01[-.07,.09]	.08[-.02,.19]
Neuroticism	.02[-.05,.09]	.03[-.08,.14]	.08[-.02,.18]	-.15[-.29, -.02]
Openness to Experience	.09[.03,.16]	.03[-.05,.11]	.03[-.05,.11]	.05[-.07,.17]

i1 = intercept of parenting variable; s1= slope of parenting variable; i2=intercept of child personality variable; s2= slope of child personality variable

Bold font: statistically significant at $p < .003$

Table 9

Means and Standard Deviations of Variables in CPF Dataset

	M Inv T1	M Inv T3	M Inv T5	M Inv T7	F Inv T1	F Inv T3	F Inv T5	F Inv T7	M Mon T1
Mean	3.35	3.20	3.02	2.76	3.16	3.13	3.00	2.76	3.67
(SD)	(.62)	(.61)	(.61)	(.64)	(.68)	(.65)	(.61)	(.66)	(.37)
	M Mon T3	M Mon T5	M Mon T7	F Mon T1	F Mon T3	F Mon T5	F Mon T7	M Rout T1	M Rout T3
Mean	3.74	3.67	3.55	3.45	3.36	3.67	3.31	3.09	2.95
(SD)	(.42)	(.44)	(.52)	(.46)	(.47)	(.44)	(.58)	(.40)	(.42)
	M Rout T5	M Rout T7	F Rout T1	F Rout T3	F Rout T5	F Rout T7	M PG T1	M PG T3	M PG T5
Mean	2.82	2.71	2.98	2.94	2.75	2.71	3.74	3.70	3.70
(SD)	(.43)	(.43)	(.42)	(.40)	(.45)	(.47)	(.21)	(.25)	(.25)
	M PG T7	F PG T1	F PG T3	F PG T5	F PG T7	C Ex T5	C Ex T7	C Ag T5	C Ag T7
Mean	3.68	3.74	3.74	3.70	3.69	2.85	2.76	3.04	3.01
(SD)	(.26)	(.23)	(.24)	(.25)	(.29)	(.39)	(.39)	(.34)	(.32)
	C Con T5	C Con T7	C Neu T5	C Neu T7	C Op T5	C Op T7	M Ex T5	F Ex T5	M Ag T5

Table 9 (continued)

Mean	2.87	2.84	2.19	2.24	2.87	2.88	2.83	2.81	3.17
(SD)	(.36)	(.33)	(.42)	(.40)	(.34)	(.33)	(.39)	(.35)	(.35)
	M Ag T5	M Con T5	F Con T5	M Neu T5	F Neu T5	M Op T5	F Op T5		
Mean	3.12	3.03	3.04	2.27	2.16	2.61	2.64		
(SD)	(.31)	(.35)	(.35)	(.44)	(.39)	(.32)	(.30)		

F=Father; M=Mother; C=Child; Inv=Involvement; Mon=Monitoring; Rout=Routines; PG= Parental Goals;
 Ex=Extraversion; Ag= Agreeableness; Con=Conscientiousness; Neu=Neuroticism; Op=Openness to Experience

Table 10

Correlations between Parenting and Child Personality Variables in CFP Dataset

	C Ex T5	C Ex T7	C Ag T5	C Ag T7	C Con T5	C Con T7	C Neu T5	C Neu T7	C Open T5	C Open T7
M Invo T1	.07	-.005	.02	-.02	-.06	-.11	.01	.03	.07	.02
M Invo T3	.10	.05	.11	.04	.04	-.04	-.06	.002	.09	.07
M Inv T5	.03	-.02	.10	.06	.03	-.01	-.01	.03	-.03	.02
M Inv T7	.09	.05	.07	.09	.001	.02	.006	-.02	-.02	.04
M Mon T1	-.03	.04	.13	.11	.06	.06	-.05	-.03	.04	.07
M Mon T3	.11	.15	.25	.11	.15	.06	-.16	-.09	.16	.18
M Mon T5	.06	.10	.19	.14	.11	.07	-.12	-.08	.09	.08
M Mon T7	.10	.16	.22	.24	.10	.06	-.06	-.08	.07	.15
M Rout T1	.03	.06	.10	.05	.13	.08	-.10	-.05	.03	-.02
M Rout T3	.10	.07	.14	.05	.16	.06	-.13	-.08	.07	.02
M Rout T5	.06	.07	.14	.06	.13	.04	-.09	-.06	.04	-.02
M Rout T7	.06	.08	.11	.13	.11	.13	-.06	-.11	-.04	-.02

Table 10 (*continued*)

M PG T1	.03	.07	.01	-.02	.06	.07	-.04	-.03	-.01	-.04
M PG T3	.02	.08	-.04	-.03	.06	.05	-.05	-.02	-.04	-.02
M PG T5	.02	.06	-.001	.005	.06	.04	-.05	-.03	-.05	.004
M PG T7	.06	.07	.03	-.001	.04	.06	-.05	-.02	-.02	.00
F Inv T1	.07	-.03	.03	-.002	-.00	.01	-.07	.03	.09	.02
F Inv T3	.03	-.03	.08	-.009	.06	-.01	-.06	-.02	.07	-.02
F Inv T5	.01	-.07	.10	.06	-.004	.07	-.09	-.07	.09	-.003
F Inv T7	.05	.02	.15	.11	.11	.21	-.07	-.14	.05	.02
F Mon T1	.07	.04	.07	.11	.08	.08	-.08	.03	.09	.05
F Mon T3	.04	.01	.14	.10	.10	.06	-.08	-.05	.09	.05
F Mon T5	.08	.08	.16	.17	.11	.09	-.10	-.10	.12	.12
F Mon T7	.14	.20	.20	.21	.18	.17	-.11	-.09	.16†	.15
F Rout T1	.04	.05	.08	.09	.06	.11	-.03	-.04	.13	.07
F Rout T3	.04	.04	.09	.10	.16	.08	-.07	-.06	.08	-.05
F Rout T5	.08	.02	.10	.08	.12	.14	-.15	-.13	.07	-.07

Table 10 (continued)

F Rout T7	.09	.07	.08	.11	.17	.17	-.08	-.06	.04	-.03
F PG T1	.04	.09	.002	-.001	.12	.09	-.13	-.05	.03	.03
F PG T3	-.04	.06	-.07	-.002	.08	.05	-.04	-.09	-.10	-.08
F PG T5	-.06	.04	-.06	-.02	.005	.02	-.04	-.05	-.11	-.10
F PG T7	.10	.17	.03	.03	.07	.10	-.08	-.10	.04	.08

F=Father; M=Mother; C=Child; Inv=Involvement; Mon=Monitoring; Rout=Routines; PG= Parental Goals; Ex=Extraversion; Ag= Agreeableness;
 Con=Conscientiousness; Neu=Neuroticism; Open=Openness to Experience
 Bold font: statistically significant at $p < .001$

Table 11

Results of Measurement Invariance Tests in CFP Dataset

	Mother Involvement			Father Involvement			Mother Monitoring		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	.98	.03	.04	.97	.04	.05	.99	.06	.04
Metric	.96	.04	.07	.96	.04	.07	.99	.05	.10
P Metric	.97	.04	.05	.97	.04	.06	.99	.04	.04
Scalar	.95	.05	.06	.95	.04	.06	.98	.06	.04
P Scalar	.96	.04	.05	.96	.04	.06	---	---	---
	Father Monitoring			Mother Routines			Father Routines		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	1	.03	.03	1	.01	.02	.96	.06	.04
Metric	.99	.04	.07	.99	.03	.04	.95	.06	.06
P Metric	---	---	---	1	.02	.03	---	---	---
Scalar	.99	.05	.07	.97	.04	.05	.93	.06	.08
P Scalar	---	---	---	.99	.02	.04	.94	.06	.07
	Mother Parental Goals			Father Parental Goals			Child Extraversion		

Table 11 (*continued*)

	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	.97	.06	.07	.99	.03	.05	1	.03	.02
Metric	.97	.06	.12	.99	.03	.09	.99	.04	.04
P Metric	---	---	---	---	---	---	---	---	---
Scalar	.97	.06	.11	.99	.03	.10	.97	.07	.04
P Scalar	---	---	---	---	---	---	.99	.04	.04
Child Agreeableness			Child Conscientiousness			Child Neuroticism			
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	.99	.04	.02	.98	.07	.03	1	.02	.02
Metric	.99	.03	.02	.98	.06	.03	.99	.03	.03
P Metric	---	---	---	---	---	---	---	---	---
Scalar	.99	.04	.03	.98	.05	.03	.99	.03	.03
P Scalar	---	---	---	---	---	---	---	---	---
Child Openness to Experience									
	CFI	RMSEA	SRMR						

Table 11 (*continued*)

Baseline	1	.04	.02
Metric	1	.03	.03
P Metric	---	---	---
Scalar	1	.03	.03
P Scalar	---	---	---

P Metric= Partial Metric; P Scalar= Partial Scalar

Table 12

Model Fit Indices of Cross-lagged Models Fitted to CFP Dataset

	Mother Involvement		Mother Monitoring		Mother Routines		Mother Parental Goals	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
Extraversion	.91	.05	.95	.05	.94	.04	.97	.04
Agreeableness	.92	.04	.97	.04	.97	.03	1	.01
Conscientiousness	.93	.04	.97	.04	.97	.03	.98	.02
Neuroticism	.92	.05	.97	.04	.96	.03	.98	.03
Openness to Experience	.93	.05	.97	.04	.96	.03	.99	.02
	Father Involvement		Father Monitoring		Father Routines		Father Parental Goals	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
Extraversion	.90	.05	.96	.04	.94	.04	.94	.04
Agreeableness	.91	.04	.97	.04	.97	.03	.99	.02
Conscientiousness	.92	.04	.97	.04	.96	.03	.97	.03
Neuroticism	.91	.05	.96	.04	.97	.03	.97	.03
Openness to Experience	.93	.04	.97	.03	.97	.03	.98	.03

Table 13

Results of Structural Paths of the Cross-Lagged Models Fitted to CFP Dataset

Mother Involvement				
	MInv5 → MInv7	X5 → X7	MInv5 → X7	X5 → MInv7
Extraversion	.76[.69,.82]	.56[.47,.65]	.10[.002,.19]	-.03[-.13,.07]
Agreeableness	.76[.69,.82]	.62[.51,.73]	.04[-.07,.15]	-.04[-.06,.13]
Conscientiousness	.75[.69,.82]	.58[.48,.68]	-.005[-.11,.09]	-.02[-.11,.07]
Neuroticism	.76[.69,.82]	.57[.47,.67]	.04[-.06,.13]	.03[-.07,.12]
Openness to Experience	.76[.70,.83]	.61[.52,.70]	.04[-.06,.14]	.07[-.01,.16]
Mother Monitoring				
	MMon5 → MMon7	X5 → X7	MMon5 → X7	X5 → MMon7
Extraversion	.49[.42,.57]	.51[.40,.62]	.005[-.10,.11]	.03[-.07,.13]
Agreeableness	.47[.40,.55]	.62[.51,.74]	.01[-.11,.13]	.10[.004,.20]
Conscientiousness	.48[.40,.55]	.58[.48,.68]	.01[-.09,.11]	.05[-.04,.15]
Neuroticism	.50[.42,.57]	.57[.47,.67]	-.01[-.11,.09]	.02[-.08,.12]
Openness to Experience	.50[.43,.57]	.61[.52,.70]	.02[-.09,.11]	.003[-.09,.09]

Table 13 (continued)

Mother Routines				
	MRou5 → MRou7	X5 → X7	MRou5 → X7	X5 → MRou7
Extraversion	.69 [.58, .79]	.56 [.47, .66]	-.04 [-.17, .08]	-.10 [-.22, .02]
Agreeableness	.68 [.58, .79]	.62 [.51, .73]	.02 [-.12, .16]	-.07 [-.19, .05]
Conscientiousness	.66 [.54, .78]	.60 [.49, .70]	-.08 [-.22, .05]	-.001 [-.12, .12]
Neuroticism	.68 [.56, .79]	.58 [.47, .68]	.01 [-.11, .14]	-.002 [-.12, .12]
Openness to Experience	.68 [.57, .79]	.61 [.52, .70]	-.11 [-.23, .02]	-.13 [-.24, -.02]
Mother Parental Goals				
	MPG5 → MPG7	X5 → X7	MPG5 → X7	X5 → MPG7
Extraversion	.50 [.42, .59]	.56 [.42, .59]	.005 [-.10, .11]	.03 [-.08, .13]
Agreeableness	.51 [.43, .60]	.63 [.52, .74]	.05 [-.06, .17]	.07 [-.03, .18]
Conscientiousness	.52 [.43, .60]	.58 [.48, .68]	.001 [-.10, .10]	.02 [-.08, .12]
Neuroticism	.52 [.44, .60]	.57 [.47, .67]	.01 [-.08, .11]	-.02 [-.12, .09]
Openness to Experience	.52 [.44, .61]	.61 [.52, .70]	.05 [-.06, .15]	.01 [-.09, .11]
Father Involvement				

Table 13 (continued)

	FInv5 → FInv7	X5 → X7	FInv5 → X7	X5 → FInv7
Extraversion	.72 [.64, .81]	.56 [.46, .66]	-.15 [-.27, -.03]	.02 [-.09, .13]
Agreeableness	.73 [.64, .81]	.63 [.52, .74]	-.03 [-.17, .11]	.07 [-.05, .19]
Conscientiousness	.73 [.64, .81]	.58 [.48, .68]	.09 [-.04, .21]	.11 [-.007, .22]
Neuroticism	.73 [.64, .82]	.58 [.47, .68]	.02 [-.11, .14]	.04 [-.08, .16]
Openness to Experience	.74 [.65, .82]	.61 [.52, .70]	-.09 [-.22, .04]	-.03 [-.15, .09]
Father Monitoring				
	FMon5 → FMon7	X5 → X7	FMon5 → X7	X5 → FMon7
Extraversion	.65 [.58, .72]	.56 [.46, .65]	.03 [-.09, .14]	.12 [-.02, .21]
Agreeableness	.65 [.58, .73]	.62 [.51, .74]	.007 [-.13, .14]	.10 [.003, .21]
Conscientiousness	.65 [.58, .73]	.58 [.48, .68]	.03 [-.10, .15]	.14 [.04, .24]
Neuroticism	.66 [.59, .73]	.57 [.47, .67]	-.04 [-.16, .08]	-.05 [-.16, .05]
Openness to Experience	.66 [.59, .73]	.60 [.51, .69]	.08 [-.03, .18]	.08 [-.03, .18]
Father Routines				
	FRou5 → FRou7	X5 → X7	FRou5 → X7	X5 → FRou7

Table 13 (continued)

Extraversion	.66 [.54, .78]	.56 [.46, .65]	-.008 [-.14, .12]	.05 [-.08, .17]
Agreeableness	.65 [.53, .77]	.63 [.52, .74]	-.03 [-.18, .12]	.05 [-.08, .17]
Conscientiousness	.59 [.47, .72]	.58 [.48, .67]	.08 [-.05, .21]	.14 [.02, .27]
Neuroticism	.66 [.54, .78]	.57 [.47, .68]	-.02 [-.15, .12]	.02 [-.11, .16]
Openness to Experience	.64 [.52, .75]	.61 [.52, .70]	-.11 [-.25, .03]	.01 [-.12, .14]
Father Parental Goals				
	FPG5 → FPG7	X5 → X7	FPG5 → X7	X5 → FPG7
Extraversion	.63 [.54, .72]	.56 [.47, .66]	.03 [-.09, .15]	.17 [.06, .28]
Agreeableness	.63 [.54, .71]	.62 [.51, .73]	-.10 [-.23, .04]	.06 [-.05, .17]
Conscientiousness	.60 [.51, .69]	.58 [.49, .68]	-.009 [-.13, .11]	.06 [-.05, .17]
Neuroticism	.63 [.54, .71]	.57 [.47, .67]	-.05 [-.17, .07]	-.05 [-.17, .06]
Openness to Experience	.63 [.54, .72]	.59 [.50, .69]	-.07 [-.20, .06]	.10 [-.01, .22]

X1= Personality at Time 1; X4= Personality at Time 4
 Bold font: significant at $p < .0008$

Table 14

Model Fit Indices of Latent Growth Models Fitted to CFP Dataset

	Mother Involvement		Father Involvement		Mother Monitoring	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
Extraversion	.94	.03	.93	.03	.96	.04
Agreeableness	.94	.03	.93	.03	.98	.03
Conscientiousness	.95	.03	.93	.03	.97	.03
Neuroticism	.95	.03	.93	.03	.98	.03
Openness to Experience	.94	.03	.94	.03	.98	.03
	Father Monitoring		Mother Routines		Father Routines	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
Extraversion	.95	.04	.96	.03	.93	.04
Agreeableness	.95	.04	.97	.02	.93	.03
Conscientiousness	.95	.04	.97	.02	.94	.03
Neuroticism	.94	.04	.97	.03	.93	.04
Openness to Experience	.95	.04	.95	.03	.93	.03
	Mother Parental Goals		Father Parental Goals			

Table 14 (*continued*)

	CFI	RMSEA	CFI	RMSEA
Extraversion	.96	.04	.96	.03
Agreeableness	.97	.03	.99	.02
Conscientiousness	.97	.03	.98	.02
Neuroticism	.96	.03	.98	.02
Openness to Experience	.97	.03	.98	.02

Table 15

Means and Variances of Intercepts and Slopes in CFP Dataset

Variable	Intercept		Slope	
	Mean	Variance	Mean	Variance
Mother Involvement	3.13	.45	-.26	.05
Father Involvement	2.93	.41	-.17	.03
Mother Monitoring	3.65	.06	-.04	.008
Father Monitoring	3.43	.11	-.05	.009
Mother Routines	3.40	.07	-.13	.007
Father Routines	2.92	.08	-.11	.003
Mother Parental Goals	3.79	.02	-.02	0.001
Father Parental Goals	3.80	.03	-.02	.001
Child Extraversion	2.87	.12	-.12	.12
Child Agreeableness	3.04	.08	-.05	.05
Child Conscientiousness	2.93	.11	-.06	.08
Child Neuroticism	2.17	.12	.04	.09
Child Openness to Experience	2.98	.17	.02	.12

Bold font: statistically significant at $p < .0008$

Table 16

Results of Correlations between Intercepts and Slopes of Parenting and Child Personality Variables in CFP Dataset

	Mother Involvement			
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.03[-.09,.16]	-.08[-.21,.06]	.02[-.13,.17]	.06[-.11,.22]
Agreeableness	.10[-.03,.23]	-.17[-.34, -.004]	.01[-.14,.16]	.19[-.009,.38]
Conscientiousness	-.05[-.18,.07]	-.06[-.20,.08]	.03[-.12,.17]	.12[-.05,.29]
Neuroticism	.009[-.12,.13]	.08[-.06,.22]	.04[-.11,.18]	-.13[-.30,.04]
Openness to Experience	.08[-.04,.20]	-.11[-.25,.04]	-.08[-.22,.07]	.15[-.02,.31]
	Father Involvement			
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.04[-.10,.19]	-.14[-.31,.02]	-----	-----
Agreeableness	.10[-.05,.26]	-.17[-.38,.04]	-----	-----
Conscientiousness	.004[-.15,.15]	-.009[-.18,.17]	-----	-----
Neuroticism	-.07[-.22,.09]	.20[.02,.38]	-----	-----

Table 16 (continued)

Openness to Experience	.09[-.07,.25]	-.16[-.36,.04]	-----	-----
Mother Monitoring				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.16[-.01, .34]	-.04[-.23,.15]	-----	-----
Agreeableness	.29[.12,.46]	-.29[-.51, -.06]	-----	-----
Conscientiousness	.16[-.001,.32]	-.13[-.31,.06]	-----	-----
Neuroticism	-.21[-.38, -.04]	.12[-.08,.31]	-----	-----
Openness to Experience	.23[.07,.39]	-.02[-.21,.17]	-----	-----
Father Monitoring				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.007[-.15,.17]	.006[-.18,.19]	-----	-----
Agreeableness	.05[-.12,.22]	.10[-.13,.34]	-----	-----
Conscientiousness	.09[-.08,.25]	-.02[-.21,.18]	-----	-----
Neuroticism	-.09[-.26,.07]	.16[-.04,.36]	-----	-----
Openness to Experience	.06[-.11,.24]	-.007[-.23,.21]	-----	-----

Table 16 (*continued*)

Mother Routines				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.11[-.05,.26]	-.07[-.24,.11]	-----	-----
Agreeableness	.21[.05,.37]	-.27[-.48, -.05]	-----	-----
Conscientiousness	.24[.08,.39]	-.19[-.37, -.01]	-----	-----
Neuroticism	-.13[-.28,.03]	.10[-.08,.28]	-----	-----
Openness to Experience	.17[.02,.33]	-.20[-.38, -.02]	-----	-----
Father Routines				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	-.12[-.28,.04]	.09[-.10,.27]	-----	-----
Agreeableness	.07[-.10,.24]	-.05[-.28,.18]	-----	-----
Conscientiousness	.13[-.03,.30]	-.13[-.32,.06]	-----	-----
Neuroticism	-.01[-.18,.16]	.07[-.14,.27]	-----	-----
Openness to Experience	.09[-.08,.26]	-.08[-.29,.14]	-----	-----
Mother Parental Goals				

Table 16 (continued)

	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	-.01[-.17,.15]	.06[-.12,.24]	-----	-----
Agreeableness	-.06[-.23,.10]	-.02[-.23,.19]	-----	-----
Conscientiousness	.11[-.04,.27]	-.07[-.25,.11]	-----	-----
Neuroticism	-.009[-.17,.15]	.001[-.18,.18]	-----	-----
Openness to Experience	-.03[-.18,.13]	-.05[-.23,.14]	-----	-----
Father Parental Goals				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	-.02[-.16,.13]	.06[-.11,.23]	-----	-----
Agreeableness	-.02[-.18,.14]	-.008[-.22,.21]	-----	-----
Conscientiousness	.22[.07,.37]	-.16[-.34,.01]	-----	-----
Neuroticism	-.11[-.27,.04]	.12[-.07,.30]	-----	-----
Openness to Experience	.05[-.11,.21]	-.08[-.28,.13]	-----	-----

i1 = intercept of parenting variable; s1= slope of parenting variable; i2=intercept of child personality variable; s2= slope of child personality variable

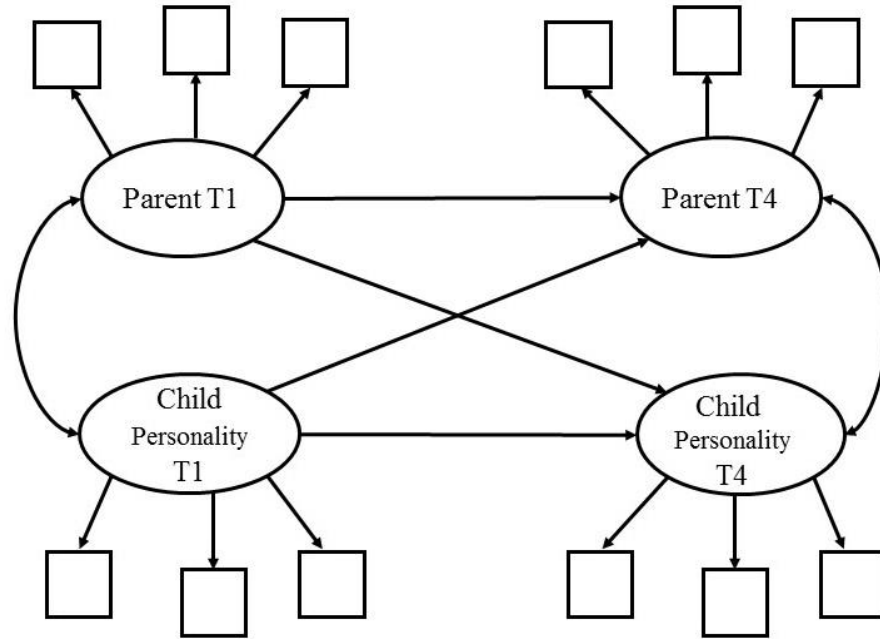


Figure 1: Example of Cross-Lagged Model fitted to TRAIN dataset. For simplicity, only three indicators are represented, and relations between indicators are omitted.

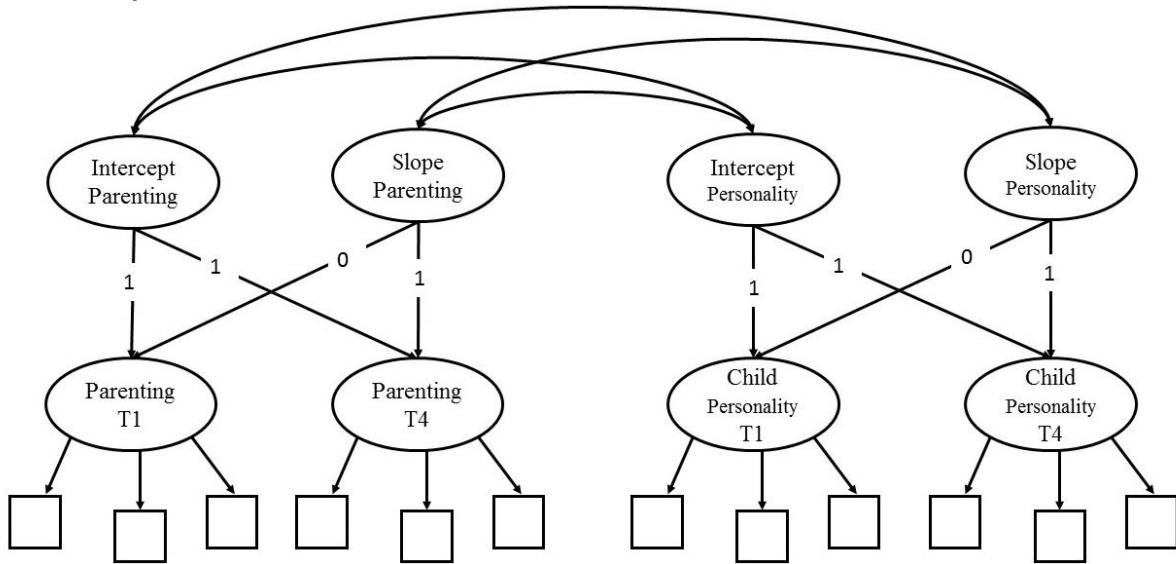


Figure 2: Example of Bivariate Latent Growth Model fitted to TRAIN data. For simplicity, only two assessment waves are represented, and relations between indicators are omitted.

REFERENCES

- Ainsworth, M. D., Blehar, M. C., Waters, E., & Wall, S. (1978). Patterns of attachment: Assessed in the strange situation and at home.
- Avinun, R., & Knafo, A. (2014). Parenting as a reaction evoked by children's genotype: A meta-analysis of children-as-twins studies. *Personality and Social Psychology Review, 18*(1), 87-102.
- Ayoub, M., Gosling, S. D., Potter, J., Shanahan, M., & Roberts, B. W. (2018). The relations between parental socioeconomic status, personality, and life outcomes. *Social Psychological and Personality Science, 9*(3), 338-352.
- Baardstu, S., Karevold, E. B., & von Soest, T. (2017). Childhood antecedents of Agreeableness: A longitudinal study from preschool to late adolescence. *Journal of Research in Personality, 67*, 202-214.
- Bandura, A. (1963). The role of imitation in personality development. *Dimensions of Psychology, 16*-23.
- Bandura, A. (1971). Vicarious and self-reinforcement processes. *The nature of reinforcement, 228278*
- Bell, R. Q. (1968). A reinterpretation of the direction of effects in studies of socialization. *Psychological Review, 75*, 81-95
- Belsky, J. (1984). The determinants of parenting: A process model. *Child development, 83*-96.
- Berry, D., & Willoughby, M. T. (2017). On the practical interpretability of cross-lagged panel models: Rethinking a developmental workhorse. *Child Development, 88*(4), 1186-1206.
- Bollen, K. A., & Curran, P. J. (2006). *Latent curve models: A structural equation perspective* (Vol. 467). John Wiley & Sons.

- Bornstein, M. H. (2001). Parenting: Science and practice. *Parenting, 1*(1-2), 1-4.
- Bowlby, J. (1969). Attachment (Attachment and loss series, Vol. 1). New York: Basic Books
- Bowlby, J. (1980). Attachment and loss: Loss, sadness and depression (Vol. 3).
- Brooks, J. B. (2013). *The process of parenting*. New York: McGraw-Hill.
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 14*(3), 464-504.
- 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*(2), 274.
- Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Erlbaum
- Cooke, L. J., Chambers, L. C., Añez, E. V., & Wardle, J. (2011). Facilitating or undermining? The effect of reward on food acceptance. A narrative review. *Appetite, 57*(2), 493-497
- Curran, P. J., Obeidat, K., & Losardo, D. (2010). Twelve frequently asked questions about growth curve modeling. *Journal of cognition and development, 11*(2), 121-136.
- Damian, R. I., & Roberts, B. W. (2015). The associations of birth order with personality and intelligence in a representative sample of US high school students. *Journal of Research in Personality, 58*, 96-105.
- Davidov, M., & Grusec, J. E. (2006). Untangling the links of parental responsiveness to distress and warmth to child outcomes. *Child development, 77*(1), 44-58.
- Dumas, J. E., & LaFreniere, P. J. (1993). Mother-child relationships as sources of support or stress: A comparison of competent, average, aggressive, and anxious dyads. *Child development, 64*(6), 1732-1754.

- Duncan, T. E., & Duncan, S. C. (2004). An introduction to latent growth curve modeling. *Behavior therapy*, 35(2), 333-363.
- Egberts, M. R., Prinzie, P., Deković, M., de Haan, A. D., & van den Akker, A. L. (2015). The prospective relationship between child personality and perceived parenting: Mediation by parental sense of competence. *Personality and Individual Differences*, 77, 193-198.
- Fadda, D., Scalas, L. F., & Meleddu, M. (2015). Contribution of personal and environmental factors on positive psychological functioning in adolescents. *Journal of adolescence*, 43, 119-131.
- Fei-Yin Ng, F., Kenney-Benson, G. A., & Pomerantz, E. M. (2004). Children's achievement moderates the effects of mothers' use of control and autonomy support. *Child Development*, 75(3), 764-780.
- Field, T., Diego, M., & Hernandez-Reif, M. (2009). Depressed mothers' infants are less responsive to faces and voices. *Infant behavior and Development*, 32(3), 239-244.
- Forman, D. R., Aksan, N., & Kochanska, G. (2004). Toddlers' responsive imitation predicts preschool-age conscience. *Psychological Science*, 15(10), 699-704.
- Fraley, R. C., & Marks, M. J. (2007). The null hypothesis significance testing debate and its implications for personality research. *Handbook of research methods in personality psychology*, 149-169.
- Fraley, R. C., & Roberts, B. W. (2005). Patterns of continuity: a dynamic model for conceptualizing the stability of individual differences in psychological constructs across the life course. *Psychological review*, 112(1), 60.
- Funder, D. C., & Ozer, D. J. (2019). Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science*, 2(2), 156-168.

- Galambos, N., & Costigan, C. L. (2003). Emotional and personality development in adolescence. In I. B. Weiner (Series Ed.), & R. M. Lerner, M. A. Easterbrooks, & J. Mistry (Vol. Eds.), *Handbook of psychology: Vol. 6. Developmental psychology* (pp. 351–372). New York, NY:Wiley.
- Gallarín, M., & Alonso-Arbiol, I. (2012). Parenting practices, parental attachment and aggressiveness in adolescence: A predictive model. *Journal of adolescence*, 35(6), 1601-1610.
- Gershoff, E. T. (2002). Corporal punishment by parents and associated child behaviors and experiences: a meta-analytic and theoretical review. *Psychological bulletin*, 128(4), 539.
- Ginsburg, G. S., & Bronstein, P. (1993). Family factors related to children's intrinsic/extrinsic motivational orientation and academic performance. *Child development*, 64(5), 1461-1474.
- Göllner, R., Roberts, B. W., Damian, R. I., Lüdtke, O., Jonkmann, K., & Trautwein, U. (2017). Whose “storm and stress” is it? Parent and child reports of personality development in the transition to early adolescence. *Journal of personality*, 85(3), 376-387.
- Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual review of psychology*, 60, 549-576.
- Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological methods*, 20(1), 102.
- Harris, J. R. (2011). *The nurture assumption: Why children turn out the way they do*. Simon and Schuster.

- Heaven, P., & Ciarrochi, J. (2008). Parental styles, gender and the development of hope and self-esteem. *European Journal of Personality: Published for the European Association of Personality Psychology*, 22(8), 707-724.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.
- Karraker, K. H., & Coleman, P. K. (2005). The effects of child characteristics on parenting. *Parenting: An ecological perspective*, 147-176.
- Kenney-Benson, G. A., & Pomerantz, E. M. (2005). The role of mothers' use of control in children's perfectionism: Implications for the development of children's depressive symptoms. *Journal of Personality*, 73(1), 23-46.
- Lansford, J. E., Rothenberg, W. A., Jensen, T. M., Lippold, M. A., Bacchini, D., Bornstein, M. H., ... & Malone, P. S. (2018). Bidirectional relations between parenting and behavior problems from age 8 to 13 in nine countries. *Journal of Research on Adolescence*, 28(3), 571-590.
- Leerkes, E. M., Blankson, A. N., & O'Brien, M. (2009). Differential effects of maternal sensitivity to infant distress and nondistress on social-emotional functioning. *Child development*, 80(3), 762-775.
- Lianos, P. G. (2015). Parenting and social competence in school: The role of preadolescents' personality traits. *Journal of Adolescence*, 41, 109-120.
- Mabbe, E., Soenens, B., Vansteenkiste, M., & Van Leeuwen, K. (2016). Do personality traits moderate relations between psychologically controlling parenting and problem behavior in adolescents?. *Journal of Personality*, 84(3), 381-392.

- Madon, S., Guyll, M., Spoth, R., & Willard, J. (2004). Self-fulfilling prophecies: The synergistic accumulative effect of parents' beliefs on children's drinking behavior. *Psychological Science, 15*(12), 837-845.
- Markova, G., & Legerstee, M. (2006). Contingency, imitation, and affect sharing: Foundations of infants' social awareness. *Developmental Psychology, 42*(1), 132.
- Meredith W, Horn JL: The role of factorial invariance in modeling growth and change; in Collins LM, Sayer AG (eds): *New Methods for the Analysis of Change*. Washington, American Psychological Association, 2001, pp 204–240.
- Moilanen, K. L., Rasmussen, K. E., & Padilla-Walker, L. M. (2015). Bidirectional associations between self-regulation and parenting styles in early adolescence. *Journal of Research on Adolescence, 25*(2), 246-262.
- Newton, E. K., Laible, D., Carlo, G., Steele, J. S., & McGinley, M. (2014). Do sensitive parents foster kind children, or vice versa? Bidirectional influences between children's prosocial behavior and parental sensitivity. *Developmental Psychology, 50*(6), 1808.
- Nyhus, E. K., & Webley, P. (2013). The relationship between parenting and the economic orientation and behavior of norwegian adolescents. *The Journal of genetic psychology, 174*(6), 620-641.
- Olineck, K. M., & Poulin-Dubois, D. (2007). Imitation of intentional actions and internal state language in infancy predict preschool theory of mind skills. *European Journal of Developmental Psychology, 4*(1), 14-30.
- Padilla-Walker, L. M., Carlo, G., Christensen, K. J., & Yorgason, J. B. (2012). Bidirectional relations between authoritative parenting and adolescents' prosocial behaviors. *Journal of Research on Adolescence, 22*(3), 400-408.

- Patterson, G. R., & Fisher, P. A. (2002). Recent developments in our understanding of parenting: Bidirectional effects, causal models, and the search for parsimony. *Handbook of parenting, 5*, 59-88.
- Patterson, G. R., Fisher, P. A., & Bornstein, M. H. (2002). Handbook of parenting: Vol. 5: Practical issues in parenting.
- Patterson, G. R., Reid, J. B., & Dishion, T. J. (1992). *Antisocial boys*. Eugene, OR: Castalia.
- Pearl, A. M., French, B. F., Dumas, J. E., Moreland, A. D., & Prinz, R. (2014). Bidirectional effects of parenting quality and child externalizing behavior in predominantly single parent, under-resourced African American families. *Journal of Child and Family Studies, 23*(2), 177-188.
- Pelham, W. E., Lang, A. R., Atkeson, B., Murphy, D. A., Gnagy, E. M., Greiner, A. R., ... & Greenslade, K. E. (1997). Effects of deviant child behavior on parental distress and alcohol consumption in laboratory interactions. *Journal of Abnormal Child Psychology, 25*(5), 413-424.
- Pettit, G. S., & Arsiwalla, D. D. (2008). Commentary on special section on “bidirectional parent–child relationships”: The continuing evolution of dynamic, transactional models of parenting and youth behavior problems. *Journal of Abnormal Child Psychology, 36*(5), 711.
- Pomerantz, E. M., & Dong, W. (2006). Effects of mothers' perceptions of children's competence: The moderating role of mothers' theories of competence. *Developmental Psychology, 42*(5), 950.

- Pomerantz, E. M., Ng, F. F. Y., & Wang, Q. (2006). Mothers' mastery-oriented involvement in children's homework: Implications for the well-being of children with negative perceptions of competence. *Journal of Educational Psychology, 98*(1), 99.
- Pomerantz, E. M., & Thompson, R. A. (2008). Parents Role in Children's Personality Development. *Handbook of personality-theory and research, 351-374*.
- Pomerantz, E. M., Wang, Q., & Ng, F. F. Y. (2005). Mothers' affect in the homework context: the importance of staying positive. *Developmental Psychology, 41*(2), 414.
- Power, T. G. (2013). Parenting dimensions and styles: a brief history and recommendations for
- Roberts, B. W. (2009). Back to the future: Personality and assessment and personality development. *Journal of research in personality, 43*(2), 137-145.
- Roberts, B. W., Luo, J., Briley, D. A., Chow, P. I., Su, R., & Hill, P. L. (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin, 143*(2), 117.
- Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychological bulletin, 132*(1), 1.
- Sameroff, A. (2009). *The transactional model*. American Psychological Association.
- Sameroff, A. J. (1983). Development systems: Contexts and evolution. *Handbook of child psychology: formerly Carmichael's Manual of child psychology/Paul H. Mussen, editor*.
- Sanguras, L. (2018). *Raising Children With Grit: Parenting Passionate, Persistent, and Successful Kids*. Sourcebooks, Inc..
- Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of genotype→ environment effects. *Child development, 424-435*.

- Schimmenti, A., & Bifulco, A. (2015). Linking lack of care in childhood to anxiety disorders in emerging adulthood: the role of attachment styles. *Child and Adolescent Mental Health, 20*(1), 41-48.
- Schofield, T. J., & Atherton, O. E. (2018). *Personality and Parenting*. Unpublished manuscript.
- Schofield, T. J., Conger, R. D., Donnellan, M. B., Jochem, R., Widaman, K. F., & Conger, K. J. (2012). Parent personality and positive parenting as predictors of positive adolescent personality development over time. *Merrill-Palmer quarterly (Wayne State University Press), 58*(2), 255.
- Selig, T., & Little, J. P. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (pp. 265–278). New York, NY: Guilford Press.
- Skinner, B. F. (1966). The phylogeny and ontogeny of behavior. *Science, 153*(3741), 1205-1213.
- Skinner, E., Johnson, S., & Snyder, T. (2005). Six dimensions of parenting: A motivational model. *Parenting: Science and practice, 5*(2), 175-235.
- Soenens, B., Luyckx, K., Vansteenkiste, M., Luyten, P., Duriez, B., & Goossens, L. (2008). Maladaptive perfectionism as an intervening variable between psychological control and adolescent depressive symptoms: a three-wave longitudinal study. *Journal of Family Psychology, 22*(3), 465.
- Soenens, B., Park, S. Y., Vansteenkiste, M., & Mouratidis, A. (2012). Perceived parental psychological control and adolescent depressive experiences: A cross-cultural study with Belgian and South-Korean adolescents. *Journal of adolescence, 35*(2), 261-272.
- Spagnola, M., & Fiese, B. H. (2007). Family routines and rituals: A context for development in the lives of young children. *Infants & young children, 20*(4), 284-299.

- Valiente, C., Lemery-Chalfant, K., & Reiser, M. (2007). Pathways to problem behaviors: Chaotic homes, parent and child effortful control, and parenting. *Social Development, 16*(2), 249-267.
- van den Akker, A. L., Deković, M., & Prinzie, P. (2010). Transitioning to adolescence: How changes in child personality and overreactive parenting predict adolescent adjustment problems. *Development and Psychopathology, 22*(1), 151-163.
- Van den Akker, A. L., Deković, M., Asscher, J., & Prinzie, P. (2014). Mean-level personality development across childhood and adolescence: A temporary defiance of the maturity principle and bidirectional associations with parenting. *Journal of Personality and Social Psychology, 107*(4), 736.
- Wang, Q., Pomerantz, E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the United States and China. *Child development, 78*(5), 1592-1610.

APPENDIX A
Information about Instruments in TRAIN and CFP Datasets

Table 17

Information about Variables in TRAIN Dataset

Variable	Rater	Waves Assessed
Child Personality	Child	1,2,3,4
Parental involvement	Parents (unspecified)	1,4
Parental Structure	Parents (unspecified)	1,2,3,4
Parental Cultural Stimulation	Parents (unspecified)	1,4
Parental Goals	Parents (unspecified)	1,4

Table 18

Information about Variables in CFP Dataset

Variable	Rater	Waves Assessed
Child Personality	Child	5, 7
Parental Monitoring	Father, Mother	1,3,5,7
Parental Involvement	Father, Mother	1,3,5,7
Family Routines	Father, Mother	1,3,5,7
Parental Goals	Father, Mother	1,3,5,7
Parental Warmth	Father, Mother	1,3,5,7
Parental Hostility	Father, Mother	1,3,5,7

Table 19

Cronbach's Alpha Reliabilities of Scales in TRAIN Dataset

	Time 1	Time 2	Time 3	Time 4
Parental Involvement	.81	---	---	.81
Parental Structure	.64	---	---	.75
Parental Cultural Stimulation	.64	---	---	.68
Parental Goals	.89	---	---	.90
Child Extraversion	.71	.73	.76	.77
Child Agreeableness	.67	.67	.66	.67
Child Conscientiousness	.77	.80	.80	.81
Child Neuroticism	.71	.68	.69	.72
Child Openness to Experience	.82	.83	.83	.82

Table 20

Cronbach's Alpha Reliabilities of Scales in CFP Dataset

	Time 1	Time 3	Time 5	Time 7
Mother Involvement	.67	.65	.67	.68
Mother Monitoring	.81	.85	.87	.91
Mother Routines	.45	.59	.60	.60
Mother Parental Goals	.54	.64	.71	.72
Mother Warmth	.89	.92	.93	.94
Mother Hostility	.70	.77	.87	.86
Father Involvement	.73	.73	.70	.72
Father Monitoring	.84	.85	.90	.91
Father Routines	.54	.61	.70	.68
Father Parental Goals	.64	.68	.74	.80
Father Warmth	.88	.92	.92	.92
Father Hostility	.70	.82	.86	.89
Child Rated Extraversion	---	---	.72	.75

Table 20 (continued)

Child Rated Agreeableness	---	---	.68	.64
Child Rated Conscientiousness	---	---	.72	.68
Child Rated Neuroticism	---	---	.72	.73
Child Rated Openness to Experience	---	---	.70	.71
Mother Rated Extraversion	---	---	.75	.78
Mother Rated Agreeableness	---	---	.73	.75
Mother Rated Conscientiousness	---	---	.80	.81
Mother Rated Neuroticism	---	---	.71	.72
Mother Rated Openness to Experience	---	---	.77	.78
Father Rated Extraversion	---	---	.69	.72
Father Rated Agreeableness	---	---	.69	.73
Father Rated Conscientiousness	---	---	.82	.81
Father Rated Neuroticism	---	---	.73	.74
Father Rated Openness to Experience	---	---	.76	.80

Items of Instruments in TRAIN Dataset

Parental Involvement

I have enough time and energy to

- 1) talk intensively about school day
- 2) take care that child is doing his/her homework
- 3) go through schoolwork with child
- 4) get involved in child school
- 5) go to parents' evenings
- 6) study classwork with child

Parental Structure

I make sure that

- 1) my child goes to bed early on school days
- 2) my child does his homework at fixed times everyday
- 3) my child has breakfast in the morning
- 4) we get up together and have breakfast at the weekend
- 5) my child brushes his/her teeth in the morning and in the evening
- 6) my child packs the school bag for the next day in the evening
- 7) family eats together at least once a day
- 8) my child gets up on time in the morning on school days

Parental Cultural Stimulation

How often does it happen that you

- 1) go to the theater together with your child
- 2) go to the museum together with your child
- 3) go to classical concerts together with your child
- 4) go to an opera / ballet performance together
- 5) go to a book reading with your child

Parental Goals

In your opinion, how important that family teaches child

- 1) personal independence
- 2) performance and effort
- 3) order and discipline
- 4) versatile knowledge
- 5) political judgement
- 6) sound knowledge in main subjects
- 7) social responsibility
- 8) appropriate social manners
- 9) respect/respect for parents
- 10) mastery of cultural skills

- 11) willingness to learn
- 12) righteous and helpful behavior
- 13) knowledge for profession
- 14) moral judgment
- 15) Life

Items of Instruments in CFP Dataset

Mother/Father Involvement

In the past year, you

- 1) helped child with homework or school project
- 2) encouraged child to study
- 3) helped child study for a test
- 4) checked to see that child had done his homework

Mother/Father Monitoring

Over the past three months,

- 1) knew what child was doing after school
- 2) knew how child spent his money
- 3) knew the parents of the child's friends
- 4) knew who child's friends are
- 5) if the child was going to get home late, he was expected to call
- 6) child told you who he/she was going to be with before he/she went out
- 7) when child went out at night, you knew where he/she was going to be
- 8) knew about the plans child had with friends
- 9) when child went out, you asked him/her where he/she was going
- 10) knew how child was doing in his/her schoolwork
- 11) knew where child was and what he/she was doing
- 12) talked with child about what was going on in his/her life
- 13) knew if child did something wrong
- 14) knew when child did something really well at school or other place

Mother/Father Family Routines

How often

- 1) talk to child about his/her homework
- 2) help child with his/her homework
- 3) child does his/her homework at the same time each day or night during the week
- 4) child takes part in regular activities after school
- 5) is there an adult at home when child comes back from school
- 6) child go to bed at the same time each night
- 7) your family eat a meal together
- 8) child does regular household chores

Mother/Father Parental Goals

How important is it that

- 1) child does well in school
- 2) child is popular
- 3) sets goals and accomplishes them

- 4) is good at sports
- 5) child does chores at home
- 6) attends church every week
- 7) respects and pays attention to his/her teachers
- 8) is courteous toward other people
- 9) plans for the future
- 10) develops his/her talents and abilities
- 11) respects and pays attention to you

Mother/Father Warmth

During the past year, how often did your mother/father

- 1) Ask you for your opinion about an important matter
- 2) Listen carefully to your point of view
- 3) Let you know she really cares about you
- 4) Act loving and affectionate toward you
- 5) Let you know that she appreciates you, your ideas, or things you do
- 6) Help you do something that was important to you
- 7) Have a good laugh with you about something that was funny
- 8) Act supportive and understanding toward you
- 9) Tells you she loves you
- 10) Talks about things that bother you
- 11) Ask you what you think before deciding on family matters that involve you
- 12) Gives you reasons for his/her decisions
- 13) Asks you what you think before making a decision about you
- 14) Lets you know he/she is pleased
- 15) Rewards with money or good things when you get good grades
- 16) Go to special events that involve you, like a play or sports
- 17) Understands why your parents make a rule
- 18) Discipline by reason, explaining, or talking to you

Mother/Father Hostility

During the past year, how often did your mother/father

- 1) Shouts or yells at you because he/she was mad at you
- 2) Ignores you when you tried to talk to him/her
- 3) Gives a lecture about how you should behave
- 4) Boss around a lot
- 5) Hit, push, grab or shove you
- 6) Did not listen, but does all talking himself/herself
- 7) Argue with you whenever they disagree about something
- 8) Insults or swears at you
- 9) Tells you he/she is right, and you are wrong about things
- 10) Calls you bad names

- 11) Threatens to hurt you by hitting you with his/her fist, an object, or something else
- 12) Get angry at you
- 13) Criticize you or your ideas

APPENDIX B
Results of Univariate Latent Growth Models

Table 21

Model Fit Indices of Linear and Quadratic Univariate Models (TRAIN Dataset)

	Linear			Quadratic		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Child Extraversion	.96	.03	.03	.96	.03	.03
Child Agreeableness	.99	.02	.03	.98	.02	.03
Child Conscientiousness	.95	.04	.04	.95	.04	.04
Child Neuroticism	.96	.03	.04	.96	.03	.03
Child Openness to Experience	.95	.03	.04	.95	.03	.04

Table 22

Model Fit Indices of Linear and Quadratic Univariate Models (CFP Dataset)

	Linear			Quadratic		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Mother Involvement	.92	.04	.08	.93	.04	.08
Mother Monitoring	.98	.05	.09	.99	.05	.09
Mother Routines	.97	.04	.06	.98	.03	.05
Mother Goals	.96	.06	.12	.97	.06	.11
Father Involvement	.94	.05	.08	.95	.05	.08
Father Monitoring	.97	.06	.08	.98	.05	.07
Father Routines	.93	.06	.07	.93	.06	.07
Father Goals	.99	.03	.13	.99	.03	.10

APPENDIX C: SUPPLEMENTARY ANALYSES

Results of Analyses of Parental Warmth/Hostility and Child Personality

In CFP dataset, all parenting dimensions were rated by parents, except for warmth and hostility, which were rated by children. To eliminate mono-rater bias, we used parent-rated child personality traits for the latent growth model analyses. In the sections below, we report results of descriptive statistics, measurement invariance tests, and bivariate latent growth models.

Descriptive Statistics

With respect to parental warmth and hostility scores that were provided by children instead of the parents due to lack of parental data, we found that warmth scores were above the midpoints, while hostility scores were below the midpoints. Parental warmth and hostility scores were higher for mothers than fathers. Across the four assessment points, children viewed their mothers and fathers to be less warm, while hostility did not show a clear increasing or decreasing trajectory.

We also examined child Big five scores that were rated by mothers and fathers. Mothers scores were higher than father scores for agreeableness, conscientiousness, neuroticism, while their scores were almost similar for extraversion and openness to experience. Moreover, mothers tended to report decreases in extraversion, agreeableness, conscientiousness and neuroticism with time. On the other hand, fathers reported slight increases in extraverted, agreeable, conscientious, and open to experience with time.

Interestingly, almost all correlations between parental warmth and child personality were statistically significant at $p < .001$ (See Tables 24 and 25). The magnitude of the correlations was larger for mother warmth than father warmth. They ranged between .10 and .45. There were

fewer statistically significant associations between parental hostility and child personality. Their magnitude was small-to-medium.

Measurement Invariance Tests

Full measurement invariance held for most parent rated child personality measures, while partial measurement invariance held for all of the child rated parenting measures as shown in Table 26.

Results of Bivariate Latent Growth Models

Each model consisted one child-rated parenting variable, and one parent-rated child personality variable. All models demonstrated good fit of the data as shown in Table 27.

Table 28 shows the means and variances of the intercepts and slopes. Mother warmth, father warmth, and father hostility significantly decreased with time. The slopes ranged between -.11 and -.18. Mother hostility slightly increased with time but did not reach significance level. Interestingly, out of all parent-rated child personality traits, only mother-rated child openness showed significant decrease with time. The other slopes ranged between .006 and .06. All variances were statistically significant.

The first column of Table 29 shows the correlations between parenting at Time 1 and child personality at Time 5. Only one significant correlation was significant. It was between mother warmth and child agreeableness. As for the correlations between changes in parenting and changes in personality, none of the correlations were statistically significant.

Table 23

Means and Standard Deviations of Variables in CPF Dataset

Variable	Mean	Standard Deviation
Mother Warmth Time 1	2.86	.49
Mother Warmth Time 3	2.73	.55
Mother Warmth Time 5	2.61	.56
Mother Warmth Time 7	2.51	.57
Father Warmth Time 1	2.78	.57
Father Warmth Time 3	2.62	.62
Father Warmth Time 5	2.43	.63
Father Warmth Time 7	2.29	.63
Mother Hostility Time 1	1.51	.32
Mother Hostility Time 3	1.41	.31
Mother Hostility Time 5	1.51	.41
Mother Hostility Time 7	1.52	.39
Father Hostility Time 1	1.38	.29
Father Hostility Time 3	1.35	.32
Father Hostility Time 5	1.42	.39
Father Hostility Time 7	1.47	.44
Mother-Rated Child Extraversion Time 5	2.96	.32
Mother-Rated Child Extraversion Time 7	2.91	.31
Mother-Rated Child Agreeableness Time 5	2.48	.28
Mother-Rated Child Agreeableness Time 7	2.46	.26
Mother-Rated Child Conscientiousness Time 5	2.85	.29
Mother-Rated Child Conscientiousness Time 7	2.79	.26
Mother-Rated Child Neuroticism Time 5	2.56	.29
Mother-Rated Child Neuroticism Time 7	2.52	.31
Mother-Rated Child Openness to Experience Time 5	3.02	.37
Mother-Rated Child Openness to Experience Time 7	2.96	.34
Father-Rated Child Extraversion Time 5	2.95	.33
Father-Rated Child Extraversion Time 7	2.97	.33
Father-Rated Child Agreeableness Time 5	2.44	.29
Father-Rated Child Agreeableness Time 7	2.45	.27

Table 23 (continued)

Father-Rated Child Conscientiousness Time 5	2.77	.27
Father-Rated Child Conscientiousness Time 7	2.78	.28
Father-Rated Child Neuroticism Time 5	2.51	.30
Father-Rated Child Neuroticism Time 7	2.51	.29
Father-Rated Child Openness to Experience Time 5	3.01	.33
Father-Rated Child Openness to Experience Time 7	3.05	.38

Table 24

Correlations between Child Rated Maternal Parenting and Mother Rated Child Personality Variables

	MR C Ex T5	MR C Ex T7	MR C Ag T5	MR C Ag T7	MR C Con T5	MR C Con T7	MR C Neu T5	MR C Neu T7	MR C Op T5	MR C Op T7
M Warm T1	.13	.12	.19	.11	.17	.11	-.11	-.06	.13	.09
M Warm T3	.11	.14	.31	.29	.23	.18	-.12	-.10	.19	.20
M Warm T5	.15	.16	.45	.32	.34	.25	-.28	-.20	.26	.20
M Warm T7	.15	.23	.32	.38	.25	.34	-.18	-.23	.18	.21
M Host T1	.05	-.005	-.11	-.15	-.11	-.12	.13	.02	-.03	-.10
M Host T3	.05	.03	-.14	-.17	-.18	-.11	.15	.05	-.09	-.08
M Host T5	.05	.01	-.25	-.21	-.30	-.23	.33	.21	-.004	.03
M Host T7	.06	-.01	-.15	-.27	-.25	-.28	.22	.26	.08	.07

M=Mother; C=Child; Warm= Warmth; Host=Hostility

Bold font: significant at $p < .001$

Table 25

Correlations between Child Rated Paternal Parenting and Father Rated Child Personality Variables

	FR C Ex T5	FR C Ex T7	FR C Ag T5	FR C Ag T7	FR C Con T5	FR C Con T7	FR C Neu T5	FR C Neu T7	FR C Op T5	FR C Op T7
F Warm T1	.09	.15	.20	.16	.18	.14	-.14	-.17	.16	.11
F Warm T3	.15	.12	.35	.28	.23	.18	-.22	-.16	.22	.23
F Warm T5	.13	.15	.40	.34	.28	.21	-.25	-.22	.27	.23
F Warm T7	.11	.16	.35	.35	.23	.27	-.21	-.21	.17	.17
F Host T1	-.09	-.09	-.05	-.07	-.08	-.06	-.03	.02	-.04	-.07
F Host T3	-.008	-.05	-.19	-.15	-.17	-.07	.15	.07	-.08	-.08
F Host T5	.006	-.08	-.22	-.20	-.27	-.15	.25	.17	.08	.06
F Host T7	.003	.002	-.16	-.22	-.23	-.18	.20	.20	.09	.09

F=Father; C=Child; Warm= Warmth; Host=Hostility

Bold font: significant at $p < .001$

Table 26

Results of Measurement Invariance Tests

	Mother Warmth			Father Warmth			Mother Hostility		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	1	.03	.02	1	.03	.02	1	.03	.03
Metric	.99	.03	.03	.99	.04	.04	.99	.04	.05
P Metric	---	---	---	.99	.03	.03	.99	.03	.03
Scalar	.99	.04	.05	.99	.03	.03	.97	.07	.05
P Scalar	.99	.03	.04	---	---	---	.99	.04	.03
	Father Hostility			MR Child Extraversion			MR Child Agreeableness		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	.99	.06	.05	1	.04	.01	1	.04	.02
Metric	.97	.08	.09	1	.04	.03	1	.03	.03
P Metric	.98	.06	.06	---	---	---	---	---	---
Scalar	.94	.10	.08	1	.03	.03	.99	.04	.03
P Scalar	.97	.08	.06	---	---	---	---	---	---
	MR Child Conscientiousness			MR Child Neuroticism			MR Child Openness to Experience		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	1	.03	.01	1	0	.008	1	0	.008
Metric	1	.02	.02	1	0	.02	1	0	.02
P Metric	---	---	---	---	---	---	---	---	---
Scalar	.99	.06	.03	1	0	.03	1	.02	.02
P Scalar	1	.008	.02	---	---	---	---	---	---
	FR Child Extraversion			FR Child Agreeableness			FR Child Conscientiousness		
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
Baseline	.99	.07	.02	.99	.05	.03	1	0	.01
Metric	.99	.05	.03	.99	.03	.03	.99	.05	.03
P Metric	---	---	---	---	---	---	---	---	---

Table 26 (continued)

Scalar	.99	.05	.03	.99	.03	.03	.98	.07	.03
P Scalar	---	---	---	---	---	---	.99	.05	.03
	FR Child Neuroticism			FR Child Openness to Experience					
	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR			
Baseline	1	0	.02	1	.009	.01			
Metric	1	.004	.01	1	0	.01			
P Metric	---	---	---	---	---	---			
Scalar	.99	.04	.03	1	0	.009			
P Scalar	---	---	---	---	---	---			

P Metric= Partial Metric; P Scalar= Partial Scalar; CR=Child Rated; MR= Mother Rated; FR= Father Rated

Table 27

Model Fit Indices

	Mother Warmth		Father Warmth		Mother Hostility	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
Extraversion	.99	.03	.99	.02	.98	.03
Agreeableness	.98	.03	.98	.04	.97	.03
Conscientiousness	.98	.03	.99	.03	.98	.03
Neuroticism	.98	.03	.99	.03	.98	.03
Openness to Experience	.98	.03	.99	.03	.98	.03
	Father Hostility					
	CFI	RMSEA				
Extraversion	.96	.04				
Agreeableness	.95	.05				
Conscientiousness	.92	.06				
Neuroticism	.95	.05				
Openness to Experience	.96	.05				

Table 28

Means and Variances of Intercepts and Slopes

Variable	Intercept		Slope	
	Mean	Variance	Mean	Variance
Mother Warmth	3.01	.12	-.12	.02
Mother Hostility	1.52	.03	.02	.009
Father Warmth	3.06	.28	-.18	.08
Father Hostility	2.39	.21	-.11	.06
Mother-Rated Child Extraversion	2.86	.16	.003	.06
Mother-Rated Child Agreeableness	3.10	.11	-.02	.08
Mother-Rated Child Conscientiousness	2.73	.21	.06	.11
Mother-Rated Child Neuroticism	2.11	.17	-.006	.08
Mother-Rated Child Openness to Experience	3.24	.17	-.10	.12
Father-Rated Child Extraversion	2.81	.12	.05	.06
Father-Rated Child Agreeableness	3.14	.04	-.02	.04
Father-Rated Child Conscientiousness	2.83	.09	-.06	.05
Father-Rated Child Neuroticism	2.16	.15	.01	.08
Father-Rated Child Openness to Experience	3.23	.14	.03	.15

Bold font: $p < .0008$

Table 29

Results of Correlations between Intercepts and Slopes of Parenting and Child Personality Variables

Mother Warmth				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.23[.10,.36]	-.16[-.34,.03]	-.02[-.17,.13]	.30[.10,.50]
Agreeableness	.35[.21,.49]	-.16[-.33,.006]	.05[-.11,.21]	.10[-.08,.29]
Conscientiousness	.21[.07,.34]	-.12[-.28,.004]	.07[-.08,.21]	.09[-.08,.26]
Neuroticism	-.20[-.34,-.06]	.02[-.16,.20]	-.09[-.25,.07]	-.02[-.22,.18]
Openness to Experience	.19[.06,.32]	-.06[-.21,.09]	.04[-.10,.19]	.13[-.03,.29]
Father Warmth				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.07[-.12,.26]	.03[-.25,.31]	.03[-.24,.30]	-.27[-.68,.15]
Agreeableness	.27[.09,.45]	.003 [-.19,.20]	.07[-.16,.29]	.01[-.24,.27]
Conscientiousness	.21[.05,.36]	-.12[-.33,.10]	.13[-.06,.32]	-.13[-.40,.13]
Neuroticism	-.13[-.30,.04]	-.02[-.24,.20]	-.16[-.34,.02]	.01[-.23,.26]
Openness to Experience	.17[.02,.33]	.05[-.12,.22]	.08[-.11,.27]	-.07[-.30,.15]
Mother Hostility				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	-.16[-.33,.01]	.10[-.13,.33]	.10[-.10,.30]	-.24[-.43,-.18]
Agreeableness	-.20[-.38,-.02]	.04[-.21,.28]	-.06[-.27,.16]	-.07[-.31,.16]
Conscientiousness	-.34[-.54,-.13]	.19[.07,.46]	-.03[-.22,.17]	-.004[-.25,.25]
Neuroticism	.40[.18,.62]	-.24[-.52,.05]	-.07[-.29,.14]	.20[-.07,.47]
Openness to Experience	-.34[-.54,-.14]	.10[-.15,.24]	.04[-.15,.24]	-.10[-.31,.11]
Father Hostility				
	i1 with i2	i1 with s2	i2 with s1	s1 with s2
Extraversion	.04[-.124.22]	.05[-.21,.32]	.03[-.22,.27]	-.24[-.61,.13]
Agreeableness	.001[-.19,.19]	-.03[-.24,.18]	.07[-.19,.32]	.07[-.23,.36]

Table 29 (continued)

Conscientiousness	.05[-.12,.22]	-.17[-.40,.06]	-.003[-.23,.23]	-.05[-.37,.26]
Neuroticism	.09[-.10,.27]	.06[-.19,.29]	-.03[-.28,.22]	-.10[-.43,.24]
Openness to Experience	-.03[-.20,.13]	.006[-.18,.19]	.13[-.09,.35]	-.007[-.27,.26]

i1 = intercept of parenting variable; s1= slope of parenting variable; i2=intercept of child personality variable; s2= slope of child personality variable

Bold font: $p < .0008$