

Closer to the Core:
A Multi-Informant Longitudinal
Perspective on Personality

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Closer to the Core:
A Multi-Informant Longitudinal Perspective on Personality

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(met een samenvatting in het Nederlands)

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For my parents

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Chapter 1

General Introduction

“Every person is like all other persons,
like some other persons, and like no other person.”

Kluckhohn & Murray (1953)

Personality refers to the *relative* enduring individual differences in the way people feel, think, and behave (John, Naumann, & Soto, 2008). The word “relative” reflects the complexity of personality. For one thing, personality is relatively enduring in that it shows a considerable amount of temporal consistency (e.g., a disagreeable child typically grows into a disagreeable adult), but is far from being perfectly stable (e.g., with education and internalized social norms, the disagreeable child may become increasingly agreeable over time). For another, for personality to be enduring, it by definition requires some degree of consensus among perceivers (i.e., interjudge consistency). At the same time, personality is a multifaceted construct, and each perspective also uniquely captures some aspects of one’s personality.

Embracing the complexity of personality structure, the present longitudinal investigation examined three main questions regarding the enduringness of personality by focusing on its temporal consistency and interjudge consistency. The first question concerns the temporal consistency of personality from late childhood to young adulthood as perceived from multiple perspectives (**Chapter 2**). The second question concerns the utility of each perspective in predicting future personality and life outcomes (**Chapter 3**). The third question concerns the implications of interjudge (dis-)agreement regarding adolescents’ personality on their adjustment, using both the profile approach (**Chapter 4**) and the trait approach (**Chapter 5**). Together, the present dissertation aims to improve our understanding of the development and structure of personality, boost accuracy in predicting future personality and life outcomes, and shed light on the potential implications of interjudge (dis-)agreement on personality. Answers to these questions are important for describing, explaining, and predicting the development of individual competence across the lifespan.

Personality and Its Temporal Consistency

Individual differences in personality can be conceptualized in five dimensions: extraversion, agreeableness, conscientiousness, neuroticism/emotional stability, and openness to experience (i.e., Big Five personality traits; McCrae & Costa, Jr., 1999; McCrae & John, 1992). Extraversion captures individual differences in reward sensitivity, indicating the extent to which people actively engage with the world (vs. avoid social situations). Agreeableness describes individual differences in prosociality, indicating tendencies to show compassion and cooperate (vs. antagonism). Conscientiousness is conceptualized as individual differences in orderliness and self-control in the pursuit of goals (vs. messiness and impulsiveness). Neuroticism captures individual differences in negative emotionality, indicating the extent to which people perceive the world as threatening (vs. emotional stability). Openness to experience/Intellect taps into individual differences in the complexity and depth of people's mental life and experiences (Caspi & Shiner, 2006). The framework of the Big Five personality traits is regarded as an optimal balance between conceptual breadth, descriptive specificity, and generalizability (Soto & Tackett, 2015).

The temporal consistency of personality is commonly studied in terms of mean-level change and rank-order stability (Denissen, van Aken, & Roberts, 2011; van Aken, Hutteman, & Denissen, 2011). Personality shows mean-level change across the lifespan, which refers to the extent to which the group of individuals increases or decreases in the levels of their personality traits. Consider the example of children's weight: Average weight increases as children age (i.e., mean-level increases), although some children develop faster than others, and a few children might even show decreases. A meta-analysis of 92 studies on the mean-level change of the Big Five personality traits (Roberts, Walton, & Viechtbauer, 2006) showed that people on average become more socially dominant (a facet of extraversion), conscientious, and emotionally stable over time, especially in young adulthood (i.e., from 20 to 40 years old). Moreover, people showed prominent increases in social vitality (another facet of extraversion) and openness to experience in adolescence but later show decreases in both domains in old age. Agreeableness only exhibited a mean-level change during the sixth decade (i.e., in people's 50s), such that people became increasingly agreeable. The general developmental trend that individuals become more conscientious, agreeable, and emotionally stable especially during adolescence and young adulthood, has been named "the maturity principle" (Roberts, Wood, & Caspi, 2008). The maturity principle has been found across cultures and has been attributed to normative life transitions into adult

roles, such as entering the workforce, establishing romantic relationships, and having children (Bleidorn, 2015; Bleidorn et al., 2013; Hutteman, Bleidorn, et al., 2014; Jokela, Alvergne, Pollet, & Lummaa, 2011; Neyer & Asendorpf, 2001; Roberts, Wood, & Smith, 2005). Despite this general trend, there are substantial individual differences in the degree and direction of personality change (Jones & Meredith, 1996; Vaidya, Gray, Haig, Mroczek, & Watson, 2008).

Besides mean-level change, another way to look at personality development is rank-order stability. Rank-order stability entails the extent to which individuals maintain their relative placements (i.e., rankings) over time. Again using children's weight as an example: Although most children become heavier over time, their ranking might remain relatively stable (i.e., the heaviest child becomes the heaviest adult of his/her cohort). A meta-analysis of 152 studies on the rank-order stability of the Big Five personality traits (Roberts & DelVecchio, 2000) showed that the stability is moderate in childhood (.31), increases from .54 in emerging adulthood to .64 at age 30, and to approximately .74 in old age, holding the time interval constant (i.e., 6.7 years). This finding that the rank-order of personality becomes increasingly stable with age was named "the cumulative-continuity principle" (Kandler et al., 2010; Roberts & Caspi, 2002; Roberts & DelVecchio, 2000). One explanation is the development of identity certainty and commitment, such that stronger and clearer identities should guide individuals to select the environment and social roles that are congruent with, and capitalize on, their personalities (Roberts & Caspi, 2002).

Together, research on mean-level change and rank-order stability suggest substantial temporal consistency in personality as well as a considerable amount of change across the lifespan, particularly at younger ages (Denissen, van Aken, et al., 2011; van Aken et al., 2011). The developmental process of a clear and committed identity could be one mechanism underlying the temporal consistency and change in personality (Roberts & Caspi, 2002). From late childhood to young adulthood, individuals actively explore and commit to an identity (Erikson, 1994), thus the present dissertation investigates the temporal consistency of personality in this life phase.

Interjudge Consistency of Personality

Previous studies provide valuable initial insight into the temporal consistency of personality. However, most of those studies were built from self-reports of personality whereas multiple-informant studies are rare. The (implicit)

assumption of previous studies that changes in self-reported personality reflect “true” *trait* changes is yet to be examined. Studying the temporal consistency of personality as perceived from multiple perspectives provides a first step to inform us of the *uncertainty* we have when claiming “true” personality trait changes from late childhood to young adulthood. The aggregation principle advocates that aggregating good information, in general, leads to greater accuracy (Hofstee, 1994). Therefore, the simple principle is that the fewer knowledgeable perspectives verify certain personality changes, the greater uncertainty we have to interpret changes in self-reports as “true” trait changes. As a result, efforts should be taken to probe the source and consequences of interjudge disagreement on personality.

Previous cross-sectional studies on adults show that when multiple judges perceive one’s personality, the level of interjudge agreement is only moderate, and varies across personality domains and target-judge dyads (Connelly & Ones, 2010; John & Robins, 1993; Vazire, 2010). Moderate levels of interjudge agreement have given rise to both methodological issues in research as well as practical issues in clinical diagnosis (see Connelly & Ones, 2010; De Los Reyes & Kazdin, 2005 for reviews). During adolescence, especially, people are just becoming aware of their attributes and traits. Their close others (e.g., parents, siblings, and peers) may have different and particularly informative views on adolescents’ personality.

Because of these potential interjudge discrepancies, it would be helpful to first clarify in what sense personality is changing (during certain life stages or after certain life events) before researchers all dive into figuring out which factors drive these personality changes. For example, an alternative interpretation of the “maturity principle” is that as people age, instead of *becoming* more conscientious, agreeable, and emotionally stable, they *perceive/report* their own personality in an increasingly diplomatic manner (i.e., towards higher social desirability). Such potential distortions in self-reports could be driven by conscious or unconscious self-representation motives such as impression management and self-deception. Impression management refers to individuals consciously tailor their reports to impress an audience, whereas self-deception refers to unconscious favorability biases in self-reports (Paulhus & John, 1998; Paulhus & Vazire, 2007; Robins & John, 1997; Swann, Chang-Schneider, & Larsen McClarty, 2007). Thus, examining the temporal consistency of personality using multi-informant data enables more accurate and nuanced understanding of personality development. The present dissertation investigated the temporal consistency of personality from late childhood to young adulthood using self-ratings supplemented with ratings from parents and siblings (**Chapter 2**).

Personality and Life Success

Research on personality not only provides a framework for people to describe themselves and each other and understand their behaviors but also reveals the validity of personality in predicting life success in numerous domains. For example, a meta-analytic review by Roberts and colleagues (2007) has shown that personality prospectively predicts physical health, relationship quality, and occupational achievement. The predictive power of personality is similar in size to the predictive power of socioeconomic status and cognitive ability (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). A large-scale longitudinal study in the US showed that a one standard deviation increase in adolescents' personality traits translated into up to 2.7 additional months of education (for conscientiousness), \$2419 annual income (in 2014 dollars; for extraversion), and more prestigious occupations (e.g., from "mail handler" to "receptionist"; for conscientiousness) 11 years later (Damian, Su, Shanahan, Trautwein, & Roberts, 2014). Personality also reliably predicts other important life outcomes, such as internalizing and externalizing problems, educational attainment, substance use, and subjective well-being (e.g., Damian et al., 2014; DeNeve & Cooper, 1998; Kotov, Gamez, Schmidt, & Watson, 2010; Ozer & Benet-Martínez, 2006; Prinzie et al., 2004).

Understanding the relationship between personality and life success is essential, as it helps us with navigating critical decisions - such as selecting the most suitable candidate, choosing career paths and relationship partners, and targeting intervention recipients - and therefore deserves more scientific attention. The present dissertation sheds light on the open question regarding the degree to which the predictive power of personality depends on who judges these traits (**Chapter 3**). The answer to these questions contributes to improving the predictive power of personality by revealing the most knowledgeable personality judges. Also, this line of research could shed light on the nature of the relationship between personality and life outcomes (see more about this later in this chapter).

Who Is the Most Accurate Personality Judge?

Discrepancies in personality judgment raise important questions such as "who is the most accurate personality judge?" The answer to this question depends on one's definition of personality, and relatedly, the chosen trait validation criterion. Multiple perspectives aim to shed light on this question; the realistic perspective, the constructivist perspective, and the pragmatic perspective have provided some

of the most influential insights.

The realistic perspective proposes that people have one true personality, which is the “core” of the person (Funder, 1995, 2012). Accurate personality judgment requires the availability of valid personality trait-related cues, as well as efficient detection and utilization of such cues by judges (“good targets”, “good traits”, “good information”, and “good judges”). The word “good” here refers to the characteristics of the target/trait/information/judge that facilitate accurate judgments. These characteristics are not necessarily good in terms of social desirability. For instance, extraversion is regarded as a “good trait” because it is relatively easy to judge (i.e., high judgeability). However, compared to other traits, extraversion is regarded as evaluative neutral instead of highly desirable or undesirable (Connelly & Ones, 2010; Funder, 1995; John & Robins, 1993).

Following this realistic approach, the Self-Other Knowledge Asymmetry model (the SOKA model; Vazire, 2010) provides a framework for the relative predictive power of self- vs. other-rated personality, based on the visibility and evaluativeness (i.e., either highly desirable or highly undesirable, instead of neutral) of personality traits. Specifically, the SOKA model argues that the self has privileged access to thoughts and feelings that are invisible to others, and therefore the self may be more accurate in judging personality traits that are low in visibility, such as neuroticism. However, there are substantial individual differences in the level and direction of self-bias (i.e., self-enhancement vs. accurate self-perception vs. self-effacement), and therefore others should be more accurate in judging traits that are high in evaluativeness, such as conscientiousness and openness/intellect. Moreover, the SOKA model claims that the self and other should be equally accurate in judging traits that are high in visibility and low in evaluativeness (“good traits”), such as extraversion. The SOKA model has been empirically tested with adult samples and received partial support (Beer & Vazire, 2017; Vazire, 2010).

In comparison, the constructivist perspective does not assume the existence of one true personality. Instead, the constructivist perspective argues that personality is at least partially a social construction, and therefore there are multiple valid answers regarding one’s personality (Kruglanski, 1989). Although having a “shared reality” between relationship partners shows relational benefits (e.g., promoting a sense of mutual understanding and easing communication; Hardin & Higgins, 1996; Kwang & Swann, 2010), for constructivists one perspective is not necessarily more valid than another. Moreover, the pragmatic perspective does not concern whether or not there is a “core” of each person. Rather, the pragmatic perspective considers accurate personality judgments as the insight regarding one’s personality that is most useful for the perceiver (Swann, 1984). This perspective is consistent

with Gibson's notion that "perception is for doing" (Gibson, 1979; cf. Funder & West, 1993). Thus, the best information regarding a person are those proven to be useful in increasing judges' survival and adjustment.

Consistent with some other researchers (e.g., McAbee & Connelly, 2016), the present dissertation conceptualizes personality using a combination of the perspectives mentioned above. Specifically, personality is considered to have a "true" core part, which becomes visible in interjudge consensus. Moreover, the unique perceptions of each judge (the residuals) are considered as useful information instead of noise. Similarly, this dissertation considers the level and form of interjudge discrepancies of personality ratings as useful information (e.g., an indicator of personality structure and/or target-judge relationship dynamic) instead of noise. The present dissertation examined the temporal consistency of personality as perceived from multiple perspectives (**Chapter 2**), the unique insight of each perspective in predicting future personality and life outcomes (**Chapter 3**), and the implications of interjudge personality (dis-)agreement on adjustment (**Chapter 4 and 5**, see the next section).

Personality Interjudge Consistency and Adjustment

Theoretical and empirical research indicates some potential benefits of interjudge consistency in personality (Human & Biesanz, 2011, 2013). The present dissertation focuses on one specific form of interjudge consistency: the consistency between "judging the person from the inside and outside" (i.e., self-other personality agreement; Vazire, 2006).

Benefits of Self-Other Agreement on Adults' Personality

As previously mentioned, the degree to which an individual agrees with close others on his/her personality might be indicative of their interaction experience. Acquaintanceship and intimacy with the target provide judges with more information regarding the target's personality and therefore promotes self-other personality agreement (Connelly & Ones, 2010; Funder & Colvin, 1988; Vazire, 2010). In addition, building upon the work by Prescott Lecky on self-coherence (Lecky, 1945), self-verification theory (Swann, 2011; Swann & Read, 1981) advocates that people have a fundamental need for consistency and coherence in self-views, because a clear and confident view on the self is crucial in organizing life stories, making sense of the world, and guiding decisions. Close others are valuable resources of information for individuals to form and maintain their self-

views (Cooley, 1902; Srivastava, 2012), therefore self-verification theory proposes that to maintain self-view consistency, people desire to be seen by close others in the same way as they do themselves, both in cases of positive and negative self-views (Swann, 2011; Swann & Buhrmester, 2012; Swann & Read, 1981).

Besides these “epistemic” reasons, such as the sense of psychological coherence, self-verification theory also proposes “pragmatic” reasons for the need of self-verification such as smoothing relationships. Specifically, self-other agreement may provide a “shared-reality” in the relationship, which may promote intimacy and a sense of being understood, and may ease communication (Kwang & Swann, 2010).

A meta-analytic review has shown that self-verification theory was empirically supported such that people seek self-related feedback consistent with their self-views, even when those self-views were negative. Moreover, self-partner agreement related positively to marital intimacy and satisfaction and negatively to separation or divorce (Kwang & Swann, 2010; Swann, De La Ronde, & Hixon, 1994). This meta-analysis also showed that as long as the rejection risk is low (e.g., in an established marriage instead of dating relationship), the desire for self-verification is on average even stronger than the desire for an overly-positive evaluation from others (Kwang & Swann, 2010).

Support for self-verification theory also comes from physiological data. One study that examined physiological reactivity and facial expressions has shown that, when receiving negative feedback, individuals with negative self-views showed lower blood pressure reactivity, lower facial negativity, and greater creativity, suggesting that self-verification might promote coping behavior and stress regulation (Ayduk, Gyurak, Akinola, & Mendes, 2013).

Another meta-analytic review (Human & Biesanz, 2013) has shown that self-other personality agreement is associated with better psychological adjustment, including both hedonic (e.g., life satisfaction) and eudaimonic aspects (e.g., life purpose). Again in this review, personality coherence was described as one of the most likely mechanisms for the link between self-other personality agreement and adjustment.

Adjustment and Self-Other Agreement on Adolescents’ Personality

Previous studies exclusively focused on self-other personality agreement in adulthood. The present dissertation examined the relationship between self-other personality agreement and adjustment during the critical period of adolescence (**Chapter 4 and 5**).

Personality agreement during adolescence is a particularly important and exciting research question given the unique features of adolescent self-views. On the one hand, self-other personality agreement might be more important for adolescents than adults. Compared to adults, adolescents are limited in their cognitive capacity to integrate contradictory information and show heightened frequency for self-reflection (Harter, 2007). Therefore, adolescents might be more psychologically affected by feedback inconsistent with their self-views (Harter, 2007). Moreover, researchers have argued that as adolescents' self-views are still developing, they may be more susceptible to external influences than adults' (Srivastava, 2012). On the other hand, it is also possible that self-other personality agreement is not as influential for adolescents compared to adults because adolescents have not yet committed to a clear and coherent self-view. Swann and Buhrmester (2012) have argued that *self-view certainty and accessibility* are important for the effect of self-other agreement. That is, feedback inconsistent with self-views is threatening is largely because it challenges self-views that individuals have heavily invested in, and therefore challenges all their previous life stories. Self-verification is most influential when individuals' self-views are certain and accessible (Swann & Buhrmester, 2012). Since adolescents' self-views are on average less certain than adults' (Erikson, 1994; Meeus, van de Schoot, Keijsers, Schwartz, & Branje, 2010), perhaps their desire for self-other personality agreement is overridden by other motives in adolescence (e.g., being seen in a positive light). Thus, the present dissertation explored the extent to which the benefits related to self-other personality agreement in adulthood generalize to adolescence.

Agreement on Personality Trait vs. Personality Profile

Two major approaches to capture self-other personality agreement are the trait approach and the profile approach, with each tapping into unique important questions (Back & Nestler, 2016; Borkeu & Leising, 2016). The trait approach examines interjudge agreement on individuals' standing on a trait level. For example, Sarah thinks she is highly conscientious (e.g., scores a 6 on a 7-point Likert scale), whereas her mother thinks Sarah is moderately conscientious (e.g., scores a 4). The score for self-other *disagreement* would, in this case, be 2, with higher scores indicating lower agreement.

The profile approach examines interjudge agreement regarding which traits are more central to an individual, and which less central (i.e., the ranking of traits within individuals). For example, Sarah thinks she is more conscientious than extraverted and more extraverted than emotionally stable. However, Sarah's mother might think that Sarah is more extraverted than emotionally stable and

conscientious. To capture personality profile agreement, a correlation is computed between Sarah's self-ratings and mother-ratings on all personality items (ranging from -1 to 1), with higher correlations indicating greater agreement.

The distinction between trait agreement and profile agreement in studying interjudge consistency is similar to the distinction between mean-level stability and rank-order stability in studying temporal consistency. That is, the trait agreement only shows interjudge agreement on one trait, independent of other traits (like mean-level stability), whereas the profile agreement shows interjudge agreement on the relative standing of traits to each other (like rank-order stability, which focuses on the ranking of individuals in the population).

Researchers have argued that interjudge agreement on personality traits and personality profile are not interchangeable (Connelly & Ones, 2010). For example, Sarah's mother might perceive Sarah as less conscientious than Sarah does herself, but they both perceive Sarah as more conscientious than extraverted. Empirical evidence has supported this conceptual assertion by showing only a modest correlation between trait accuracy and profile accuracy in both well-acquainted and first-impression contexts, indicating that distinguishing individuals on one specific personality trait might involve a different process than distinguishing traits within an individual (Allik, Borkenau, Hrebicková, Kuppens, & Realo, 2015; Hall et al., 2017). In addition, within the trait approach, accuracy in judging one trait showed very low correlations with accuracy in judging other traits (Allik et al., 2015; Lippa & Dietz, 2000). Therefore, trait- and profile-level self-other personality agreement might be differentially related to adjustment and require separate investigations. Thus, the present dissertation investigated the relationship between adolescents' self-other personality agreement and adjustment using both the profile approach (**Chapter 4**) and the trait approach (**Chapter 5**).

Summary of Focal Issues of the Present Dissertation

The present dissertation contributes to personality literature by moving from relying exclusively on self-report data to studying personality from multiple perspectives, and from focusing on personality in adulthood to also investigating younger ages when personality changes most rapidly and potential disruptions of maturation take place. The present dissertation applied state-of-the-art statistical techniques to deal with methodological issues regarding the effects of self-other personality agreement.

Multi-Informant Data

The current personality literature is predominantly based on self-reports of personality, which was driven by the practical efficiency of this method and the (probably correct) assumptions that the self has the richest information regarding his/her personality and that the self is one of the most motivated personality judges (Paulhus & Vazire, 2007). However, self-report alone is insufficient to understand the complex nature of personality and interjudge (dis-)agreement on personality can provide valuable insights about the person and/or his/her environment. Thus, the present dissertation studied personality from multiple perspectives to advance the theories and practices of the field.

First, multi-informant data enables a more accurate understanding of the stability and change of personality over time. Examining the extent to which personality development is in the eyes of the beholder informs us of whether the personality changes (across some life period or after a specific life event) are likely representing “true” *trait* change, or only representing changes in *self-perceptions*. This clarification is important as these two types of changes might be driven by different underlying mechanisms. For example, development of narcissism or self-esteem might be influential for changes in self-perceptions (e.g., people see themselves through a rose-colored lens), but not necessarily for “true” trait changes.

Second, multi-informant data may boost the predictive power of personality. Researchers have noted the limitations regarding the accuracy of self-reports due to several informational and motivational factors, such as blind spots and considerable individual differences in the degree and direction of self-bias (Beer & Vazire, 2017; Paulhus & Vazire, 2007). Thus, multi-informant data may provide incremental predictive power over and above self-reports, which can boost the efficiency of research and practice.

Third, multi-informant data might shed light on the mechanisms underlying the links between personality and life success. Although the predictive power of personality on many life outcomes is now beyond dispute nowadays thanks to the rich personality literature in recent decades (Ozer & Benet-Martínez, 2006; Roberts et al., 2007), we know little about the underlying mechanisms. Figuring out in what sense personality is related to certain life outcomes may be a first step towards understanding the mechanisms of this link. For example, the Trait-Reputation-Identity model (McAbee & Connelly, 2016) recommends separating personality variance into *trait* (i.e., the aspect with interjudge consensus), *identity* (i.e., the unique aspect of self-ratings), and *reputation* (i.e., the unique aspect of other-ratings). By testing which specific aspect is driving the link between personality

and life success, the present dissertation may point to promising directions for understanding the mechanisms of such links.

Fourth, multi-informant data enables the examination of the developmental implications of interjudge (dis-)agreement. Discrepant views with close others on important issues could be detrimental as they might reflect and give rise to a relationship climate that lacks certainty, clarity, acceptance, and support (Tein, Roosa, & Michaels, 1994). For example, disagreement between adolescents and their parents on their family climate might make it difficult for them to find common ground with each other, which in turn could increase conflict, and hinder communication and individual adjustment (Ferdinand, van der Ende, & Verhulst, 2004; Human, Dirks, DeLongies, & Chen, 2016). It remains unclear whether adolescents' disagreement with close others on their personality also influences adolescents' adjustment.

Youth Personality

Compared to the abundant literature on the Big Five personality traits in adulthood (and temperament in early childhood), some basic issues regarding youth personality are not so well illuminated. Current research shows not only similarities but also important differences between youth and adult personalities (Soto & Tackett, 2015).

Specifically, researchers have recently questioned the generalizability of the maturity principle of mean-level change to youth personality development. They found a temporary disruption in personality maturation, such that the mean-levels of agreeableness, conscientiousness, and openness to experience clearly drop from late childhood to early adolescence, and then increases quickly from late adolescence to young adulthood (“the disruption hypothesis”; Denissen, van Aken, Penke, & Wood, 2013; Soto, John, Gosling, & Potter, 2011; Soto & Tackett, 2015). This disruption in personality maturation is assumed to result from the increased level of social expectations as individuals enter adolescence, coupled with their still-developing self-regulatory capacity that has not yet lived up to this elevated expectation. It is argued that as individuals continue adjusting their behaviors and increasing regulatory capacity, over time personality development will eventually go back to the track of maturation (Denissen et al., 2013).

Importantly, one study showed discrepancies in self- and mother-perceptions regarding the disruption in personality maturation (van den Akker, Deković, Asscher, & Prinzie, 2014). It remains unclear to what extent the disruptions in maturation represent “true” trait changes instead of changes only in self-perceptions, as research has also found a drop in self-esteem during this time

(Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). Changes in self-esteem might greatly influence changes in self-perception while not changing the core personality. Thus, the present dissertation included additional personality judges and a longer time span to replicate and extend the findings of van den Akker and colleagues (2014), thereby providing more information on the nature of this disruption in personality maturation.

In addition, previous studies on the correlates of interjudge personality agreement also focus on adulthood (Human & Biesanz, 2011, 2013; Kwang & Swann, 2010; Swann & Buhrmester, 2012). As stated above, the generalizability of these previous findings to adolescence remains unknown.

Methodological Issues

Previous researchers of the correlates of self-other personality agreement applied either a profile approach or a trait approach, whereas recent empirical evidence shows only a modest level of correlation between the two (Allik et al., 2015; Hall et al., 2017). The present dissertation employed both approaches to examine the developmental implications of interjudge personality agreement.

In addition, the majority of previous attempts to study the effects of personality agreement have used methodologies that were not ideally suited to address these issues such as various forms of difference score and moderated regressions (for empirical demonstrations, see Barranti, Carlson, & Côté, 2017; Humberg, Nestler, & Back, 2018; Nestler, Humberg, & Schönbrodt, 2018). These approaches do not take the main effects of self- and other-reported personality into account, and/or do not capture the complexity that agreement and disagreement can manifest in multiple forms.

For example, the scenario where Sarah and her mother agree on the view that Sarah is *highly agreeable* might have different implications for Sarah's adjustment than the scenario where they agree on the view that Sarah is highly disagreeable. One reason is that Sarah in the former case is plausibly indeed *highly agreeable* whereas in the latter case indeed highly disagreeable. Research has shown that personality traits are associated with many aspects of individual adjustment (Ozer & Benet-Martínez, 2006; Roberts et al., 2007; Tackett, 2006), and therefore Sarah in the former case is likely to show better adjustment than in the latter case.

Moreover, it is also possible that the scenario where Sarah and her mother agree on the view that Sarah is *moderately agreeable* might have different implications for Sarah's adjustment than the scenario where they agree on the view that Sarah is either *extremely agreeable* or *extremely disagreeable*. Thus, the present dissertation took the effect of personality into account when testing

the effect of personality agreement, aiming to reduce false positive findings and capture different nuanced forms of agreement and disagreement.

Outline of the Present Dissertation

The present dissertation investigated three research questions regarding the enduringness of personality: the temporal consistency of personality from late childhood to young adulthood as perceived from multiple perspectives (**Chapter 2**); the utility of each perspective in predicting future personality and life outcomes (**Chapter 3**); and the relationship between adjustment and interjudge agreement on adolescent personality profile (**Chapter 4**) and personality traits (**Chapter 5**).

To examine these questions, the present dissertation used longitudinal data from the Munich Longitudinal Study on the Genesis of Individual Competence that spans 29 years (LOGIC; $N = 230$ at Wave 1; Weinert & Schneider, 1999). This dissertation also builds on longitudinal data from the Dutch Longitudinal Family and Personality Research Project where a full round-robin design was used (G&P; $N = 288$ families at Wave 1; Haselager & van Aken, 1999).

Specifically, **Chapter 2** tests the validity of the SOKA model (Vazire, 2010) in describing personality development from late childhood to young adulthood. **Chapter 2** uses two longitudinal studies to examine mean-level change and rank-order stability of Big Five personality traits from multiple perspectives (i.e., self-, mother-, father-, and sibling-reports), as well as the developmental trajectories of self-other personality agreement. **Chapter 3** examines the longitudinal predictive power of self- and other-reported personality in adolescence, using personality and life outcomes in adulthood (e.g., internalizing and externalizing problems, educational and occupational achievement, and relationship quality) as trait validation criteria. **Chapter 4** investigates the potential beneficial effects of self-other personality agreement that was proposed in self-verification theory (Swann, 2011; Swann & Buhrmester, 2012) in a longitudinal framework focusing on adolescent personality, using a *profile approach*. This chapter examines whether self-other agreement on adolescents' personality profile predicts later self-esteem development, controlling for the main effects of personality. **Chapter 5** employs a *trait approach* to test the associations between adolescent self-other personality agreement and internalizing problems one year later, using polynomial regression analysis and Response Surface Analysis to control for the main effects of personality and to examine various nuanced forms of (dis-)agreement. **Chapter 6** summarizes the findings, relates them to the three research questions, and points

to directions for future studies.

Taken together, the present dissertation aims to shed light on the structure of youth personality, seeking to improve our understanding of its temporal and interjudge consistency, and implications for individual adjustment across the lifespan. Recall the quote mentioned at the beginning of this chapter that “Every person is like all other persons, like some other persons, and like no other person.” (Kluckhohn & Murray, 1953). Perhaps the same is true for person perception – Perhaps every perspective is like all other perspectives, like some other perspectives, and like no other perspective. Including multiple perspectives may take us one step closer to understanding the core of personality and its development.



Chapter 2

Do You See My Growth? Two Longitudinal Studies on Personality Development from Childhood to Young Adulthood from Multiple Perspectives

Author Note:

Luan, Z., Hutteman, R., Denissen, J.J.A., Asendorpf, J.B. & van Aken, M.A.G. (2017). Do you see my growth? Two longitudinal studies on personality development from childhood to young adulthood from multiple perspectives. *Journal of Research in Personality*, 67, 44-60. doi: 10.1016/j.jrp.2016.03.004

The raw data, analysis code, and measures used for this chapter are stored on the Utrecht University Research Data Server.

Z. Luan conceptualized the study, and R. Hutteman, & M.A.G. van Aken provided feedback. R. Hutteman, J.J.A. Denissen, J.B. Asendorpf, & M.A.G. van Aken organized data collection. Z. Luan performed data-analysis and interpretation. Z. Luan drafted the manuscript, and all co-authors provided feedback.

Abstract

Personality developmental studies typically rely on single reporter data, while multi-informant studies are rare. In two longitudinal studies, the present investigation examined inter-judge differences in the development of the Big Five personality traits from childhood to young adulthood. Study 1 investigated personality development as judged by the self and parents from age 12 to 17 to 29 ($N = 186$). Study 2 investigated personality development annually from age 12 to 18 as judged by the self, and both parents and siblings ($N = 574$). Results showed personality maturation from childhood to young adulthood with disruptions during adolescence. Only parent-reports indicated maturation in adolescents' negative affectivity (decreases in N), while self-reports indicated maturation in self-regulatory traits (increases in A and C).

Keywords: personality development, personality maturation, disruption hypothesis, personality judgment, longitudinal study, multi-informants

Introduction

Personality traits refer to the relatively enduring inter-individual differences in the tendency to feel, think, and behave (Roberts et al., 2008)¹. On the one hand, a certain degree of stability is what makes personality traits conceptually distinct from states (Denissen, van Aken, et al., 2011). On the other hand, despite this relative stability, previous research has shown that personality is susceptible to change across the entire life span, especially during young age (e.g., Roberts & DelVecchio, 2000; Roberts, Walton, & Viechtbauer, 2006).

Studies on the development of personality traits have bloomed in the last years (for an overview, see Denissen, 2014). However, the majority of these studies have focused on adulthood, whereas personality development from childhood to young adulthood remains relatively understudied. This is surprising, given that childhood personality predicts a variety of crucial future outcomes, such as parenting, internalizing and externalizing problem behaviors, and educational and occupational success (Asendorpf, Denissen, & van Aken, 2008; Denissen, Asendorpf, & van Aken, 2008; van den Akker, Deković, Asscher, & Prinzie, 2014). In addition, personality development during childhood and adolescence contains key differences from personality development during adulthood, thus requiring unique scientific attention (Soto & Tackett, 2015).

Most previous studies have relied exclusively on either parent-, teacher-, or self-reports, leaving it unclear whether similar developmental patterns are found when examining personality from multiple perspectives. Cross-sectional studies have shown that judges differ considerably in the information they rely on for personality judgments (Connelly & Ones, 2010; Vazire, 2010). Importantly, there is no single perspective from which a person is known best, rather, both the self and others possess unique information (Vazire & Mehl, 2008). Therefore, multiple informants are needed to capture different perspectives of the developing individuals. The current paper used two longitudinal studies to examine in what way the mean-level change and rank-order stability of the Big Five personality traits from childhood to early adulthood differ depending on the judge², and the level of self-other agreement.

Previous studies have shown many more substantial changes in personality

1 Although this definition could technically also include mental abilities, ability, and temperamental traits - which were historically covered in relatively separate literature - in the current paper we focus on the development of personality traits.

2 There are multiple ways of referring to who judges the personality, such as the judge, rater, perceiver, and reporter. In the current paper we will consistently use the term “judge”.

from childhood to young adulthood compared to the later ages, reflected in both rank-order stability and mean-level change. Rank-order stability reflects whether groups of people maintain their relative placement to each other on personality traits over time. A classic meta-analysis based on 152 longitudinal studies showed that rank-order stabilities were moderate during early childhood and adolescence, and large from college years to old age (Roberts & DelVecchio, 2000). A more recent meta-analysis (Ferguson, 2010) confirmed the significantly lower rank-order stability from childhood to young adulthood, and further recommended the consideration of measurement error when investigating rank-order stability.

Another type of change - mean-level change - reflects the average amount of change in the population as a whole, independent of individual differences. A meta-analysis of 92 longitudinal studies (Roberts et al., 2006) showed that people, on average, increased in social dominance (a facet of extraversion) and conscientiousness and decreased in neuroticism, especially during young adulthood (age 20 to 40). Moreover, people increased on social vitality (another facet of extraversion) and openness in adolescence, but then decreased in both of these domains during old age. Agreeableness showed no mean-level change until old age (after age 50), when it increased.

Recent theoretical frameworks have aimed to describe developmental patterns in these results. The “maturity principle” refers to the finding that individuals tend to become more conscientious, more agreeable, and less neurotic with age (Bleidorn et al., 2013; Roberts et al., 2008). However, the maturity principle was based on findings focusing on adults, and more recent studies have shown that personality development during adolescence is more in accordance with the disruption hypothesis (Denissen et al., 2013; Soto & Tackett, 2015). The disruption hypothesis suggests that the biological, social, and psychological transitions from childhood to adolescence are accompanied by temporary dips in some aspects of personality maturity, thus showing a temporary deviation from the maturity principle during adolescence (Denissen et al., 2013; Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2009; van den Akker et al., 2014).

Although these recent studies have provided valuable insights into developmental patterns of personality during young age, they have typically relied on single-reporter data, while multi-informant studies are rare. However, cross-sectional studies have shown that judges differ considerably in their judgment of personality traits. The Self-Other Knowledge Asymmetry Model (the SOKA Model; Vazire, 2010) advocates that judges vary considerably in their information and motivation for personality judgments. Therefore, personality judgment might be, at least to some degree, a social construction. Transferring this to a developmental

framework, children's personality maturation and the possible disruption of this maturation during adolescence might be observed differently by different judges.

The constructivist perspective and the realistic perspective, regardless of their different assumptions of the degree to which "the true" personality exists, both provide support for this notion. Studies from a more constructivist perspective maintain that alternative personality judgments are both valid, since each reflects accurately what this judge perceives (e.g., John & Robins, 1993). Studies from a more realistic perspective maintain that valid cues need to be available and used, in order to make *accurate* personality judgment. However, the availability and usage of valid cues are almost always not perfectly sufficient, and then personality judgments are influenced by various heuristics (e.g., Funder, 1995), such as convenient social comparisons (Wood, Brown, Maltby, & Watkinson, 2012) or current relationship quality (Watson, Hubbard, & Wiese, 2000).

Studying personality development from multiple perspectives is important, because recent studies have shown that there is no single perspective from which a person is known best. Rather, both the self and others possess unique information (Vazire & Mehl, 2008). In addition, the perceived views of each other's personalities influence the interpersonal interaction and as such thus deserve more scientific attention. However, the notion that judges might differ in the degree to which or the personality trait in which they observe personality maturation and possible disruptions thereof, has rarely been tested longitudinally.

A highly interesting exception by Watson & Humrichouse (2006) tracked newlywed young adults for two years, and found that while self-ratings were in accordance with the maturity principle – increases in conscientiousness and agreeableness and decreases in neuroticism over time – spouses reported opposite developmental trajectories of the very same person's personality, specifically decreases in conscientiousness, agreeableness, extraversion, and openness.

How can these results be translated to differences between judges when looking at personality development in childhood and adolescence? When focusing on the most important relationship partners during childhood – the parents – previous studies have shown that parents possess some of the characteristics of "good judges" in that they are motivated to provide thoughtful responses about their child and are highly familiar with their child (Funder, 1995; Tackett, Herzhoff, Kushner, & Rule, 2016). However, just like other judges, a parent's judgment of their child's personality and emotions can also be biased (Durbin & Wilson, 2012; Tackett, 2011). Consequently, mothers' and fathers' *longitudinal* judgments of their children's personality might differ from each other, and also differ from the judgments of children themselves and of other family members.

Indeed, a recent study by van den Akker and colleagues (2014) investigated personality development by self- and mother-report and found that benevolence and conscientiousness increased from middle to late childhood, temporarily declined from late childhood to mid-adolescence, and increased again thereafter. Imagination decreased from middle childhood to mid-adolescence and also increased again thereafter. Mothers reported a temporary decline in emotional stability, which was not confirmed by children's self-ratings.

A number of questions still remain unknown in this field of research. First, within the family context, personality judgments by fathers and siblings are also important to understand the development of an adolescent's personality. Fathers and mothers show only moderately high agreement regarding their child's personality traits (Tackett, 2011). Moreover, sibling relationships are among the most constant and prominent social companionships in adolescence (Jenkins & Dunn, 2009). Adolescent siblings are of similar age and encounter the same developmental tasks and emotional fluctuations, therefore both mean-level change and rank-order stabilities of siblings' personality judgments might be more similar to adolescents' self-views than to parents' views.

Second, the study by van den Akker and colleagues (2014) compared personality development judged by children and mothers from age 9 to 17. It would be interesting to see whether parent-ratings confirm the maturity principle in the longer term, after the "storm and stress" period of adolescence (Arnett, 2000; Casey et al., 2010).

Third, not much is known regarding the self-other agreement in personality during childhood and adolescence. On the one hand, lay people show wisdom in personality judgments. Previous studies have shown that people in general know what cues are valid for personality judgments and actually use these valid cues to form their personality judgments (Funder & Sneed, 1993). One of the pioneer studies by Funder and Colvin (1988) found, on average, medium level agreement between the self and close friends across personality traits. Moreover, people know that others see their personality differently from how they see themselves, and they have a pretty good idea about the impressions they make to others (Carlson & Furr, 2009; Carlson, Vazire, & Furr, 2011). On the other hand, inter-judge differences in personality are also considerable, and each perspective provides unique predictive validities (Connelly & Ones, 2010; Vazire & Mehl, 2008).

The SOKA Model (Vazire, 2010) also suggests that more visible and behaviorally centered traits (i.e., extraversion and conscientiousness) should be more consistently judged than less visible and evaluative traits (i.e., neuroticism, openness, and agreeableness). Cross-sectional studies confirm this expectation

for adults, but it remains unclear whether previous findings from adult research on the SOKA Model generalize to personality traits in childhood and adolescence. In addition, it is questionable whether the *development* of visible traits, such as extraversion and conscientiousness, is also more consistently judged than the *development* of the other traits.

The Present Study

The present investigation aimed to examine differences in the development of the Big Five personality traits in childhood, adolescence, and young adulthood across judges (i.e., self-, mother-, father-, and sibling-ratings) in two longitudinal studies. Study 1 examined the personality development of German children from childhood to young adulthood (age 12 to 17 to 29; $N = 155$) as judged by the children themselves as well as their parents. Study 2 zoomed in on adolescence, to examine personality development from age 11.5 to 17.5, assessed annually, with an accelerated longitudinal design ($N = 576$ Dutch adolescents).

Previous work by Branje, van Lieshout and Gerris (2007) based on the same dataset with half of the current sample, found first indications that mean-level change in personality during adolescence might differ between self-ratings and aggregated other-ratings (i.e., aggregating the personality judgments from three family members). The current paper moved beyond this by examining specific differences between judges (i.e., self, father, mother, and sibling) in judging personality development in adolescence, shown through mean-level change, rank-order stability, and self-other agreement. We had three research questions:

Is personality maturation from childhood to young adulthood perceived differently across judges?

We examined the maturity principle (Roberts et al., 2006) from childhood to young adulthood. Based on the seemingly robust and universal findings for the maturity principle obtained from meta-analyses and cross-cultural studies (Bleidorn et al., 2013; Roberts et al., 2006, 2008), we expected that with a relatively long time interval (Study 1), both self and parent-reports of personality would be in line with the maturity principle (i.e., increases in agreeableness and conscientiousness, and decreases in neuroticism). Due to limited current knowledge, we formulated no specific hypotheses concerning the question of whether children and their parents would see similar degrees of personality maturation.

Are personality maturation and disruption during adolescence perceived differently across judges?

Zooming in on adolescence (Study 2) we examined the possible dips in some aspects of personality maturity during adolescence, as advocated by the disruption hypothesis (Denissen et al., 2013; Soto & Tackett, 2015). We expected that during adolescence, there would be some developmental trajectories that deviated from the maturity principle (i.e., decreases in agreeableness and conscientiousness, or increases in neuroticism), as observed by at least some of the judges. Given the increases in parent-adolescent conflict during adolescence (van der Giessen et al., 2014), we expected parents to observe more disruptions in personality maturation than adolescents themselves or their siblings observed. Due to the limited current knowledge, we did not formulate a hypothesis regarding whether all judges would observe disruptions in personality maturation.

Does the SOKA model apply to children and adolescents in a developmental framework?

We examined whether there would be higher self-other agreement in more visible and behavioral oriented traits than less visible and more evaluative traits during childhood and adolescence. In line with the SOKA Model (Vazire, 2010), we expected that (in both studies) the self-other agreement for extraversion and conscientiousness would be higher than for other personality traits, such as neuroticism. In addition, we examined whether the *development* of more visible traits would also be more consistently judged than the *development* of less visible and more evaluative traits from multiple-perspectives. In line with the SOKA Model (Vazire, 2010), we expected that (in both studies) both the mean-level change and rank-order stability of extraversion and conscientiousness would be more consistently judged than of the other personality traits, such as neuroticism.

Study 1

Study 1 investigated longitudinally personality development from childhood to adolescence to young adulthood (age 12 to 17 to 29) as judged by children themselves as well as their parents.

Method

Participants and Procedure

Participants were part of the Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC; Weinert & Schneider, 1999). The first wave started in the fall of 1984 in the Munich area. The LOGIC sample initially contained 230 children (119 boys) who started preschool in the Munich area at the age of 3 or 4 years old. Their first language was German. Twenty schools were selected from a broad spectrum of neighborhoods, and more than 90% of parents who were asked, gave consent for their child's participation. The present study included three waves of measurements, when participants were on average 12 years old (186 self-ratings and 173 parent-ratings – mainly mother-ratings, tested in 1992), 17 years old (174 self-ratings and 146 mother-ratings, tested in 1998) and 29 years old (153 self-ratings and 81 mother-ratings, tested in 2010). Although participants were also examined at age 23, those data were not included due to a change of the personality measure at that wave.

Attrition analyses revealed that for all of the investigated variables, there were no significant differences between complete and incomplete cases. More specifically, we conducted a one-way ANOVA to compare complete cases (i.e., cases that showed no missingness for all research variables, $n = 64$) and cases with missingness (i.e., cases that showed missingness for at least one research variable, $n = 122$), on all research variables (at parcel level). Results showed that for all research variables, the 95% CI of complete cases overlapped with the 95% CI of cases with missingness.

In addition, we conducted post-hoc power analyses with Monte Carlo simulation studies in *Mplus* Version 7.11 (Muthén & Muthén, 2013) following Muthén & Muthén (2002), based on the estimated parameter value and missingness obtained from the present study. The number of replications was set to 5000 to achieve a stable estimation. Regarding the mean-level change of self- and parent-ratings, results showed that for all Big Five personality traits, power was higher than .80 for investigating both intercepts and slopes, indicating sufficient statistical power.

Regarding the rank-order stability of self- and parent-ratings, results showed

that for all Big Five personality traits, power was higher than .80 for investigation of rank-order stability during both time intervals (i.e., age 12 to 17, and age 17 to 29). However, it should be noted that for models of mean-level change and rank-order stability, there were warnings (e.g., lack of convergence) in some of the 5000 replication cases, indicating that although statistical power was sufficient for our study, it would be more optimal to have a larger sample size. In addition, because inter-judge differences in mean-level change and rank-order stability were tested by chi-square differences tests - the power estimation of which is currently beyond the capability of *Mplus* - it is possible that with a larger sample size, additional smaller inter-judge differences could be captured.

Regarding self-other agreement, results showed that for all but three cases of the Big Five personality traits at all measurement waves, power was higher than .80 for investigating self-parent agreement during the three waves. The three exceptions were self-parent agreement in neuroticism and openness at age 17 (neuroticism: $r = 0.13$, power = 0.30; openness: $r = 0.21$, power = 0.56), and self-parent agreement in agreeableness at age 29 ($r = 0.16$, power = 0.45), when self-parent agreement was very low.

Measures

Big Five personality traits

Participants and their parents provided ratings on neuroticism, agreeableness, conscientiousness, extraversion, and openness using bipolar adjective pairs that were obtained from (Ostendorf, 1990). Both children and parents rated the items on a 5-point scale (from 1 = *totally agree with the adjective word on the left side*, to 5 = *totally agree with the adjective word on the right side*). Sample items include for neuroticism: calm vs. irritable; for agreeableness: vengeful vs. forgiving; for conscientiousness: lazy vs. diligent; for extraversion: unsociable vs. outgoing; and for openness: uneducated vs. knowledgeable.

The eight items of every Big Five dimension were parceled into three indicators per dimension. We applied the Item-to-Construct Balancing approach (Little, Cunningham, Shahar, & Widaman, 2002), in which items with the highest loadings were used to anchor the three parcels. Subsequently, the items with the next highest factor loadings were added to the anchor items in inverted order until all items were assigned to a parcel. The same parceling structure was applied for self-ratings and parent-ratings at all waves. More specifically, we first applied the Item-to-Construct Balancing procedure for self-rating at the first measurement wave to achieve a parceling structure. Second, this parceling structure was revised based on CFA results of all the judges at all waves, aiming to maximize

the possibility that for all the judges at all waves each parcel would show a similar factor loading. Third, the final parceling structure was applied to all the judges at all waves to ensure the comparability. As shown in **Table 1**, Cronbach’s alphas were satisfactory.

Table 1 | Study 1 and Study 2: Cronbach’s Alphas of the Big Five Personality Traits

	Judge	N	A	C	E	O
Study 1	Self	.74–.88	.77–.83	.82–.91	.84–.90	.67–.86
	Parent	.82–.85	.84–.87	.90–.91	.89–.89	.85–.91
Study 2	Self	.64–.86	.72–.85	.73–.92	.64–.89	.58–.85
	Mother	.80–.89	.81–.92	.91–.96	.87–.93	.82–.89
	Father	.76–.88	.82–.90	.90–.94	.83–.93	.80–.89
	Sibling	.68–.88	.76–.92	.81–.93	.75–.90	.62–.81

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraersion, O: Openes

Analytic Strategy

Missing data handling and model fit

Missing data were handled using full information maximum likelihood (FIML) estimation, thereby making optimal use of the available data. Model fit was assessed using the comparative fit indices (CFIs) and root-mean-square error of approximation (RMSEA). CFI values of .90 and higher and RMSEA values of .08 and lower reflect an acceptable fit to the data (Marsh, Hau, & Grayson, 2005).

Mean-level change in self- and parent-ratings of the Big Five personality traits

We first conducted a multiple-group CFA with the specification of measurement invariance across waves and across judges. Children themselves and their parents were specified as two groups. Different levels of measurement invariance (MI) can be achieved: Weak MI requires only identical factor loadings across time/judges, strong MI requires additionally that intercepts be invariant across time/judges, and strict MI requires invariant residual variance in addition to the invariant factor loadings and intercepts. In all analyses, we specified the strictest possible measurement invariance for good model fit.

Mean-level changes were tested by adding the estimation of intercepts and slopes of the latent trait from age 12 to age 29 to the multiple-group CFA models. All three waves had loadings of 1 on the intercept variable. For the slope, age 12 had a loading of 0, age 29 had a loading of 1, and age 17 was freely estimated. Whether the differences in intercepts and slopes between judges were significant, was tested

by Chi-square difference tests. A significant decline in model fit when constraining the parameter estimations across groups to be equal would indicate differences between judges, whereas a lack of significant change in model fit would indicate no differences between judges in mean-level change.

Rank-order stability in self- and parent-ratings of the Big Five personality traits

We first conducted a multiple-group CFA with the specification of measurement invariance. Rank-order stability was investigated by adding the estimation of the correlation of the latent trait between age 12 and 17, as well as the estimation between age 17 and 29 to the multiple-group CFA model. Whether differences in the correlation of a latent trait over time between judges were significant or not was tested by Chi-square difference tests. Two time lags (age 12 to 17, and 17 to 29) were tested one by one.

Self-parent agreement in the Big Five personality traits

We conducted a CFA with the specification of measurement invariance for each of the Big Five personality traits separately. Self-parent agreement in a certain personality trait refers to the correlation coefficients between the two latent factors (i.e., self-rating and parent-rating).

Results

Means, standard deviations and inter-correlations of all manifest variables can be found in **Table S1** in the supplemental materials. The results concerning the mean-level change of the Big Five personality traits as judged by children themselves and their parents are reported first, followed by the results for the rank-order stability of the Big Five personality traits. Finally, self-parent agreements for the Big Five personality traits from age 12 to 29 are reported.

Mean-Level Development of Self- and Parent-Ratings of the Big Five Personality Traits

Model fit indices and the estimated mean-level changes of the Big Five personality traits from age 12 to age 29 are shown in **Table 2** and **Figure 1³**.

3 Because of the long time-interval and the possible disruptions in between the measurements, the imaginary lines are only rough indications of developmental trajectories and should be interpreted with caution.

Table 2 | Study 1: Mean-Level Change of Self- and Parent- Ratings of the Big Five Personality Traits

Model	$\chi^2 (df)$	CFI	RMSEA	Judge	Means of Intercept	Variance of Intercept	Means of Slope	Variance of Slope
N	149.29 (69)***	.93	.08	Self	2.22***	0.00	-0.09	0.22**
				Parent	2.52***	0.31***	-0.34***	0.17
A	102.44 (70)**	.97	.05	Self	3.72***	0.08***	0.14***	0.00
				Parent	3.77***	0.13***	0.15*	0.00
C	147.96 (67)***	.95	.08	Self	3.29***	0.19***	0.51***	0.00
				Parent	3.07***	0.33***	0.75***	0.00
E	158.71 (76)***	.95	.08	Self	3.89***	0.20***	-0.08	0.00
				Parent	3.85***	0.31***	0.13	0.00
O	130.68 (59)***	.95	.08	Self	3.92***	0.04*	0.15***	0.13***
				Parent	4.04***	0.19***	0.45***	0.15***

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness. * $p < .05$, ** $p < .01$, *** $p < .001$. CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation

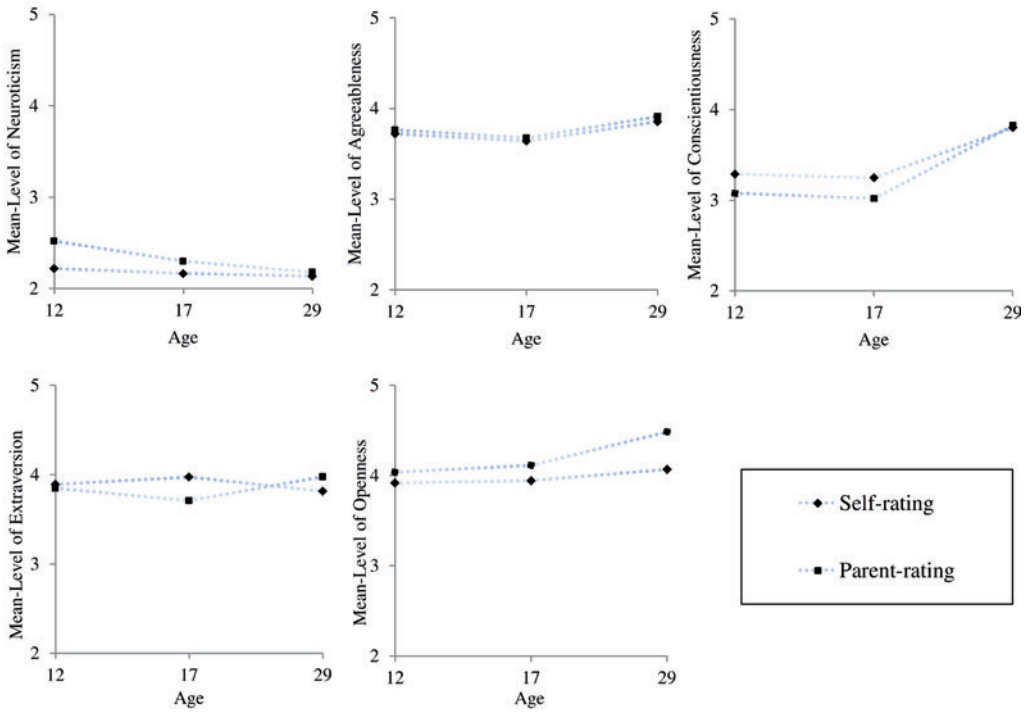


Figure 1 | Mean-level change of the Big Five personality traits from age 12 to 29.

Neuroticism

Parents on average judged their children to be more neurotic than the children judged themselves to be at age 12 ($\Delta\chi^2 = 24.80$, $\Delta df = 1$, $p < .001$; Cohen's $d = 0.76$). From age 12 to 29, children on average judged themselves to be stable on neuroticism, whereas parents observed a significant decrease in their children's neuroticism ($M_{parent} = -0.34$, $p < .001$, 95% CI [-0.48, -0.20]; $M_{self} = -0.08$, $p = .171$, 95% CI [-0.21, 0.04]; parent vs. self: $\Delta\chi^2 = 8.13$, $\Delta df = 1$, $p = .004$; Cohen's $d = 0.57$).

Agreeableness

Children and their parents observed similar levels of agreeableness at age 12 ($\Delta\chi^2 = 0.92$, $\Delta df = 1$, $p = .337$, Cohen's $d = 0.16$). From age 12 to 29, children and their parents observed similar increases in children's agreeableness ($M_{self} = 0.14$, $p < .001$, 95% CI [0.06, 0.21]; $M_{parent} = 0.15$, $p = .019$, 95% CI [0.03, 0.27]; parent vs. self: $\Delta\chi^2 = 0.05$, $\Delta df = 1$, $p = .823$).

Conscientiousness

Children judged themselves to be more conscientious than their parents judged them to be at age 12 ($\Delta\chi^2 = 8.73$, $\Delta df = 1$, $p = .003$; Cohen's $d = 0.43$). From age 12 to 29, although both self- and parent-ratings increased significantly, parents reported a stronger increase in conscientiousness than the children did ($M_{self} = 0.51$, $p < .001$, 95% CI [0.42, 0.61]; $M_{parent} = 0.75$, $p < .001$, 95% CI [0.60, 0.90]; parent vs. self: $\Delta\chi^2 = 8.02$, $\Delta df = 1$, $p = .005$).

Extraversion

Parents judged their children's extraversion at age 12 at the same level as children judged themselves ($\Delta\chi^2 = 0.33$, $\Delta df = 1$, $p = .566$; Cohen's $d = 0.08$). From age 12 to 29, extraversion was stable, independent of who judged ($M_{self} = -0.08$, $p = .063$, 95% CI [-0.16, 0.00]; $M_{parent} = 0.13$, $p = .071$, 95% CI [-0.01, 0.27]).

Openness

Parents on average judged their children to be more open to experience at age 12 than children judged themselves ($\Delta\chi^2 = 6.31$, $\Delta df = 1$, $p = .012$; Cohen's $d = 0.35$). From age 12 to 29, although children's increase in openness was reported by both themselves and their parents, parents reported a greater increase ($M_{self} = 0.15$, $p < .001$, 95% CI [0.07, 0.23]; $M_{parent} = 0.45$, $p < .001$, 95% CI [0.35, 0.55]; parent vs. self: $\Delta\chi^2 = 20.52$, $\Delta df = 1$, $p < .001$; Cohen's $d = 0.80$).

Rank Order Stability of Self- and Parent-Ratings of the Big Five Personality Traits

Rank-order stabilities of the Big Five personality traits from age 12 to age 29, as well as the model fit indices, are shown in **Table 3** and **Figure 2**. Models with identical stabilities between self- and parent-ratings did not significantly worsen model fit for any of the personality traits except for neuroticism between age 12 to age 17, in which self-ratings showed a lower stability than parent-ratings ($r_{self} = 0.25, p = .025$; $r_{parent} = 0.67, p < .001$; parent vs. self: $\Delta\chi^2 = 12.86, \Delta df = 1, p < .001$). According to Cohen’s criterion (Cohen, 1992), a correlation coefficient of 0.1 indicates a small effect size, 0.3 indicates a medium effect size, and 0.5 indicates a large effect size. In Study 1, self-ratings showed small to medium rank-order stability from age 12 to 17, while parent-ratings showed large rank-order stability. In sum, results indicated similar developmental patterns of rank-order stability of personality traits with the exception of neuroticism from age 12 to age 17, which was significantly less stable in the eyes of the children than in the eyes of their parents.

Table 3 | Study 1: Rank-Order Stabilities of Self- and Parent- Ratings of the Big Five Personality Traits

Model	$\chi^2 (df)$	CFI	RMSEA	Judge	Stability T1 (age 12 to 17)	S.E.	Stability T2 (age 17 to 29)	S.E.
N	168.08(76)***	.92	.08	Self	.25*	0.11	.47***	0.08
				Parent	.67***	0.06	.47***	0.10
A	99.35(70)*	.97	.05	Self	.56***	0.07	.42***	0.09
				Parent	.53***	0.07	.23	0.12
C	173.47(76)***	.95	.08	Self	.57***	0.06	.65***	0.06
				Parent	.57***	0.06	.68***	0.07
E	174.60(80)***	.95	.08	Self	.67***	0.05	.49***	0.07
				Parent	.57***	0.06	.54***	0.08
O	146.42(65)***	.94	.08	Self	.44***	0.10	.54***	0.07
				Parent	.60***	0.06	.52***	0.09

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness. * $p < .05$, ** $p < .01$, *** $p < .001$. CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation.

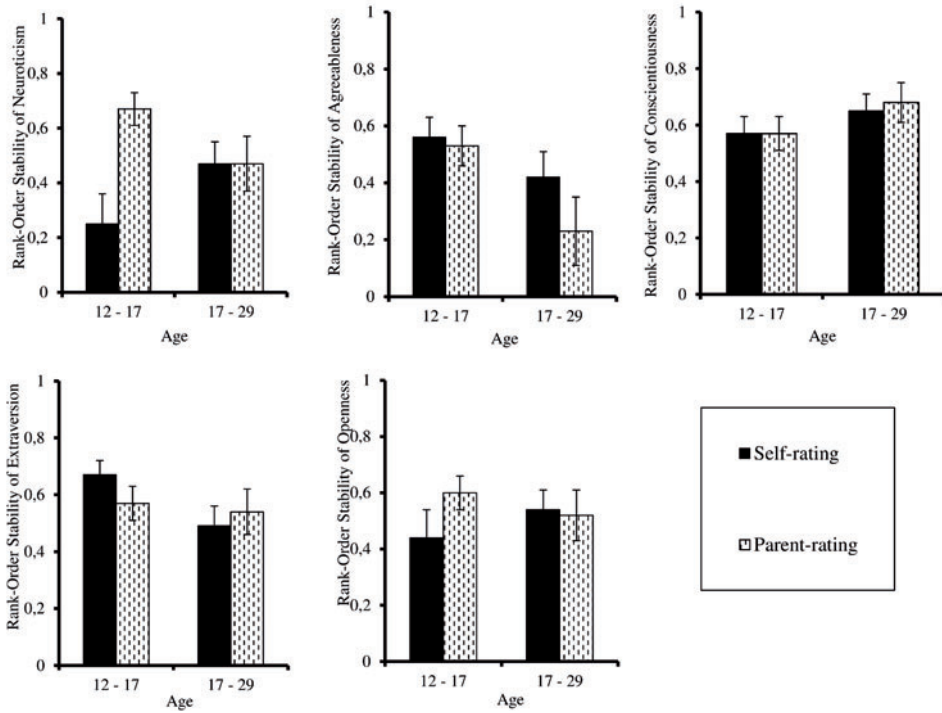


Figure 2 | Rank-order stability of the Big Five personality traits from age 12 to 29. Error bars represent ± 1 standard errors.

Self-Parent Agreement in the Big Five Personality Traits

As shown in **Figure 3**, on average children and their parents showed highest agreement in conscientiousness, followed by extraversion, while agreement was lowest for neuroticism and openness. Model fits for the Big Five personality traits were all satisfactory: for neuroticism: $\chi^2(145) = 256.16, p < .001$; CFI = .91, RMSEA = .06; for agreeableness: $\chi^2(145) = 199.26, p = .002$; CFI = .96, RMSEA = .05; for conscientiousness: $\chi^2(145) = 284.14, p < .001$; CFI = .93, RMSEA = .07; for extraversion: $\chi^2(145) = 306.64, p < .001$; CFI = .91, RMSEA = .08; for openness: $\chi^2(143) = 260.93, p < .001$; CFI = .92, RMSEA = .07.

In addition, during adolescence self-parent agreement in neuroticism dropped considerably, from medium to large agreement at age 12, to non-significant and small agreement at age 17. Self-parent agreement in neuroticism rebounded to medium level by age 29. Another noteworthy change of self-parent agreement was agreeableness, which showed medium to high agreement from age 12 to 17, yet at age 29 self-parent agreement dropped to non-significant.

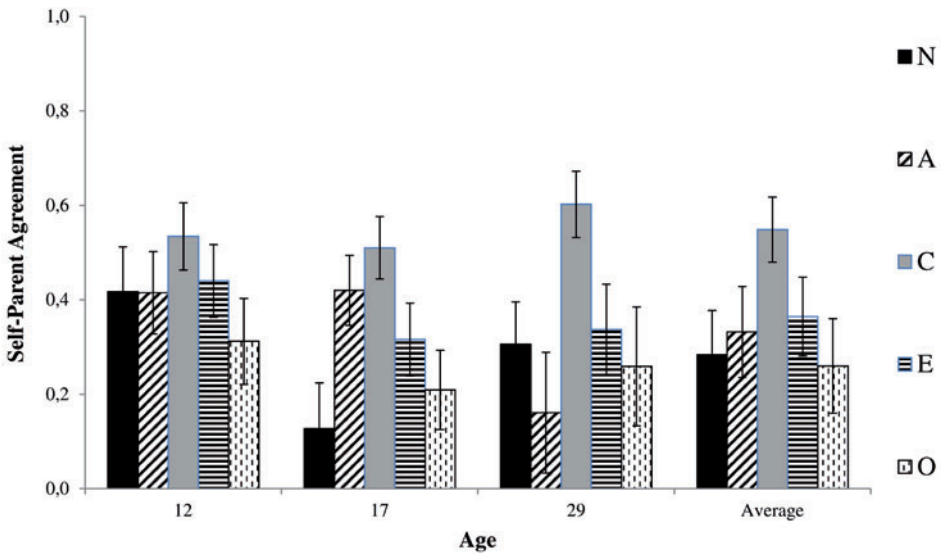


Figure 3 | Self-parent agreement in the Big Five personality traits from age 12 to 29. Average self-other agreements were computed using the Fisher r-to-z transformation. Error bars represent ± 1 standard errors.

Discussion

Study 1 longitudinally investigated personality development from age 12 to 29, as judged by children themselves as well as their parents. We discuss the results below in accordance with our research questions.

Is Personality Maturation from Childhood to Young Adulthood Perceived Differently Across Judges?

First, we examined the maturity principle and disruption hypothesis from childhood to young adulthood as judged by children themselves as well as their parents. In line with our expectations, even with this relatively long time interval, the overall developmental trend as perceived by both judges was bright. That is, both self- and parent-ratings of personality development from childhood to young adulthood were supportive of the “maturity principle” (Roberts et al., 2006, 2008).

Second, we examined the hypothesis that the maturity principle is a social construction that is observed differently by different judges (Watson & Humrichouse, 2006). Supporting this notion, results showed that parents observed stronger personality maturation in their children than the children did themselves. Specifically, parent-ratings showed a comparable amount of increase

in agreeableness, but a greater increase in conscientiousness than the self-ratings. Similarly, parents' ratings indicated a significant decrease in children's neuroticism, whereas the children's ratings of their own neuroticism were stable. These results indicate that parents have a more positive view of their children's personality development from childhood to young adulthood than their children themselves have.

Does the SOKA Model Apply to Children and Adolescence in a Developmental Framework?

First, we examined the validity of the SOKA model (Vazire, 2010) in childhood and adolescence. In line with our expectations, children at the beginning of adolescence tended to judge their own personality as more conscientious, less neurotic, but also less open to experience than their parents judged their personality. In addition, results showed that more visible and behavior-oriented traits (i.e., conscientious and extraversion) showed higher self-parent agreement during childhood and adolescence than less visible traits (i.e., neuroticism). Results also showed that by the age of 17, self-parent agreement in neuroticism had dropped to a non-significant and small level.

Second, we examined the validity of the SOKA model (Vazire, 2010) under a developmental framework, that is: whether the *development* of more visible traits would also be more consistently judged than the *development* of less visible traits from multiple perspectives. Consistent with our hypothesis, we found the development of a more visible trait (i.e., extraversion), to be more consistently judged than of less visible traits (e.g., neuroticism), indicated by fewer differences in mean-level change and rank-order stability between children and their parents.

In summary, Study 1 provides valuable first insights, specifically that both the concurrent level and the development of children's personality depends on the judges, especially when it comes to less visible traits such as neuroticism. In addition, results indicated the notion that personality maturation is a social construction and is observed differently by different judges. This long-term study, based on relatively long time intervals between measurements, has shown personality maturation in self-reports, and to an even greater degree, parent-reports.

However, due to the relatively small sample size of Study 1, replications are needed for the results we found, and a number of questions remain to be investigated. First, as suggested by the disruption hypothesis (Denissen et al., 2013; Soto & Tackett, 2015), personality maturation might not be without disturbance. Previous studies, zooming in on adolescence, have shown temporary deviations

from the maturity principle during adolescence, at least for some traits (Klimstra et al., 2009). To examine whether disruptions in the maturity principle can be found when using more fine-grained measures of personality and whether judges differ in their observations, Study 2 examined personality development as judged by multiple raters during adolescence with shorter consecutive measurements (i.e., annually).

In addition, Study 1 focused on self- and parent-ratings of children's personality development, leaving it unclear whether judges who are of a similar age to the adolescent targets would observe similar developmental patterns as the parents did. Adolescent siblings spend a lot of time with each other and encounter similar developmental tasks (Kim, McHale, Wayne Osgood, & Crouter, 2006). In Study 2 we examined whether siblings of similar age to the adolescents would confirm the maturity principle as observed by adolescents themselves.

Study 2

To closely test the disruption hypothesis across judges, Study 2 investigated personality developmental trajectories from multiple perspectives during adolescence. It was investigated annually, using an accelerated longitudinal design.

Are Personality Maturation and Disruption During Adolescence Perceived Differently Across Judges?

First, we expected that at least some judges would observe deviation from the maturity principle during the “storm and stress” in adolescence. Second, we tested the notion that the maturity principle might somewhat be in the eye of the beholder. Given the increase in parent-child conflict during adolescence (van der Giessen et al., 2014), we expected that parents would see less maturation of agreeableness, conscientiousness, and neuroticism than adolescents’ themselves or their siblings.

Does the SOKA Model Apply to Children and Adolescence in a Developmental Framework?

Following the SOKA Model (Vazire, 2010), we first expected higher agreement between adolescents and their family members in more visible and behavioral oriented traits (e.g., extraversion and conscientiousness) than less visible traits (e.g., neuroticism). Second, we expected that the development (i.e., mean-level change and rank-order stability) of more visible traits (e.g., extraversion and conscientiousness) would be more consistently judged than the other personality traits (e.g., neuroticism).

Method

Participants and Procedure

Participants were 576 Dutch adolescents (51% girls) who participated in the Family and Personality Research Project (Haselager & van Aken, 1999). A representative selection of 23 municipalities throughout the Netherlands provided lists of families with two adolescents between 11 and 16 years old. After a letter announcing the study, interviewers called families and invited them to participate, to which 50% of the contacted families agreed. The large majority of the respondents were of Dutch origin. In 4% of the families, parents reported that they were not born in the Netherlands (compared with 9% of the general Dutch population; Central Intelligence Agency, 2006).

At the start of the first measurement wave, the average ages for fathers and

mothers were 43.9 years (ranging from 34.0 to 56.1 years old) and 41.7 years (ranging from 34.0 to 51.2 years old), respectively. Adolescents were classified into 5 cohorts by age: age 11.5 (ranging from 11.0 to 12.0 years old, $n = 99$), 12.5 (ranging from 12.0 to 13.0 years old, $n = 140$), 13.5 (ranging from 13.0 to 14.0 years old, $n = 114$), 14.5 (ranging from 14.0 to 15.0 years old, $n = 121$) and 15.5 (ranging from 15.0 to 16.0 years old, $n = 102$). Participants were followed for three years, with annual measurements. In each measurement wave, trained experimenters visited the families at home and asked adolescents, their mothers, fathers, and adolescent siblings to judge the Big Five personality traits of the adolescents.

Most families participated throughout the entire course of the study: both at Wave 2 and Wave 3, 285 families (99%) provided data. Ninety-eight percent of the families provided complete data on the research variables at Wave 1, 99% at Wave 2, and 98% at Wave 3. In the same manner as in Study 1, we conducted a one-way ANOVA to compare complete cases (i.e., cases that showed no missingness for all research variables, $n = 490$) and cases with missingness (i.e., cases that showed missingness for at least one research variable, $n = 80$) on all research variables (at parcel level). Participants with complete cases showed: at Wave 1, higher mother-rated conscientiousness (Parcel 1 and 3), higher sibling-rated conscientiousness (Parcel 2), lower mother-rated neuroticism (Parcel 1); and at Wave 3, higher mother-rated conscientiousness (Parcel 1) and mother-rated extraversion (Parcel 2). For all other research variables, the 95% CI of complete cases overlapped with the 95% CI of cases with missingness. More detailed information can be found in **Table S2** in the supplemental materials.

In addition, similar to Study 1, we conducted post-hoc power analyses with Monte Carlo simulation studies based on the estimated parameter value obtained from the present study. Regarding the mean-level change, results showed that for all Big Five personality traits, power was higher than .80 for investigating intercepts for each judge. Whether the slopes were significantly different from zero was tested using chi-square differences tests. However, calculating power for chi-square differences test is currently beyond the capability of the Monte Carlo simulation in *Mplus*. It might therefore be possible, that with a larger sample size, additional smaller but significant slopes for personality development from age 11.5 to 17.5 might be captured.

Regarding rank-order stability, results showed that for all Big Five personality traits, as rated by all the judges between all time intervals, power was higher than .80 for the investigation of rank-order stability. Regarding self-other agreement, results showed that for all Big Five personality traits at all measurement waves, power was higher than .80 for investigating significant self-other agreement.

Measures

Big Five personality traits

The Big Five personality traits (neuroticism, agreeableness, conscientiousness, extraversion, and openness to experience) of the participants were judged by the adolescents themselves, their mothers, fathers, and adolescent siblings using the Dutch adaptation (Gerris et al., 1998) of the 30 adjective Big Five personality traits (Goldberg, 1992). Sample items include “anxious” and “nervous” for neuroticism; “sympathetic” and “kind” for agreeableness; “careful” and “organized” for conscientiousness; “talkative” and “reserved” (reverse coded) for extraversion; and “imaginative” and “creative” for openness to experience. Personality was rated on a 7-point Likert scale (from 1 = *very untrue of this person*, to 7 = *very true of this person*).

In the same way as in Study 1, per Big Five trait the six items were parceled into three indicators using the Item-to-Construct Balancing approach (Little et al., 2002). The same parceling structure was applied to all the judges at all waves to ensure comparability. Cronbach’s alphas were satisfactory (**Table 1**).

Analytic Strategy

Missing data handling and model fit

Missing data estimation and model fit indices were the same as reported for Study 1.

Mean-level change of the Big Five personality traits by the four judges

To investigate the mean-level change of personality, multiple-group latent growth curve models were conducted for each personality trait separately in Mplus Version 7.11 (Muthén & Muthén, 2013). In each model, the five cohorts were treated as five groups and each cohort contributed three waves of data. Because each family had two participating adolescents, the “family id” was used as a cluster variable and the “analysis = complex” was applied to account for the dependency of observations.

The loadings of the intercepts for all ages (i.e., age 11.5 to 17.5) were fixed to 1. The loadings of the slopes at age 11.5 were fixed to 0 and at age 12.5 fixed to 0.1. All other loadings from age 13.5 to 17.5 were allowed to be freely estimated. The age – wave correspondence for each cohort can be found in **Figure 4**. For example, age 12.5 corresponded to Wave 2 for Cohort 1, but corresponded to Wave 1 for Cohort 2. Measurement invariance specifications were included in the model, both across the three waves, as well as across the five cohorts in order to ensure that the psychometric meaning of the scale did not differ across waves and across cohorts.

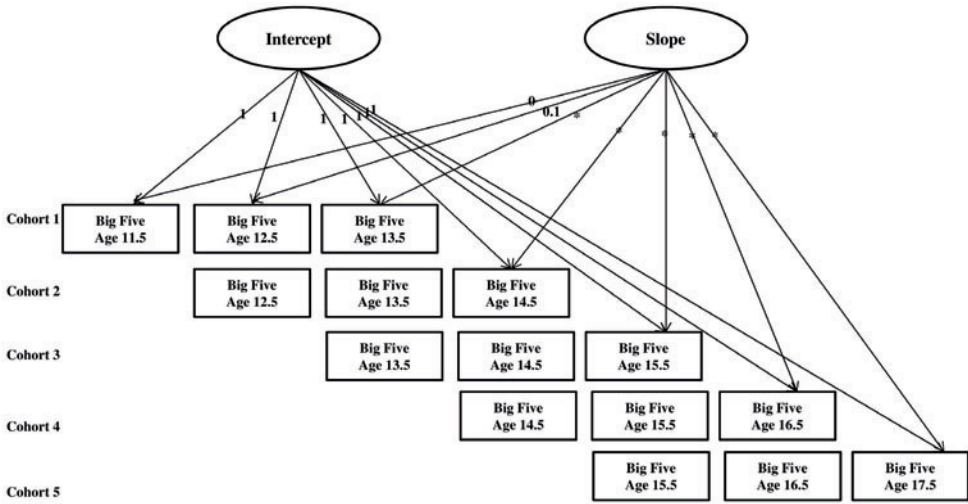


Figure 4 | Accelerated latent growth curve model for investigation of mean-level change of personality.

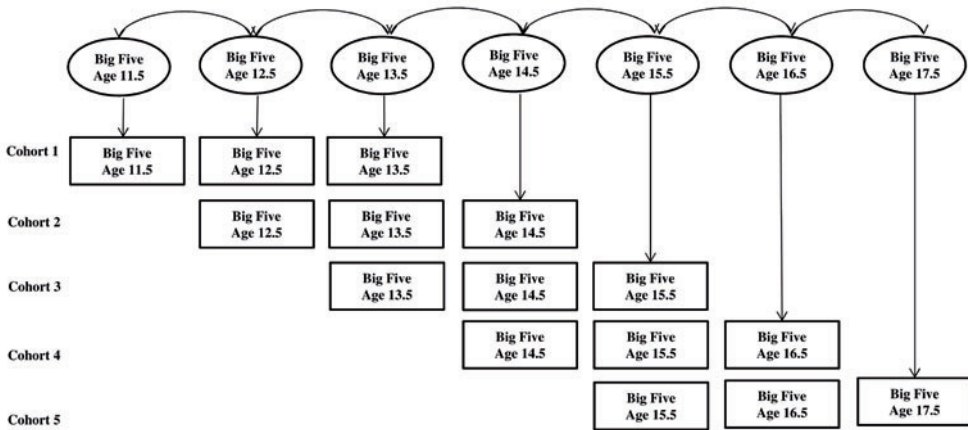


Figure 5 | Accelerated latent correlation model for investigation of rank-order stability of personality.

Differences in intercepts and slopes between the four judges (i.e., self-rating, mother-rating, father-rating, and sibling-rating) were investigated using three dummy variables, representing the four judges. Self-rating was the reference group. Chi-square difference tests were applied to test whether intercepts and slopes were different between each pair of judges. The chi-square value cannot

be analyzed in the regular manner when using the Robust Maximum Likelihood (MLR) estimator. Therefore, the procedure of Satorra-Bentler scaled chi-square difference test was applied for all model comparisons in Study 2 (Bryant & Satorra, 2012).

Rank-order stability of the Big Five personality traits by the four judges

We first conducted a multiple-group CFA with the specification of measurement invariance for each personality trait for each judge. In each model, the five cohorts were treated as five groups and each cohort contributed three waves of data. Rank-order stability of personality was investigated by adding correlations between the latent trait at Wave 1 and 2, as well as the correlations at Wave 2 and 3. The age – wave correspondence for each cohort can be found in **Figure 5**. Again, the cluster function and the “analysis = complex” were applied to account for the dependency of observations. To test whether the rank-order stability during a certain age period was different between each pair of judges, Satorra-Bentler scaled chi-square difference tests were applied to examine whether the correlation coefficients could be constrained to be equal across judges. Time lags were tested one by one.

Self-other agreement in the Big Five personality traits

We conducted CFAs with the specification of measurement invariance for each personality trait for each pair of judge separately. Self-other agreement in a certain personality trait refers to the correlation coefficients between the two latent factors (i.e., self-rating and other-rating).

Results

Means, standard deviations and inter-correlations of all manifest variables can be found in **Table S3** in the supplemental materials. The results concerning mean-level change of the Big Five personality traits from age 11.5 to 17.5, as judged by the adolescent themselves, their mothers, fathers and siblings are reported first, followed by the results of the rank-order stability of the Big Five personality traits. Finally, results of self-other agreements (i.e., self-mother, self-father, and self-sibling) in the Big Five personality traits are reported.

Mean-Level Development of the Big Five Personality Traits from Multiple Perspectives

Model fit indices and estimated mean-level change of the Big Five personality traits from age 11.5 to 17.5 can be found in **Table 4** and **Figure 6**.

Table 4 | Study 2: Mean-Level Change of the Big Five Personality Traits by the Four Judges

Trait	χ^2 (df)	CFI	RMSEA	Judge	Means of Intercept	Significant tests with the intercept of self-rating			Means of Slope
						<i>p</i>	95% CI	Cohen's <i>d</i>	
N	1136.17(365) ***	.92	.07	Self	3.43	–	–	–	0.12
				Mother	3.43	.957	[-0.17, 0.18]	0.00	-0.14**
				Father	3.47	.643	[-0.13, 0.21]	0.06	-0.14
				Sibling	3.65	.011	[0.05, 0.39]	0.27	-0.15
A	1006.97(345) ***	.94	.07	Self	5.47	–	–	–	0.16***
				Mother	5.79	.005	[0.11, 0.53]	0.47	-0.12**
				Father	5.79	.028	[0.06, 0.58]	0.40	-0.20*
				Sibling	4.97	<.001	[-0.63, -0.37]	-0.63	0.26***
C	578.57(345) ***	.99	.04	Self	4.15	–	–	–	0.05*
				Mother	4.00	.031	[-0.29, -0.01]	-0.21	-0.01
				Father	4.10	.516	[-0.19, 0.09]	0.07	-0.00
				Sibling	3.74	<.001	[-0.56, -0.26]	-0.54	0.09***
E	494.04(299) ***	.98	.04	Self	4.81	–	–	–	0.40
				Mother	4.83	.954	[-0.35, 0.37]	0.01	-0.00
				Father	4.84	.883	[-0.33, 0.38]	0.02	0.02
				Sibling	4.85	.892	[-0.47, 0.54]	0.03	-0.22
O	962.12 (345) ***	.94	.06	Self	4.99	–	–	–	0.43***
				Mother	5.21	.015	[0.04, 0.41]	0.32	-0.25*
				Father	5.34	<.001	[0.20, 0.51]	0.56	-0.27**
				Sibling	4.93	.393	[-0.18, 0.07]	0.09	0.22*

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness. **p* < .05, ***p* < .01, ****p* < .001. CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation.

Neuroticism

At age 11.5, parents perceived their children to be as neurotic as adolescents perceived themselves, but their siblings perceived them to be more neurotic. Detailed results of significant tests between self- and other- ratings for the intercepts can be found in **Table 4**.

Regarding the developmental trajectories from age 11.5 to 17.5, neuroticism remained stable for self- and sibling-ratings. By comparison, mothers judged their children to become less neurotic over time and fathers indicated a similar decreasing trend (mother: $\Delta\chi^2 = 5.47, \Delta df = 1, p = .019$; father: $\Delta\chi^2 = 2.05, \Delta df = 1, p = .152$).

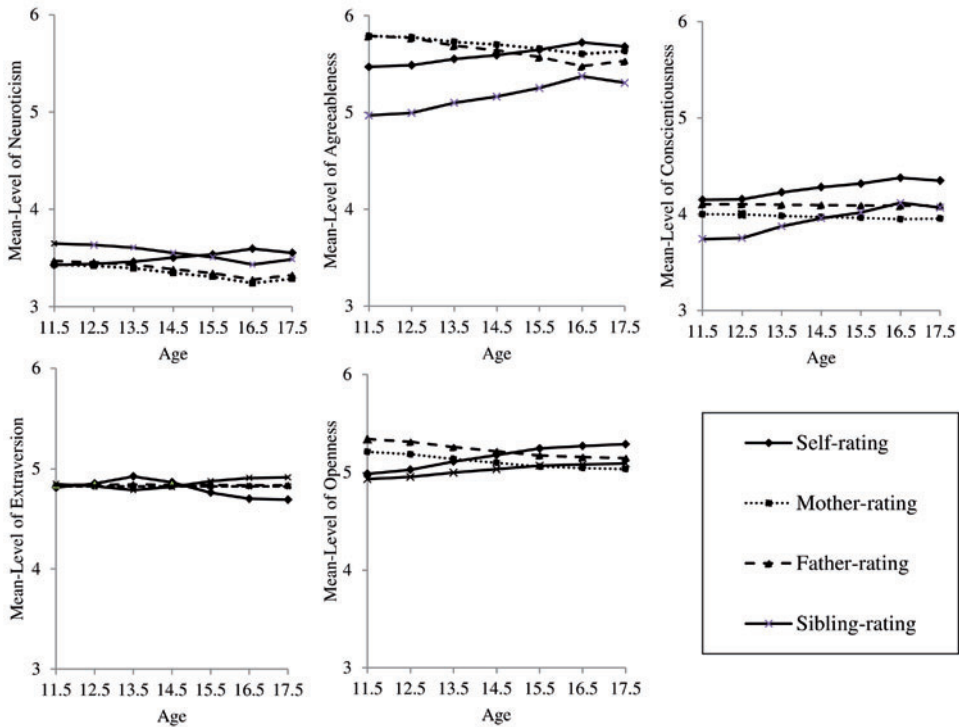


Figure 6 | Mean-level change of the Big Five personality traits from age 12 to 18.

Agreeableness

At age 11.5 adolescents were seen as more agreeable by both parents, yet less agreeable by their siblings, as compared to adolescents self-views. From age 11.5 to 17.5, adolescents were seen by themselves and by their siblings as becoming increasingly agreeable over time, but were seen as becoming *less* agreeable over time by their parents (self: $\Delta\chi^2 = 10.88, \Delta df = 1, p < .001$; sibling: $\Delta\chi^2 = 24.11, \Delta df = 1, p < .001$; mother: $\Delta\chi^2 = 9.31, \Delta df = 1, p = .002$; father: $\Delta\chi^2 = 5.16, \Delta df = 1, p = .023$).

Conscientiousness

At age 11.5 adolescents judged themselves to be more conscientious than their mothers and siblings judged them, but not their fathers. From age 11.5 to 17.5, adolescents were seen by themselves and their siblings as becoming increasingly conscientious over time. However, they were seen by their parents as unchanged (self: $\Delta\chi^2 = 6.32, \Delta df = 1, p = .012$; sibling: $\Delta\chi^2 = 15.25, \Delta df = 1, p < .001$; mother: $\Delta\chi^2 = 0.37, \Delta df = 1, p = .543$; father: $\Delta\chi^2 = 0.26, \Delta df = 1, p = .610$).

Table 5 | Study 2: Rank-Order Stability of the Big Five Personality Traits by the Four Judges

Trait Judge	χ^2 (df)	CFI	RMSEA	Significant tests with the rank-order stability of self-rating: TRD (Δdf)						
				Age 11.5-12.5	Age 12.5-13.5	Age 13.5-14.5	Age 14.5-15.5	Age 15.5-16.5	Age 16.5-17.5	
N	Self	.93	.07	-	-	-	-	-	-	-
	Mother	392.86(234)***	.08	3.94(1)*	22.62(1)***	12.81(1)***	4.10(1)*	Non-sig.	Non-sig.	Non-sig.
	Father	378.06(234)***	.07	Non-sig.	6.21(1)*	3.97(1)*	14.91(1)***	Non-sig.	Non-sig.	Non-sig.
	Sibling	384.66(234)***	.91	Non-sig.	Non-sig.	Non-sig.	Non-sig.	7.57(1)**	20.42(1)***	Non-sig.
A	Self	382.35(214)***	.08	-	-	-	-	-	-	-
	Mother	345.67(214)***	.07	7.35(1)**	9.53(1)**	9.22(1)**	12.78(1)**	Non-sig.	Non-sig.	Non-sig.
	Father	309.29(214)***	.06	5.19(1)*	19.98(1)***	Non-sig.	14.14(1)***	Non-sig.	4.66(1)*	7.82(1)**
	Sibling	331.86(214)***	.07	Non-sig.	6.31(1)**	Non-sig.	Non-sig.	7.42(1)**	Non-sig.	Non-sig.
C	Self	379.14(213)***	.08	-	-	-	-	-	-	-
	Mother	304.60(213)***	.06	Non-sig.	Non-sig.	Non-sig.	Non-sig.	5.21(1)*	Non-sig.	Non-sig.
	Father	218.13(213)	1.00	Non-sig.	Non-sig.	Non-sig.	Non-sig.	Non-sig.	5.69(1)*	6.17(1)*
	Sibling	328.13(213)***	.96	Non-sig.	9.50(1)**	14.74(1)***	18.23(1)***	4.79(1)*	Non-sig.	Non-sig.
E	Self	352.14(214)***	.08	-	-	-	-	-	-	-
	Mother	280.53(214)**	.05	Non-sig.	Non-sig.	Non-sig.	4.95(1)*	Non-sig.	Non-sig.	Non-sig.
	Father	240.13(214)	.99	6.08(1)*	Non-sig.	Non-sig.	Non-sig.	Non-sig.	Non-sig.	Non-sig.
	Sibling	276.99(214)**	.97	Non-sig.	Non-sig.	Non-sig.	Non-sig.	5.69(1)*	Non-sig.	Non-sig.
O	Self	356.79(209)***	.91	.08	-	-	-	-	-	-
	Mother	362.46(209)***	.95	.08	Non-sig.	14.23(1)***	6.76(1)**	Non-sig.	Non-sig.	Non-sig.
	Father	336.89(209)***	.96	.07	Non-sig.	14.19(1)***	Non-sig.	Non-sig.	Non-sig.	10.85(1)***
	Sibling	272.68(209)**	.96	.05	Non-sig.	Non-sig.	Non-sig.	13.63(1)***	8.40(1)**	5.74(1)*

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness. * $p < .05$, ** $p < .01$, *** $p < .001$. Non-sig. indicated $p > .05$. CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation. Chi-square differences tests were applied by using the Satorra-Bentler Scaled Chi-Square. $TRD = (T_0 * C_0 - T_1 * C_1) / cd$, $cd = (d_0 * c_0 - d_1 * c_1) / (d_0 - d_1)$.

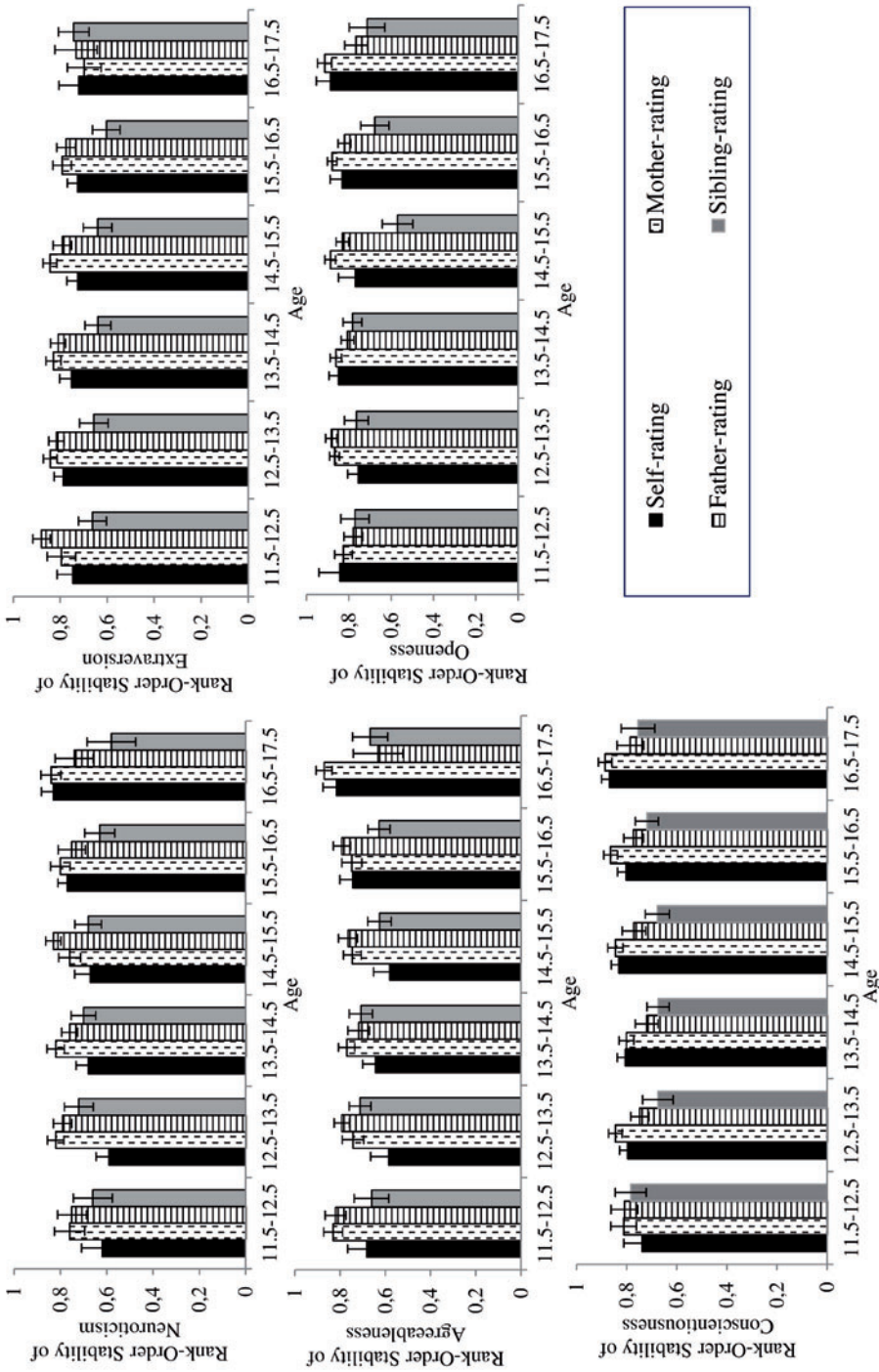


Figure 7 | Rank-order stability of the Big Five personality traits from age 12 to 18. Error bars represent ± 1 standard errors.

Extraversion

Neither intercepts nor slopes differed between self-ratings and any of the other-ratings. The judgments of all judges indicated stability in the mean level of extraversion (mother vs. self: $b = -0.40$, $p = .842$, 95% CI [-4.39, 3.58], Cohen's $d = 0.03$; father vs. self: $b = -0.39$, $p = .844$, 95% CI [-4.22, 3.45], Cohen's $d = 0.03$; sibling vs. self: $b = -0.62$, $p = .793$, 95% CI [-5.26, 4.01], Cohen's $d = 0.05$).

Openness

Parents judged their children to be more open to experience than children judged themselves at age 11.5, while sibling-ratings did not differ from self-ratings. From ages 11.5 to 17.5, adolescents were seen by themselves and their siblings as becoming increasingly open to experience, but were seen as becoming *less* open to experience over time by their parents (self: $\Delta\chi^2 = 17.31$, $\Delta df = 1$, $p < .001$; sibling: $\Delta\chi^2 = 4.04$, $\Delta df = 1$, $p = .044$; mother: $\Delta\chi^2 = 5.22$, $\Delta df = 1$, $p = .022$; father: $\Delta\chi^2 = 8.85$, $\Delta df = 1$, $p = .003$).

Rank-Order Stability of the Big Five Personality Traits from Multiple Perspectives

Model fit indices and estimated rank-order stabilities of the Big Five personality traits from ages 11.5 to 17.5 can be found in **Table 5** and **Figure 7**.

Neuroticism

Compared to self-ratings, mother-ratings showed higher rank-order stabilities from ages 11.5 to 15.5. Father-ratings showed higher rank-order stabilities from ages 12.5 to 15.5; and sibling-ratings showed lower rank-order stabilities from age 15.5 to 17.5. Detailed results of the significant tests can be found in **Table 5**.

Agreeableness

Compared to self-ratings, mother-ratings showed higher rank-order stabilities during ages 11.5 to 15.5. Father-ratings showed higher rank-order stabilities from age 11.5 to 13.5, from age 14.5 to 15.5, and from age 16.5 to 17.5. Finally, sibling-ratings showed lower rank-order stabilities from age 12.5 to 13.5, and from age 15.5 to 17.5.

Conscientiousness

Compared to self-ratings, the mother-ratings showed higher rank-order stability only from age 15.5 to 16.5. Father-ratings showed lower rank-order stabilities from age 16.5 to 17.5. Sibling-ratings showed lower rank-order stabilities from age 12.5 to 17.5.

Table 6 | Study 2: Self-Other Agreement in the Big Five Personality Traits

Trait	Self-Other Agreement	χ^2 (<i>df</i>)	CFI	RMSEA	Age 11.5	Age 12.5	Age 13.5	Age 14.5	Age 15.5	Age 16.5	Age 17.5
N	Self-Mother	956.46(653)***	0.95	0.06	.24	.33	.36	.28	.28	.46	.47
	Self-Father	1157.12(698)***	0.92	0.08	.12	.08	.30	.21	.24	.22	.31
	Self-Sibling	1097.01(698)***	0.92	0.07	.04	.40	.26	.11	.20	.23	.36
A	Self-Mother	1231.66(698)***	0.92	0.08	.17	.22	.25	.31	.28	.42	.55
	Self-Father	1124.19(698)***	0.93	0.07	.06	.25	.29	.20	.24	.27	.15
	Self-Sibling	1262.98(697)***	0.91	0.08	.11	.17	.17	.25	.32	.35	.21
C	Self-Mother	989.70(698)***	0.97	0.06	.53	.60	.59	.52	.65	.55	.63
	Self-Father	990.28(698)***	0.97	0.06	.55	.58	.55	.43	.57	.48	.55
	Self-Sibling	1053.84(698)***	0.95	0.07	.36	.50	.47	.44	.50	.54	.52
E	Self-Mother	1003.18(698)***	0.96	0.06	.59	.57	.47	.41	.54	.50	.57
	Self-Father	894.58(698)***	0.97	0.05	.53	.39	.45	.38	.43	.34	.32
	Self-Sibling	951.12(698)***	0.96	0.06	.51	.53	.42	.34	.38	.30	.30
O	Self-Mother	921.42(653)***	0.96	0.06	.52	.47	.48	.47	.38	.39	.28
	Self-Father	915.96(653)***	0.96	0.06	.44	.47	.37	.41	.42	.25	.18
	Self-Sibling	876.25(622)***	0.94	0.06	.28	.37	.51	.40	.36	.53	.48

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness. * $p < .05$, ** $p < .01$, *** $p < .001$. CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation.

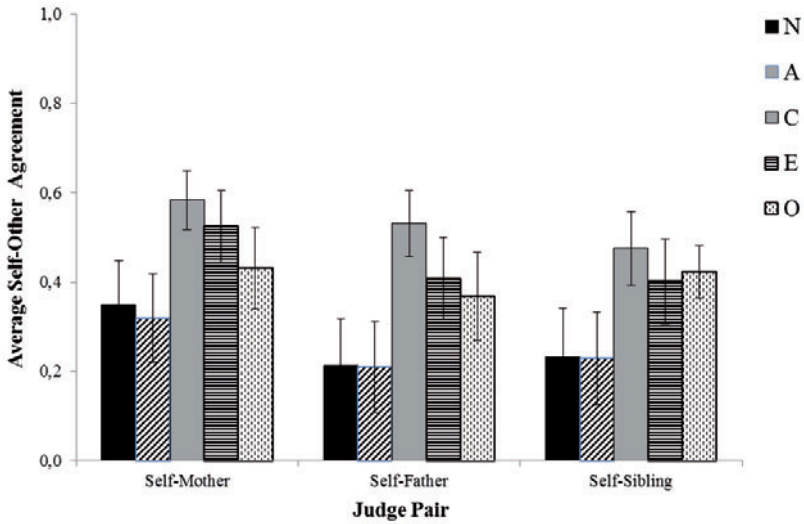


Figure 8. | Average self-other agreement in the Big Five personality traits from age 12 to 18. Average self-other agreements were computed using the Fisher r-to-z transformation. Error bars represent ± 1 standard errors.

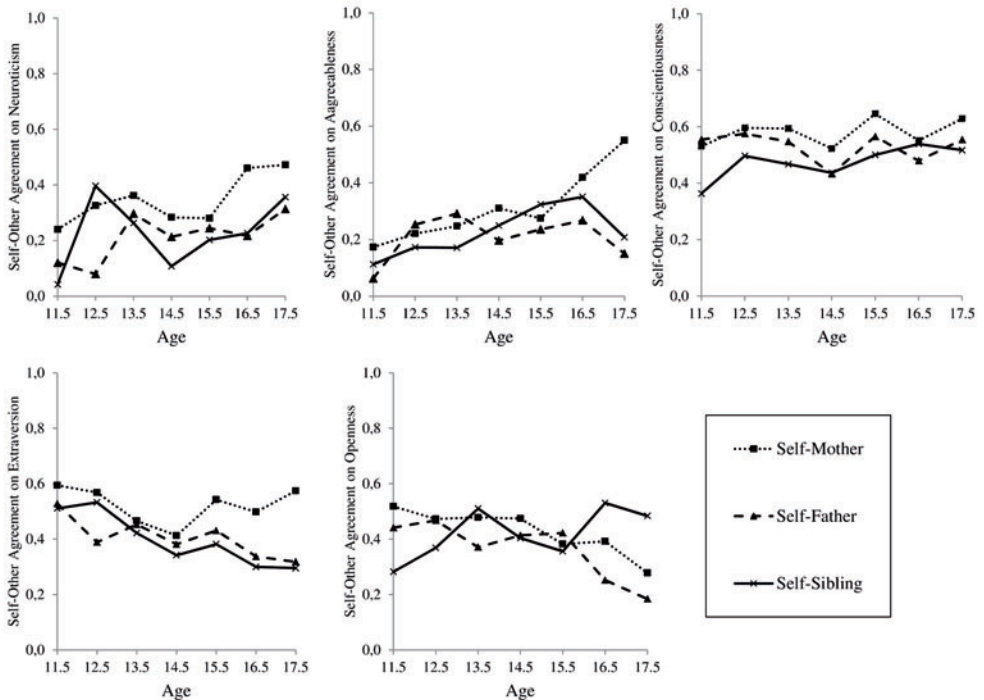


Figure 9 | Self-other agreement in the Big Five personality traits from age 12 to 18.

Extraversion

Compared to self-ratings, the mother-ratings differed from self-ratings only during ages 14.5 to 15.5, with higher rank-order stability. Father-ratings differed only during ages 11.5 to 12.5, with higher rank-order stability. Sibling-ratings showed lower rank-order stabilities from age 15.5 to 16.5.

Openness

Compared to self-ratings, the mother-ratings showed higher rank-order stabilities from age 12.5 to 13.5 and from age 14.5 to 15.5. Father-ratings showed higher stabilities from age 12.5 to 13.5 but lower stabilities from age 16.5 to 17.5. Siblings-ratings showed lower rank-order stabilities from age 15.5 to 17.5.

Self-Other Agreement in the Big Five Personality Traits

As shown in **Table 6** and **Figure 8**, on average during adolescence self-other agreement was highest in conscientiousness and extraversion (both showed high agreement), lowest in neuroticism and agreeableness (both showed small to medium agreement). In addition, mothers showed higher agreement with adolescents themselves for all personality traits than fathers and siblings.

Also, as shown in **Figure 9**, self-other agreement in neuroticism showed strong ups-and-downs during adolescence for all judges, especially for adolescents vs. siblings.

Discussion

Study 2 closely investigated the adolescents' personality development annually, as judged by adolescents themselves, their mothers, fathers, and siblings. We discussed the results below in accordance with our three research questions:

Are Personality Maturation and Disruption during Adolescence Perceived Differently Across Judges?

First, our results confirmed the disruption hypothesis (Denissen et al., 2013; Soto & Tackett, 2015) by revealing dips in personality maturation, observed by at least some of the judges in some of the traits. It was only a partial confirmation, however, because only mothers and fathers observed the decreases in agreeableness during adolescence that are associated with the disruption hypothesis.

Second, our results supported the notion that the maturity principle is a social construction to some degree, by showing different degrees of or aspects of the maturity principle for different judges. In our study, adolescents saw themselves as

increasingly agreeable and conscientious, whereas they were seen by their parents as decreasingly agreeable and neurotic.

Referring to the items of the personality scale used in the present study, these results indicated that parents see maturation of adolescents' personality as being less stressed, insecure and worried than before. But parents also saw adolescents become increasingly reckless, argumentative, and irritable. Adolescents' views were different. The adolescents regarded themselves as being just as emotionally vulnerable and stressed as they were before. However, they see maturation in the way they regulate their interpersonal interactions and daily tasks, shown through increases in the two self-regulatory traits: agreeableness and conscientiousness (Soto & Tackett, 2015).

Regarding the siblings' view of adolescents' personality maturation, the results confirmed our expectation that siblings observe similar personality maturation as the adolescents themselves. Unexpectedly, concerning the intercepts, we found siblings' judgments at age 11.5 to be more negative than adolescent' self-views⁴ in conscientiousness, neuroticism and agreeableness. These more negative views of the siblings on the maturity of personality traits might be related to the competitiveness between siblings for parental resources (e.g., attention, love, money) during childhood, which was shown to decline before early adolescence (Kim et al., 2006).

Does the SOKA Model Apply to Children and Adolescents in a Developmental Framework?

Our results confirmed the SOKA Model (Vazire, 2010) in an adolescent sample and extended its validity in the developmental context. Specifically, we first found higher self-other agreement during adolescence for more visible and behavioral-oriented traits (e.g., extraversion and conscientiousness) than for less visible traits (e.g., neuroticism).

Second, we found that more visible traits were not only concurrently, but also longitudinally, more consistently judged than less visible traits among an adolescent's family members, indicated by fewer differences in the mean-level change and rank-order stability between judges. In addition, adolescents' judgments again showed lower rank-order stabilities than their parents', which may be due to their highly fluctuating emotional status and their less committed identity. Adolescents' judgments were less stable than parents' judgments not only when they were judging themselves, but also when they were judging their siblings.

⁴ Siblings' judgments on these three traits at age 11.5 were also more negative than parents' judgments based on additional analyses. Detailed results can be retrieved from the first author upon request.

General Discussion

In two longitudinal studies, we consistently found mean-level change and rank-order stability of personality to depend on the judge in meaningful ways. Looking at long-term development (Study 1), personality development from late childhood to young adulthood through both self- and parent- reports confirmed the maturity principle. However, when zooming in on adolescence (Study 2), maturation was disrupted during adolescence. In addition, we confirmed the SOKA Model in the children and adolescents sample and expanded its validity into the developmental context. In the following, we discuss the results in more detail.

Are Personality Maturation and Disruption during Adolescence Perceived Differently Across Judges?

From childhood to young adulthood, our findings supported the maturity principle (Roberts et al., 2006, 2008) by showing that both children themselves, and (to a greater degree) their parents' judgments showed personality maturation over time. That is, parent-ratings showed a similar amount of increase in agreeableness, but a greater increase in conscientiousness than the self-ratings. Moreover, parent-ratings perceived decreases in neuroticism, whereas the children reported that they were just as emotionally stressed and vulnerable as they were before. These results indicate that in the long run, parents see their children's personality development in a more positive light than the children themselves.

However, personality maturation is not without disruption, as suggested by the disruption hypothesis (Denissen et al., 2013; Soto & Tackett, 2015). Indeed, when taking a closer look at personality development in adolescence, we found that adolescents were seen by their mothers and fathers as becoming less agreeable (and also less open to experience) over time.

Our results supported the suggestion from previous studies (Watson & Humrichouse, 2006) that the maturity principle might (at least to some degree) be a social construction, meaning that different judges may vary in the degree to, and the traits in which, they observe the maturity principle and the disruption of it. Parents saw maturation in the way their adolescent children experience emotions (decreases in neuroticism). Adolescents' reports, however, showed that they were just as emotionally vulnerable and stressed as they were before. Instead, adolescents (and their siblings) saw maturation in their self-regulatory traits (increases in agreeableness and conscientiousness), whereas their parents did not.

How can these differences be explained? One speculative explanation is that as adolescents' strive for autonomy and independence from their parents, their

inner feelings and sufferings are no longer very accessible to their parents (van der Giessen et al., 2014), making it hard for parents to sympathize with changes in emotional traits such as neuroticism (Vazire, 2010). In addition, adolescents go through a number of biological and socio-emotional transitions, and it takes some time before adolescents' increasing self-regulatory capacities become sufficient for properly regulating a majority of their emotions and social tasks (Denissen et al., 2013). Therefore, the increases of adolescent's self-regulatory traits might not be immediately visible to their parents.

It should be noted that we are not assuming that one judgment is more "correct" than the other. Previous studies have shown that each perspective contains unique information, and no perspective is better than the rest. Rather, which perspective is pragmatically more useful is highly dependent on the specific outcome that is being targeted (Connelly & Ones, 2010; Vazire, 2010). The discrepancy we found between parents and adolescents, however, might have implications for understanding and promoting parent-adolescent relationship quality, as self-verifying feedback from close others boosts feelings of being understood and relationship quality (Gordon & Chen, 2015; Human & Biesanz, 2013; Kwang & Swann, 2010; Swann, De La Ronde, & Hixon, 1994). Failure of parents to sympathize with their adolescents' inner stress and vulnerability might limit their ability to provide the necessary support.

A recent study focusing on a younger and shorter age period (from 10.70 to 13.70 years old) found several similar results - neuroticism declined in parent-ratings, but remained stable in self-reports; agreeableness decreased and conscientiousness remained stable in parent-ratings (Göllner et al., 2017). However, different from our results, decreases were found in the self-ratings of conscientiousness (rather than increases) and agreeableness (rather than remaining stable). Knowledge from both studies suggests the disruption in personality maturation to be in the eyes of the beholder, in addition to being a temporary phenomenon. Looking at longer-term development, both children themselves and (to a greater degree) parents perceived personality maturation. More research with additional judges and age groups is needed to replicate and further illuminate this matter.

Does the SOKA Model Apply to Children and Adolescents in a Developmental Framework?

Our data have interesting implications for the generalizability of the SOKA Model (Vazire, 2010) - which was based on cross-sectional studies on adults - to children and adolescents. First, consistent with our hypotheses, in both studies we found higher self-other agreement in more visible and behavioral-oriented traits (e.g., conscientiousness and extraversion) than in less visible traits (e.g.,

neuroticism) between children and their family members. Especially at age 17, self-parent agreement had dropped to non-significant and small level.

An unexpected but potentially interesting finding was that although self-parent agreement in agreeableness was significant and at a medium level at age 12 and 17, this agreement dropped to non-significant and was only at a small level at age 29. One explanation might be that the interaction with parents at this later age becomes a smaller part of individuals' social lives, than compared to childhood and adolescence. A person might behave prosocially with their parents (and other family members), but less so with friends, colleagues and strangers, or vice versa. Certainly this speculation needs future studies to verify.

Second, results confirmed and expanded the predictions from the SOKA Model to personality *development* in childhood and adolescence, by showing fewer inter-judge differences in the development (mean-level change and rank-order stability) of more visible traits (i.e., extraversion and conscientious) than the development of less visible and more evaluative traits (e.g., neuroticism and openness).

These results can be explained using the framework of the realistic accuracy model (Funder, 1995, 2012), which suggests that a personality judgment contains four steps: relevant information exists for that trait (relevance), is available to the judge (availability), is noticed by the judge (detection), and is interpreted correctly (utilization). More visible traits (e.g. extraversion and conscientiousness) ease steps such as relevance and availability (e.g., extraverts' exaggerated facial expressions and loud voice, and a conscientious person's tidy office). When such trait-relevant cues are not sufficiently available (such as for less visible traits), judgments are more influenced by various heuristics, such as the current relationship quality (Watson et al., 2000), leading to less consistency in judgments.

Third, although it was not the focus of our study, an additional interesting finding was the fluctuating characteristic of adolescents' personality judgments. Both studies showed that children's personality judgments showed lower rank-order stability during adolescence than parents' judgments. In Study 1 self-views were less stable than the parent views of neuroticism during adolescence. Study 2 confirmed this finding and further showed that self-views on other traits (especially openness and agreeableness) were also less stable than parents' views. Furthermore, siblings' views were even less stable than self-views.

One possibility is that adolescents' emotional fluctuations together with their less committed identity made adolescents' self-views less stable than their parents'. In addition, adolescents' emotional fluctuations might not only be reflected in lower rank-order stabilities (e.g., compared to their parents') in judging their own personality, but also in the impressions they form for others (i.e., their siblings),

suggesting a fluctuating characteristic of adolescent judges. That is, adolescents' judgments of their own and their siblings' personality might fluctuate more with their current mood or state self-esteem than their parents' judgments.

Limitations and Future Directions

The present article is the first to shed light on the developmental trajectories of the Big Five personality traits from childhood to young adulthood as judged from multiple perspectives in two longitudinal studies. However, it also contains some limitations. First, both studies focused on judgments of personality development by children themselves and their family members. Future studies might be interested in examining differences between other important judges in adolescence (e.g. friends and romantic partners) and extending results to other life phases (e.g., mid- and late-adulthood).

Second, the present study did not establish the external validity of personality judgment by different judges, such as their predictive validity for future outcomes. However, previous studies have shown that there is no best perspective, given that each perspective provides unique information (Connelly & Ones, 2010; Vazire & Mehl, 2008). Future studies might want to examine whose personality judgments of specific traits outperform the others' in predicting different types of important developmental outcomes.

Third, the sample sizes of both of our studies were modest. It is crucial for future studies with larger sample sizes to replicate our findings.

Finally, the present study was unable to directly address the dynamic transaction between relationship quality and personality judgment - such as the correlated changes between self-other relationship quality and self-other agreement on personality development - which would be an interesting question for future studies.

Conclusion

Results from our two longitudinal studies confirm and extend the self-other knowledge asymmetry model to childhood and adolescence in a developmental framework. Results indicated that personality maturation and the disruption of it is to some degree a social construction, since judges saw different degrees and aspects of the maturity principle. Specifically, in the longer term - from childhood to young adulthood - both children and (to a greater degree) parents saw personality maturation, although it was not without disruption. Zooming in on the "storm and

stress” phase of adolescence, we found parent reports of personality development to confirm the disruption hypothesis by showing decreases in agreeableness (and also openness). In addition, parents’ views showed maturation in the way adolescents experience emotions but not in the way they cooperate with others (i.e., decreases in neuroticism and agreeableness). However, adolescents’ self-views did not show decreasing emotional vulnerability, but showed maturation in their self-regulatory traits (i.e., increases in agreeableness and conscientiousness). Understanding the different views in personality development between adolescents and their family members might have theoretical and practical implications for improving children’s and adolescent’s feeling of being understood and their social relationship.

Supplemental Materials

Table S1 | Study 1: Means, Standard Deviations, and Zero-Order Correlations of All Manifest Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.N_12_self	-									
2.N_12_parent	.32**	-								
3.E_12_self	-.55**	-.23**	-							
4.E_12_parent	-.22**	-.39**	.41**	-						
5.O_12_self	-.31**	-.24**	.27**	.13	-					
6.O_12_parent	-.01	-.38**	-.15	.21**	.21**	-				
7.A_12_self	-.34**	-.16*	.34**	.05	.05	-.18*	-			
8.A_12_parent	-.08	-.34**	.01	.26**	.03	.15	.35**	-		
9.C_12_self	-.17*	-.16	.16*	-.01	.31**	-.19*	.30**	.17*	-	
10.C_12_parent	.06	-.30**	-.13	.00	.05	.15	.10	.31**	.46**	-
11.N_17_self	.17*	.00	-.14	.07	-.02	.17*	-.03	.07	.06	.18*
12.N_17_parent	.25**	.60**	-.13	-.25**	-.08	-.30**	-.15	-.13	-.01	-.12
13.E_17_self	-.30**	-.03	.53**	.24**	-.03	-.28**	.21**	.05	.09	-.14
14.E_17_parent	-.15	-.38**	.38**	.58**	.06	.10	.18*	.13	.04	.12
15.O_17_self	-.09	-.22**	.08	.12	.27**	.22*	-.04	-.02	.05	.03
16.O_17_parent	-.03	-.32**	-.09	.17*	.14	.61**	-.07	.01	-.10	.19*
17.A_17_self	-.07	-.10	.17*	.16	-.18*	-.15	.44**	.41**	.11	.03
18.A_17_parent	-.07	-.11	.06	.15	-.02	.06	.29**	.51**	.01	.06
19.C_17_self	-.06	-.12	.05	.00	.05	-.24**	.23**	.11	-.50**	-.43**
20.C_17_parent	-.08	-.25**	-.11	-.01	.04	.04	.22*	.03	.29**	.57**
21.N_29_self	.23**	.08	-.24**	-.07	-.21**	.04	-.16	-.10	-.06	.08

Table S1 | Continued

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
22.N_29_parent	.17	.38**	-.01	-.08	.04	-.08	-.10	-.14	.02	-.11
23.E_29_self	-.07	.04	.34**	.24**	.00	-.18*	.17*	.01	.07	-.04
24.E_29_parent	-.31**	-.34**	.31**	.42**	.20	.14	.07	.07	.14	.20
25.O_29_self	-.07	-.08	.06	.03	.18*	.23**	.01	-.01	-.02	.05
26.O_29_parent	.06	-.25*	-.26*	.10	-.04	.42**	-.11	.06	-.16	.20
27.A_29_self	.02	-.04	-.12	-.07	-.26**	-.07	.19*	.34**	.03	.07
28.A_29_parent	-.20	-.33**	.01	.28*	-.19	-.04	.12	.32**	.07	.12
29.C_29_self	-.15	-.17	.02	-.04	-.01	-.14	.19*	-.00	.31**	.33**
30.C_29_parent	-.06	-.24*	-.13	.06	-.05	-.16	.07	.12	.19	.43**
<i>M</i>	2.30	2.62	3.94	3.88	3.81	3.96	3.77	3.76	3.46	3.19
<i>SD</i>	0.48	0.60	0.59	0.70	0.41	0.55	0.49	0.56	0.59	0.73

Table S1 | Continued

	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
11.N_17_self	-									
12.N_17_parent	.13	-								
13.E_17_self	-.44**	-.01	-							
14.E_17_parent	.09	-.47**	.30**	-						
15.O_17_self	-.38**	-.24**	.24**	.04	-					
16.O_17_parent	.10	-.42**	-.19*	.30**	.21*	-				
17.A_17_self	-.25**	-.14	.27**	.12	.05	-.09	-			
18.A_17_parent	.01	-.41**	-.06	.24**	-.03	.19*	.38**	-		
19.C_17_self	-.15*	-.11	.06	.06	.24**	.03	.19*	.04		
20.C_17_parent	.22**	-.33**	-.22**	.18*	.02	.36**	.02	.20*	.51**	-
21.N_29_self	.39**	.02	-.21**	.07	-.14	.02	-.12	-.12	-.08	.08
22.N_29_parent	.18	.46**	-.04	-.25*	-.13	-.20	-.17	-.11	-.03	-.19
23.E_29_self	-.02	.09	.43**	.20*	.06	-.14	.10	-.06	.15	-.12
24.E_29_parent	-.13	-.43**	.35**	.57**	.11	.15	.18	.17	.09	.16
25.O_29_self	-.21*	-.10	.06	-.09	.47**	.31**	.01	.04	.13	.06
26.O_29_parent	-.09	-.22	.00	.09	.22	.54**	-.01	.05	-.23*	.28**
27.A_29_self	.11	.04	-.01	.02	-.18*	-.09	.33**	.24**	-.00	-.07
28.A_29_parent	.05	-.29*	.05	.20	-.02	-.00	.34**	.25*	-.07	.21
29.C_29_self	-.15	-.03	.05	-.03	.23**	.03	.04	-.11	.58**	.43**
30.C_29_parent	.10	-.23	-.14	.18	.13	.14	.02	.09	.35**	.69**
<i>M</i>	2.23	2.39	4.03	3.75	3.84	4.03	3.64	3.70	3.29	3.27
<i>SD</i>	0.56	0.65	0.60	0.75	0.43	0.58	0.55	0.62	0.71	0.82

Table S1 | Continued

	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
21.N_29_self	-									
22.N_29_parent	.28*	-								
23.E_29_self	-.34**	.02	-							
24.E_29_parent	-.18	-.49**	.29**	-						
25.O_29_self	-.38**	.06	.20*	-.13	-					
26.O_29_parent	-.04	-.29**	-.22	.10	.24*	-				
27.A_29_self	-.08	.06	.04	-.10	-.04	-.07	-			
28.A_29_parent	-.11	-.65**	-.09	.40**	-.21	.22*	.20	-		
29.C_29_self	-.23**	-.15	.17*	.06	.25**	.03	.00	.09	-	
30.C_29_parent	.05	-.42**	-.14	.24*	-.14	.28*	.14	.47**	.54**	-
<i>M</i>	2.22	2.26	3.87	4.02	4.03	4.45	3.87	3.97	3.88	3.97
<i>SD</i>	0.67	0.68	0.68	0.65	0.49	0.44	0.49	0.58	0.66	0.71

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table S2 | Study 2: Significant Differences Between Complete Cases and Cases with Missingness

Variable	<i>N</i>		<i>SD</i>		95% CI for Mean	
	Complete cases	Cases with missingness	Complete cases	Cases with missingness	Complete cases	Cases with missingness
Wave1 mother-rating C1	490	85	1.52	1.27	[3.81, 4.08]	[3.21, 3.76]
Wave1 mother-rating C3	490	84	1.49	1.27	[4.06, 4.33]	[3.49, 4.04]
Wave1 sibling-rating C2	490	83	1.38	1.26	[3.88, 4.13]	[3.30, 3.86]
Wave1 mother-rating N1	490	84	1.29	1.25	[3.26, 3.49]	[3.50, 4.04]
Wave 3 mother-rating C1	490	74	1.46	1.25	[3.90, 4.16]	[3.22, 3.80]
Wave 3 mother-rating E2	490	74	1.16	1.41	[5.10, 5.31]	[4.42, 5.07]

Note. C1-C3: Parcel 1 to Parcel 3 of Conscientiousness; N1: Parcel 1 of Neuroticism; E2: Parcel 2 of Extraversion.

Table S3 | Study 2: Means, Standard Deviations, and Zero-Order Correlations of All Manifest Variables
Self-Rating

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1.N_wave 1	-														
2.N_wave 2	.55**	-													
3.N_wave 3	.52**	.64**	-												
4.E_wave 1	-.47**	-.31**	-.24**	-											
5.E_wave 2	-.29**	-.46**	-.31**	.63**	-										
6.E_wave 3	-.28**	-.33**	-.43**	.60**	.69**	-									
7.O_wave 1	-.02	-.05	-.04	.18**	.16**	.14**	-								
8.O_wave 2	-.04	-.02	-.06	.22**	.25**	.21**	.62**	-							
9.O_wave 3	-.11*	-.12*	-.11*	.25**	.24**	.24**	.56**	.69**	-						
10.A_wave 1	-.07	-.08	-.02	.20**	.22**	.20*	.42**	.29**	.25**	-					
11.A_wave 2	-.01	-.06	-.08	.18**	.30**	.23**	.25**	.51**	.35**	.52**	-				
12.A_wave 3	-.09*	-.16**	-.18**	.18**	.22**	.30**	.20**	.26**	.35**	.42**	.60**	-			
13.C_wave 1	.08	-.04	.01	-.12**	.00	-.05	.19**	.06	.04	.36**	.20**	.20**	-		
14.C_wave 2	.06	-.05	-.04	-.09*	.02	-.03	.08	.14**	.10*	.19**	.26**	.20**	.70**	-	
15.C_wave 3	.01	.00	-.03	-.08	.00	-.02	.04	.04	.12**	.15**	.17**	.26**	.61**	.75**	-
<i>M</i>	3.55	3.57	3.54	4.95	4.98	4.98	4.82	4.91	5.01	5.43	5.53	5.60	4.29	4.35	4.37
<i>SD</i>	0.94	1.02	1.02	1.09	1.13	1.16	0.90	0.88	0.88	0.73	0.71	0.68	1.16	1.20	1.23

Table S3 | Continued

Mother-Rating

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1.N_wave 1	-														
2.N_wave 2	.71**	-													
3.N_wave 3	.68**	.73**	-												
4.E_wave 1	-.26**	-.16**	-.18**	-											
5.E_wave 2	-.21**	-.30**	-.23**	.73**	-										
6.E_wave 3	-.23**	-.22**	-.35**	.69**	.75**	-									
7.O_wave 1	-.12**	-.09*	-.10*	.26**	.25**	.23**	-								
8.O_wave 2	-.13**	-.08	-.08*	.22**	.28**	.22**	.81**	-							
9.O_wave 3	-.10*	-.09*	-.09*	.20**	.25**	.23**	.76**	.82**	-						
10.A_wave 1	-.15**	-.05	-.10*	.27**	.24**	.24**	.38**	.33*	.30**	-					
11.A_wave 2	-.16**	-.11**	-.10*	.22**	.28**	.22**	.35**	.42**	.35**	.72**	-				
12.A_wave 3	-.16**	-.11**	-.16**	.23**	.28**	.26**	.28**	.31**	.37**	.66**	.71**	-			
13.C_wave 1	-.14**	-.04	-.05	-.05	-.04	-.08	.18**	.17**	.17**	.25**	.27**	.24**	-		
14.C_wave 2	-.12**	-.10*	-.08	-.05	-.02	-.07	.19**	.23**	.20**	.25**	.31**	.29**	.79**	-	
15.C_wave 3	-.08*	.07	-.07	-.05	-.03	-.08	.17**	.18**	.23**	.25**	.24**	.33**	.74**	.81**	-
<i>M</i>	3.35	3.35	3.24	4.98	4.95	4.99	4.93	4.84	4.86	5.76	5.72	5.70	4.02	4.04	4.02
<i>SD</i>	1.12	1.08	1.10	1.19	1.20	1.18	1.11	1.14	1.14	0.74	0.73	0.76	1.38	1.39	1.33

Table S3 | Continued
Father-Rating

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1.N_wave 1	-														
2.N_wave 2	.67**	-													
3.N_wave 3	.64**	.69**	-												
4.E_wave 1	-.34**	-.23**	-.21**	-											
5.E_wave 2	-.26**	-.33**	-.25**	.74**	-										
6.E_wave 3	-.23**	-.26**	-.37**	.65**	.69**	-									
7.O_wave 1	-.18*	-.16**	-.10*	.36**	.31**	.27**	-								
8.O_wave 2	-.13*	-.17**	-.11*	.33**	.35**	.28**	.75**	-							
9.O_wave 3	-.12*	-.14*	-.12*	.31**	.30**	.36**	.70**	.76**	-						
10.A_wave 1	-.28**	-.24**	-.19**	.34**	.30**	.26**	.35**	.33**	.33**	-					
11.A_wave 2	-.15**	-.23**	-.16**	.24**	.30**	.27**	.30**	.44**	.37**	.71**	-				
12.A_wave 3	-.18**	-.21**	-.25**	.26**	.30**	.38**	.28**	.33**	.47**	.64**	.70**	-			
13.C_wave 1	-.21**	-.14**	-.17**	.08	.06	.09*	.23**	.19**	.20**	.29**	.22**	.20**	-		
14.C_wave 2	-.17**	-.20**	-.16**	.09*	.07	.08	.16**	.28**	.23**	.26**	.29**	.25**	.71**	-	
15.C_wave 3	-.17**	-.16**	-.17**	.09*	.08*	.11**	.15**	.20**	.25**	.24**	.23**	.33**	.64**	.72**	-
<i>M</i>	3-35	3-36	3-29	4-98	4-99	5-00	5-07	5-03	4-99	5-74	5-64	5-60	4-15	4-16	4-14
<i>SD</i>	1.02	0.96	0.98	1.12	1.09	1.07	0.94	0.93	0.97	0.69	0.74	0.75	1.24	1.23	1.23

Table S3 | Continued
Sibling-Rating

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1.N_wave 1	-														
2.N_wave 2	.52**	-													
3.N_wave 3	.50**	.62**	-												
4.E_wave 1	-.52**	-.33**	-.28**	-											
5.E_wave 2	-.32**	-.53**	-.39**	.51**	-										
6.E_wave 3	-.33**	-.36**	-.51**	.48**	.61**	-									
7.O_wave 1	.02	-.07	-.11**	.15**	.16**	.14**	-								
8.O_wave 2	-.06	-.09*	-.14**	.16**	.27**	.22**	.58**	-							
9.O_wave 3	-.12**	-.15**	-.19**	.19**	.22**	.27**	.43**	.62**	-						
10.A_wave 1	-.07	-.21**	-.20**	.26**	.20**	.25**	.53**	.36**	.29**	-					
11.A_wave 2	-.01	-.19**	-.22**	.18**	.30**	.26**	.31**	.49**	.39**	.59**	-				
12.A_wave 3	-.09*	-.27**	-.32**	.27**	.27**	.36**	.25**	.34**	.56**	.53**	.64**	-			
13.C_wave 1	.08	-.05	-.08*	.02	.07	.07	.34**	.22**	.14**	.36**	.21**	.21**	-		
14.C_wave 2	.06	-.06	-.10*	.04	.10*	.07	.20**	.30**	.22**	.19**	.33**	.24**	.62**	-	
15.C_wave 3	.01	-.14**	-.13**	.09*	.11**	.09*	.18**	.22**	.35**	.22**	.27**	.37**	.56**	.67**	-
<i>M</i>	3.48	3.53	3.52	4.98	4.98	5.01	4.67	4.71	4.82	5.09	5.15	5.23	3.92	4.02	4.07
<i>SD</i>	1.02	1.03	1.06	1.06	1.05	1.10	0.96	0.93	0.97	1.05	0.99	0.99	1.20	1.28	1.27

Note. N: Neuroticism, A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness. **p* < .05, ***p* < .01, ****p* < .001.

3

Chapter 3

Incremental Predictive Power of Other-Rated Personality: An 18-Year Longitudinal Study

Author Note:

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The raw data, analysis code, and measures used for this chapter are stored on the Utrecht University Research Data Server.

Z. Luan conceptualized the study, and A.M.G. Poorthuis & M.A.G. van Aken provided feedback. R. Hutteman, J.J.A. Denissen, J.B. Asendorpf, & M.A.G. van Aken organized data collection. Z. Luan performed data-analysis and interpretation. Z. Luan drafted the manuscript, and all co-authors provided feedback.

Abstract

The Self-Other Knowledge Asymmetry model (the SOKA model; Vazire, 2010) suggests that informant-reports are especially informative regarding traits which are highly visible and evaluative (socially desirable/undesirable instead of neutral), such as openness, conscientiousness, and agreeableness. The present 18-year longitudinal study aims to demonstrate the incremental predictive power of other-rated personality in adolescence, using personality and life outcomes in adulthood as trait criteria. We examined the incremental predictive power of other-rated Big Five personality traits above and beyond self-ratings at age 12 and 17 on self-rated personality and life outcomes at age 29 (e.g., internalizing and externalizing problems, educational and occupational achievement, and relationship quality). Participants were 186 German adolescents (53% boys), their parents and friends at age 12, and their mothers and fathers at age 17. Other-ratings showed incremental predictive power beyond self-ratings for all Big Five traits, with most consistent results for openness, conscientiousness, and agreeableness. Our results demonstrate the importance of including other-reports on adolescents' personality when predicting future personality and life outcomes, especially for highly visible and evaluative traits. Results provide the first longitudinal support for the SOKA model, shedding light on the criterion validity of self- vs. other-rated personality, and personality-outcome associations.

Keywords: personality, rating, longitudinal study, predictive power

Introduction

Individuals' personality traits predict various crucial life outcomes, in domains such as work, love, and health (Ozer & Benet-Martínez, 2006; Roberts et al., 2007; Tackett, 2006). However, earlier studies in this field are predominantly based on personality traits using self-reports, and little is known regarding what is gained by having others report on one's personality. The present study investigated the incremental predictive power of adolescents' personality rated by their close others (i.e., parents and friends), using longitudinal data spanning 18 years.

Predictive Power of Self- vs. Other-Rated Personality

Several theoretical models have suggested that other-ratings provide valuable information regarding one's personality. Building upon previous work by John and Robins (1993) and Luft and Ingham (1955), the Self-Other Knowledge Asymmetry model (the SOKA model; Vazire, 2010) provides a framework on the predictive power of self- vs. other-rated personality. The SOKA model advocates that self-ratings are subject to self-bias, which may result in distortions when rating traits which are highly evaluative (i.e., either highly socially desirable/undesirable instead of neutral). Thus, other-ratings may show higher predictive power than self-ratings for openness, conscientiousness, and agreeableness. On the other hand, the self has privileged access to thoughts and feelings that are less visible to others, and therefore neuroticism, which mainly concerns individuals' thoughts and feelings, might be most accurately judged by the self. Self and others are assumed to be equally accurate in judging personality traits which are both high in visibility and low in evaluativeness, such as extraversion (Vazire, 2010).

In her paper, Vazire (2010) provided empirical support for the SOKA model, such that undergraduate students' friend-ratings showed higher predictive power than self- and stranger-ratings for concurrent openness-related predictions (e.g., creativity). Self-ratings showed higher predictive power than other-ratings (i.e., friend- and stranger-ratings) for concurrent neuroticism-related predictions (e.g., anxiety). Furthermore, self- and other-ratings were equally predictive for concurrent extraversion-related predictions (e.g., talkativeness; Vazire, 2010). However, conscientiousness and agreeableness – two moderately-to-highly visible and evaluative traits – were not directly tested in this study. A meta-analysis has shown that other-rated conscientiousness and agreeableness, in general, showed higher predictive power than self-ratings, although this depended on the specific trait criterion (Connelly & Ones, 2010).

Thus, according to the SOKA model, other-rated personality should show

incremental predictive power above and beyond self-ratings for highly evaluative traits. This assertion is also based on the findings of the considerable individual differences in the level and direction of self-bias – some people self-enhance, some self-deprecate, and still some are relatively accurate (Bollich, Rogers, & Vazire, 2015; Campbell & Sedikides, 1999; Paulhus & John, 1998; Vazire, 2010). These individual differences in self-bias weaken the predictive power of self-rated personality. Although informant-ratings are not immune to bias, research has shown that they tend to be more uniformly positive (Leising, Erbs, & Fritz, 2010; Leising, Gallrein, & Dufner, 2014) and therefore are less disruptive of the rank-ordering of individuals. Therefore, informant-ratings may show higher predictive power for highly evaluative traits.

In addition, based on the principle of aggregation, Hofstee (1994) argued that aggregated ratings of multiple knowledgeable others provide the best available reference for the definition of personality structure as well as for assessing someone's personality. However, little is known regarding whether only adding one other-rating to the self-rating can already improve predictions of life outcomes. An exception is a study by Jackson and colleagues, who found that personality judgments by a single friend did not show any predictive power on individuals' longevity 75 years later. In contrast, aggregated (three to eight) friend-ratings of conscientiousness (for males), agreeableness and emotional stability (for females) showed greater and unique predictive power than adults' self-ratings on longevity. Also, aggregated friend-ratings of openness showed predictive power for males' longevity, although they were redundant with self-ratings (Jackson, Connolly, Garrison, Leveille, & Connolly, 2015).

Although previous studies using cross-sectional criteria provide initial insight to the predictive power of self- and other-rated personality, little is known regarding the longitudinal predictive power of personality judgments from different perspectives. Also, previous studies focused on the predictive power of self- vs. other-rated personality during adulthood, leaving processes during adolescence largely unknown. To our knowledge, no study to date has explored the extent to which the SOKA model applies to adolescents and their close others in a longitudinal framework.

On the one hand, the SOKA model makes predictions based on very plausible mechanisms which could be universal across age groups (i.e., trait visibility and evaluativeness). On the other hand, perceptions of adolescents' personality might show some unique features. For example, previous research has shown that self-rated personality in adolescence is less stable, less coherent within a domain, and less differentiated across domains than in adulthood (Luan, Hutteman, Denissen,

Asendorpf, & van Aken, 2017; Soto, John, Gosling, & Potter, 2008). Parent-ratings of adolescents' personality are more stable than adolescent self-ratings, (Luan et al., 2017; Study 2) and therefore may provide incremental predictive power above and beyond self-ratings. In addition, adolescence is characterized by frequent self-reflection and a heightened need for achieving a clear self-view (Harter, 2007), which might result in greater frequency and willingness of adolescents to express and discuss their thoughts and feelings with their close others. Such expression and discussion, in turn, might provide valid information for adolescents' close others to accurately judge their personality, even for neuroticism. Therefore, personality rated by friends and adults may be particularly informative in adolescence.

Trait Validation Criteria: Future Personality and Life Outcomes

The relative predictive power of self- and other-rated Big Five personality traits may partly depend on the trait validation criteria (Connelly & Ones, 2010). The trait validation criteria of the present study were future personality and life outcomes.

Big Five personality traits have repeatedly been found to be associated with various meaningful aspects of individuals' lives. The most consistent findings in the literature revealed that internalizing behaviors were positively associated with neuroticism and negatively associated with extraversion. Educational and occupational achievements were positively associated with openness to experience and conscientiousness. Relationship quality was positively associated with agreeableness and extraversion, and negatively associated with neuroticism. Health was positively associated with conscientiousness. Finally, externalizing behaviors were negatively associated with agreeableness and conscientiousness (see Ozer & Benet-Martínez, 2006; Roberts et al., 2007 for reviews).

Because the aim of the present study was to demonstrate the incremental predictive power of other-rated personality traits above and beyond self-ratings, the criteria for each trait (i.e., later personality and life outcomes) focused on the most consistent findings in the literature, for the sake of brevity and to reduce the number of analyses. We did not conduct exhaustive tests for all personality-outcome links (see Beer & Vazire, 2017; Vazire, 2010, where a similar approach was used). Specifically, the validation criteria for openness included the domains of later self-rated openness as well as educational and occupational achievement. The validation criteria for conscientious included the domains of later self-rated conscientiousness, educational and occupational achievement, health, and (fewer) externalizing problems. The validation criteria for agreeableness included the domains of self-rated agreeableness, relationship quality, and (fewer) externalizing

problems. The validation criteria for extraversion included the domains of self-rated extraversion, (fewer) internalizing problems, and relationship quality. Lastly, the validation criteria for neuroticism included the domains of self-rated neuroticism, internalizing problems, and (lower) relationship quality.

The Present Study

We investigated whether other-rated Big Five personality traits in early and late adolescence (i.e., age 12 and 17) can contribute incremental predictive power above and beyond adolescents' self-ratings in predicting later trait validation criteria (i.e., personality and life outcomes at age 29). Based on the SOKA model (Vazire, 2010), we expected other-ratings to show incremental predictive power for openness-, conscientiousness-, and agreeableness-related predictions above and beyond self-ratings. Moreover, considering that self-rated personality in adolescence is less stable and less coherent than in adulthood, and that parent-ratings were more stable than adolescent self-ratings (Luan et al., 2017; Soto et al., 2008), we explored whether other-ratings would provide incremental predictive power above and beyond self-ratings also for extraversion- and neuroticism-related predictions.

Predictive power was tested with Big Five personality traits and various life outcomes in young adulthood as trait validation criteria. Life outcomes included internalizing behaviors (i.e., self-esteem - reversed, and depression), educational and occupational achievement (i.e., the highest achieved educational level and work income), relationship quality (i.e., relationship satisfaction, secure attachment to mothers and to partners, and marriage), health (i.e., substance use and hospitalization – both reversed), and externalizing behaviors (i.e., moral transgressions and police contact). Since all trait validation criteria were based on self-ratings, the present study is a conservative test to demonstrate the incremental predictive power of other-ratings over and above self-ratings.

Method

Participants

Participants were part of the Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC; Weinert & Schneider, 1999). The first wave started in the fall of 1984 in the Munich area. The LOGIC sample initially contained 230 children (119 boys) who started preschool in the Munich area at the age of 3 or 4 years old. Their first language was German. Twenty schools were selected from

a broad spectrum of neighborhoods, and more than 90% of parents asked gave consent for their child's participation. The present study included three waves of measurements: when participants were, on average, 12 years old (186 self-ratings and 155 parent-ratings – mainly mother-ratings, and 125 best-friend ratings, tested in 1992), 17 years old (174 self-ratings and 146 mother-ratings, and 128 father-ratings, tested in 1998), and 29 years old (153 self-ratings and 94 parent-ratings, tested in 2010). Attrition analyses showed that participants with complete cases scored significantly higher than those with missingness on some items of self-rated agreeableness at age 12, and self-rated openness at age 17, indicated by non-overlapping 95% confidence intervals (see **Table S1** of the supplemental materials for details).

Measures

Self- and other-rated Big Five personality traits at age 12 and 17 were used to predict self-rated Big Five personality traits and various life outcomes at age 29.

Predictors (age 12 and 17)

Big Five personality traits

At age 12, Big Five personality traits were judged by participants, one of their parents (mainly mothers), and one same-sex best friend. Neuroticism, agreeableness, conscientiousness, extraversion, and openness were rated by 40 bipolar adjective pairs obtained from Ostendorf (1990) on a 5-point scale (from 1 = *totally agree with the adjective word on the left side*, to 5 = *totally agree with the adjective word on the right side*); see Asendorpf and van Aken (2003) for details. At age 17, participants and both parents rated personality using the same adjective pairs.

Trait validation criteria (age 29): Personality and life outcomes

Big Five personality traits

The same adjective pairs in age 12 and 17 were rated again by participants themselves. Cronbach's alphas were satisfactory for all judges at age 12, 17, and 29, ranging from .67 to .93.

Internalizing problems

Internalizing problems were measured in terms of self-esteem (reversed) and depression.

Self-esteem. Self-esteem was measured by asking participants to fill out a subscale of the German short version of the SDQIII (Marsh & O'Neill, 1984) on a 5-point scale (from 1 = *totally disagree*, to 5 = *totally agree*). Cronbach's alpha was .77.

Depression. Depression was measured by asking participants to fill out a 20-item Beck Depression Inventory (BDI-V-Short; Schmitt & Maes, 2000) on a 6-point scale (from 1 = *never*, to 6 = *almost always*). Cronbach's alpha was .91.

Externalizing problems

Externalizing problems were measured in terms of moral transgressions and police contact.

Moral transgressions. Moral transgressions were measured by asking the frequency of moral transgressions since the last measurement wave (i.e., six years ago when participants were at age 23). Participants indicated on a 7-point scale (from 1 = *never*, to 7 = *very often*), the frequency with which they had “fare-dodged?”, “stole (less than €10)?”, “stole (more than €10)”, “drove drunken”, “damaged property?”, “lied intentionally?”, and “broke a promise”. Cronbach's alpha was .84.

Police contact. Police contact was measured by asking whether participants had conflicted with the law since the last measurement wave (0 = *no*, 1 = *yes*). Seventeen participants responded “yes”.

Educational and occupational achievements

Educational and occupational achievements were measured in terms of educational achievement and work income.

Educational achievement. The highest achieved educational level was asked on a 6-point scale (1 = *Hauptschule*, 2 = *Ausbildung*, 3 = *Fachschule*, 4 = *Gymnasium*, 5 = *Fachhochschule*, 6 = *Universität*). Higher scores represent higher educational achievements.

Work income. Net work income was rated on a 7-point scale (from 1 = *up to €500*, 2 = *up to €1000*, 3 = *up to €1500*, 4 = *up to €2000*, 5 = *up to €2500*, 6 = *up to €3000*, 7 = *over €3000*).

Health

Health was measured in terms of substance use and hospitalization (both reversed).

Substance use. Participants answered four questions about substance use (i.e., usage of cigarettes, alcohol, soft drugs, and hard drugs; from 1 = *never tried*, to 5 = *highly dependent*). Cronbach's alpha was .61.

Hospitalization Participants were asked whether they had been in a hospital for longer than one month since the last measurement wave (0 = *no*, 1 = *yes*). Ten participants responded “yes”.

Relationship quality

Relationship quality was measured in terms of relationship satisfaction, secure attachment to parents as well as partners, and marriage.

Relationship satisfaction. Relationship satisfaction with a partner was measured with the Relationship Assessment Scale (Hendrick, 1988). A German version was published by Sander & Bocker (1993). Participants answered seven questions on a 5-point scale (e.g., “In general, how satisfied are you with your relationship?”), and higher scores indicate higher levels of satisfaction with the relationship. Cronbach’s alpha was .86.

Secure attachment to mothers and partners. Secure attachment to mother and partner were both measured by the Attachment Style Prototypes (Bartholomew & Horowitz, 1991). A German version was published by (Asendorpf, Banse, Wilpers, & Neyer, 1997). Participants answered to what degree they agreed with the four statements on a 5-point scale (from 1 = *not at all*, to 5 = *completely*) regarding their attachment to their mothers, and four statements regarding their attachment to their partners. We focused on the statement regarding secure attachment (i.e., “It is relatively easy for me to become emotionally close to my mother/partners. I am comfortable depending on my mother/partner and having my mother/partner depend on me. I do not worry about being alone or having my mother/partner not accept me.”). We did not include the other three statements regarding the different subtypes of insecure attachment, due to the absence of clearly documented links between Big Five personality traits and subtypes of insecure attachment. In addition, there were three participants whose mothers had passed away at the time of measurement, and therefore their answers were referring to their attachment towards their fathers. To ensure comparability, answers of these three participants were recoded to missingness.

Marriage. Participants were asked whether they were currently married (0 = *no*, and 1 = *yes*). Twenty-one participants responded “yes”.

Analytic Strategy

Missing data handling and model fit

Data analyses were conducted with *Mplus* Version 7.31 (Muthén & Muthén, 2015). Missing data were handled using full information maximum likelihood (FIML) estimation, thereby making optimal use of the available data. Model fit was assessed using the comparative fit indices (CFIs) and Standardized Root Mean Square Residual (SRMR), with CFI values of .90 and higher and SRMR values of .08 and lower indicating acceptable fit to the data (Hu & Bentler, 1998).

The incremental predictive power of other-rated personality above and beyond self-ratings

The predictors (i.e., personality traits) were specified in the model as latent variables with three parcels, in order to explicitly account for measurement

error and improve reliability (Little et al., 2002). The same parcel structure was used across raters and age to ensure comparability. Similarly, outcome variables measured with more than four items (i.e., Big Five personality traits, self-esteem, depression, moral transgressions, and relationship satisfaction) were all specified as latent variables with three parcels. Weak measurement invariance (i.e., same factor loadings) for Big Five personality traits was tested and subsequently specified across raters and age.

Different personality traits (i.e., Big Five traits), age (i.e., age 12 and 17), and trait validation criteria were tested in separate models. In each model, the trait validation criterion was regressed on a self- and an other-rated personality trait (e.g., educational achievement regressed on self- and mother-rated conscientiousness). For binary criterion (i.e., police contact, hospitalization, and marriage), logistic regressions were performed. As aforementioned, only the theoretically most relevant links between personality traits and trait validation criterion were tested to reduce the number of analyses.

Specifically, at age 12, trait validation criteria were regressed on self- and parent- (or friend-) ratings simultaneously to test whether parent- (or friend-) ratings provide any incremental predictive power above and beyond self-ratings. Similarly, at age 17, trait validation criteria were regressed on self- and mother- (or father-) ratings simultaneously to test whether mother- (or father-) ratings provide any incremental predictive power above and beyond self-ratings.

Results

Means, standard deviations, and inter-correlations of all research variables can be found in **Table S2** of the supplemental materials. Here, we present the incremental predictive power of other-ratings above and beyond self-ratings for each trait separately, using later personality and life outcomes as trait validation criterion.

Openness

Table 1 shows the incremental predictive power of other-rated openness at both ages. At age 12, self-ratings did not significantly predict self-rated openness, educational achievement, or work income at age 29, whereas other-ratings showed significant incremental predictive power for all criteria.

At age 17, self-ratings only significantly predicted self-rated openness at age 29, but not educational achievement or work income. Other-ratings again showed significant incremental predictive power for all criteria.

Conscientiousness

Table 2 shows the incremental predictive power of other-rated conscientiousness at both ages. At age 12, self-ratings significantly predicted self-rated conscientiousness, (less) substance use, and (fewer) moral transgressions at age 29. Moreover, self-ratings also significantly predicted educational achievement, but the unique predictive power of self-ratings was in the opposite direction to the literature (i.e., higher self-rated conscientiousness predicted lower educational achievement). Other-ratings showed incremental predictive power above and beyond self-ratings in predicting self-rated conscientiousness, educational achievement, and (fewer) moral transgressions at age 29.

At age 17, self-ratings significantly predicted conscientiousness and work income at age 29. Moreover, self-ratings again also significantly predicted educational achievement, but the unique predictive power of self-ratings was again in the opposite direction to the literature (i.e., higher self-rated conscientiousness predicted lower educational achievement). Other-ratings showed incremental predictive power above and beyond self-ratings in predicting conscientiousness, educational achievement, work income, (less) substance use, (less) hospitalization, and (less) police contacts at age 29.

Agreeableness

Table 3 shows the incremental predictive power of other-rated agreeableness at both ages. At age 12, self-ratings significantly predicted agreeableness, relationship satisfaction, secure attachment to both mothers and partners, (less) police contacts, and (fewer) moral transgressions at age 29. Other-ratings showed significant incremental predictive power in predicting self-rated agreeableness, (less) police contacts, and (fewer) moral transgressions.

At age 17, self-ratings significantly predicted agreeableness and (fewer) moral transgressions at age 29. Other-ratings showed incremental predictive power in predicting only relationship satisfaction.

Table 1 | Incremental Predictive Power of Other-Rated Openness

Self-Reported Personality and Life Outcomes at age 29	Personality at age 12			Personality at age 17			
	Judge	<i>b</i>	SE	Judge	<i>b</i>	SE	β
Openness	self/parent	0.20 [†] /0.17*	0.15/0.09	self/mother	0.58*** / 0.17***	0.11/0.08	0.49/0.21
	self/friend	0.15/0.31**	0.14/0.10	self/father	0.58***/0.13 [†]	0.11/0.09	0.50/0.14
Educational achievement	self/parent	-0.15/0.96***	0.33/0.21	self/mother	0.30/1.04***	0.23/0.16	0.11/0.55
	self/friend	-0.04/0.68***	0.30/0.21	self/father	0.25/0.95***	0.24/0.19	0.10/0.48
Work income	self/parent	0.78 [†] /0.58 [†]	0.59/0.37	self/mother	-0.24/1.15***	0.46/0.28	-0.06/0.42
	self/friend	0.78 [†] /0.67*	0.51/0.36	self/father	-0.14/0.81**	0.46/0.34	-0.04/0.27

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; one-tailed. SE: Standard Error.

Table 2 | Incremental Predictive Power of Other-Rated Conscientiousness

Self-Reported Personality and Life Outcomes at age 29	Personality at age 12			Personality at age 17			
	Judge	<i>b</i>	SE	Judge	<i>b</i>	SE	β
Conscientiousness	self/parent	0.27*/0.22*	0.13/0.10	self/mother	0.51***/0.15*	0.10/0.08	0.54/0.18
	self/friend	0.35***/0.25***	0.11/0.11	self/father	0.46***/0.20*	0.10/0.09	0.48/0.24
Educational achievement	self/parent	-0.47*/0.59***	0.21/0.16	self/mother	-0.64***/0.79***	0.17/0.15	-0.41/0.61
	self/friend	-0.13/0.18	0.18/0.17	self/father	-0.64***/0.72***	0.18/0.16	-0.41/0.55
Work income	self/parent	0.14/0.35	0.39/0.29	self/mother	0.54*/0.24	0.30/0.27	0.24/0.12
	self/friend	0.48 [†] /-0.14	0.31/0.28	self/father	0.20/0.61*	0.35/0.30	0.09/0.32
Substance use	self/parent	-0.19 [†] /-0.06	0.13/0.10	self/mother	-0.17 [†] /-0.25*	0.11/0.12	-0.18/-0.32
	self/friend	-0.20*/-0.07	0.11/0.11	self/father	-0.17 [†] /-0.23*	0.13/0.13	-0.18/-0.29
Hospitalization ($n_{\text{yes}} = 10$)	self/parent	-0.68/0.09	0.79/0.61	self/mother	-0.77/-1.39*	0.75/0.71	-0.22/-0.47
	self/friend	-0.38/-0.61	0.63/0.67	self/father	-0.91/-0.92	0.82/0.84	-0.28/-0.34
Police contact ($n_{\text{yes}} = 17$)	self/parent	-0.64/-0.14	0.65/0.54	self/mother	-0.47/-0.46	0.57/0.54	-0.17/-0.19
	self/friend	-0.48/-0.54	0.51/0.54	self/father	0.01/-1.13*	0.62/0.60	0.00/-0.44
Moral transgressions	self/parent	-0.39**/0.05	0.15/0.11	self/mother	-0.10/-0.15 [†]	0.12/0.11	-0.09/-0.18
	self/friend	-0.27*/-0.20*	0.12/0.12	self/father	-0.10/-0.13	0.13/0.11	-0.09/-0.15

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; one-tailed. SE: Standard Error.

Table 3 | Incremental Predictive Power of Other-Rated Agreeableness

Self-Reported Personality and Life Outcomes at age 29	Personality at age 12			Personality at age 17				
	Judge	<i>b</i>	SE	β	Judge	<i>b</i>	SE	β
Agreeableness	self/parent	0.13/0.29**	0.12/0.10	0.13/0.34	self/mother	0.33***/0.09	0.10/0.09	0.38/0.11
	self/friend	0.24*/0.16*	0.11/0.08	0.24/0.23	self/father	0.34***/0.07	0.09/0.11	0.39/0.08
Relationship satisfaction	self/parent	0.41*/-0.24	0.21/0.16	0.29/-0.20	self/mother	0.06/-0.16	0.15/0.14	0.06/-0.17
	self/friend	0.26 [†] /0.06	0.18/0.12	0.19/0.07	self/father	-0.10/0.38*	0.13/0.17	-0.09/0.35
Secure attachment to mother	self/parent	0.50*/0.03	0.27/0.21	0.22/0.02	self/mother	0.04/0.15	0.20/0.20	0.02/0.09
	self/friend	0.49*/0.12	0.23/0.19	0.22/0.08	self/father	0.10/-0.00	0.19/0.22	0.06/-0.00
Secure attachment to partner	self/parent	0.65***/-0.16	0.22/0.18	0.34/-0.10	self/mother	0.10/-0.03	0.17/0.16	0.07/-0.02
	self/friend	0.56***/-0.07	0.18/0.13	0.30/-0.06	self/father	-0.02/0.25 [†]	0.16/0.18	-0.01/0.17
Currently married ($n_{\text{yes}} = 21$)	self/parent	0.95/-1.13	0.97/0.73	0.20/-0.28	self/mother	-0.20/-0.59	0.63/0.61	-0.05/-0.18
	self/friend	0.20/0.31	0.74/0.57	0.04/0.10	self/father	-0.30/-0.46	0.58/0.61	-0.08/-0.13
Police contact ($n_{\text{yes}} = 17$)	self/parent	-0.91/-1.58*	0.92/0.84	-0.18/-0.36	self/mother	-0.55/0.48	0.73/0.73	-0.15/0.15
	self/friend	-1.37**/-1.13*	0.80/0.58	-0.27/-0.33	self/father	-0.44/0.32	0.66/0.75	-0.12/0.09
Moral transgressions	self/parent	-0.51**/0.13	0.20/0.16	-0.29/0.09	self/mother	-0.51***/0.27 [†]	0.16/0.14	-0.36/0.22
	self/friend	-0.39**/-0.32**	0.17/0.12	-0.23/-0.28	self/father	-0.40**/0.10	0.15/0.15	-0.29/0.07

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; one-tailed (except for predicting “moral transgression” by mother-ratings at age 17, which was two-tailed, because the effects were in the opposite direction of our expectation). SE: Standard Error.

Extraversion

Table 4 shows the incremental predictive power of other-rated extraversion at both ages. At age 12, self-ratings significantly predicted extraversion, self-esteem, and (lower) depression at age 29. Other-ratings only showed significant incremental predictive power in predicting (less likely) to be in marriage, which was in the opposite direction to our prediction.

At age 17, self-ratings significantly predicted extraversion, self-esteem, (lower) depression, and relationship satisfaction at age 29. Other-ratings showed incremental predictive power in predicting extraversion, and (less likely to) be in marriage at age 29, the latter was again in the opposite direction to our prediction.

Neuroticism

Table 5 shows the incremental predictive power of other-rated neuroticism at both ages. At age 12, self-ratings significantly predicted neuroticism, depression, and (lower) secure attachment to partners at age 29. Other-ratings did not show any incremental predictive power.

At age 17, self-ratings significantly predicted neuroticism, depression, (lower) relationship satisfaction, and (lower) secure attachment to partners at age 29. Other-ratings only showed incremental predictive power in predicting (lower) secure attachment to partners.

Discussion

Previous cross-sectional evidence with adult samples suggested that other-rated personality can provide unique information about one's personality, especially for traits which are highly visible and evaluative, such as openness, conscientiousness, and agreeableness (Beer & Vazire, 2017; Funder, 1995, 2012; Vazire, 2010). Our results provided longitudinal support for this notion by demonstrating that other-rated personality in early and late adolescence showed incremental predictive power above and beyond self-ratings, even when trait validation criteria were based on self-ratings. Below we discuss results of predicting later personality and life outcomes separately.

Predicting Later Personality

We found that other-rated personality showed incremental predictive power above and beyond adolescents' self-ratings in predicting how these adolescents would perceive themselves more than a decade later on openness,

Table 4 | Incremental Predictive Power of Other-Rated Extraversion

Self-Reported Personality and Life Outcomes at age 29	Personality at age 12			Personality at age 17				
	Judge	b	SE	Judge	b	SE	β	
Extraversion	self/parent	0.38***/0.12	0.11/0.10	0.32/0.12	self/mother	0.49***/0.11	0.10/0.09	0.43/0.12
	self/friend	0.41***/0.05	0.11/0.12	0.35/0.04	self/father	0.44***/0.21*	0.11/0.10	0.38/0.21
Self-esteem	self/parent	0.15*/0.05	0.09/0.08	0.18/0.06	self/mother	0.13 [†] /-0.01	0.08/0.07	0.17/-0.02
	self/friend	0.17*/-0.01	0.08/0.10	0.21/-0.01	self/father	0.16*/-0.06	0.09/0.09	0.20/-0.09
Depression	self/parent	-0.34***/0.11	0.10/0.09	-0.35/0.13	self/mother	-0.18*/0.02	0.09/0.07	-0.20/0.02
	self/friend	-0.27***/-0.00	0.09/0.10	-0.29/-0.00	self/father	-0.18*/0.00	0.10/0.09	-0.20/0.00
Relationship satisfaction	self/parent	0.02/-0.05	0.12/0.10	0.02/-0.06	self/mother	0.20*/-0.10	0.10/0.08	0.24/-0.15
	self/friend	-0.05/0.11	0.10/0.11	-0.05/0.13	self/father	0.10/0.15	0.12/0.12	0.12/0.20
Secure attachment to mother	self/parent	0.08/0.21 [†]	0.15/0.14	0.05/0.16	self/mother	0.01/0.18 [†]	0.13/0.12	0.00/0.17
	self/friend	0.09/0.24 [†]	0.14/0.18	0.06/0.17	self/father	-0.03/0.22 [†]	0.15/0.14	-0.02/0.18
Secure attachment to partner	self/parent	0.18 [†] /-0.08	0.13/0.12	0.15/-0.08	self/mother	0.10/-0.05	0.11/0.10	0.09/-0.06
	self/friend	0.15 [†] /-0.02	0.11/0.13	0.12/-0.02	self/father	0.04/0.11	0.12/0.12	0.04/0.11
Currently married ($n_{\text{yes}} = 21$)	self/parent	0.07/-1.67**	0.54/0.54	0.02/-0.55	self/mother	-0.48/-1.55***	0.48/0.48	-0.14/-0.55
	self/friend	-0.60/-0.30	0.43/0.50	-0.20/-0.11	self/father	-0.48/-0.87 [†]	0.47/0.46	-0.15/-0.32

Note. [†] $p < .10$, * $p < .05$, ** $p < .001$; one-tailed (except for the outcome variable “currently married”, which were two-tailed, because the effects were in the opposite direction of our expectation). SE: Standard Error.

Table 5 | Incremental Predictive Power of Other-Rated Neuroticism

	Self-Reported Personality and Life Outcomes at age 29			Personality at age 12			Personality at age 17		
	Judge	<i>b</i>	SE	β	SE	Judge	<i>b</i>	SE	β
Neuroticism	self/parent	0.34*/0.03	0.17/0.13	0.24/0.03	0.17/0.13	self/mother	0.64***/0.01	0.11/0.10	0.52/0.01
	self/friend	0.38**/-0.09	0.15/0.13	0.26/-0.09	0.15/0.13	self/father	0.63***/0.00	0.11/0.11	0.52/0.00
Self-esteem	self/parent	-0.04/-0.08	0.15/0.11	-0.03/-0.09	0.15/0.11	self/mother	-0.09/0.11	0.11/0.11	-0.09/0.12
	self/friend	-0.10/0.07	0.12/0.11	-0.08/0.08	0.12/0.11	self/father	-0.07/-0.10	0.10/0.11	-0.07/-0.11
Depression	self/parent	0.36*/-0.02	0.16/0.12	0.25/-0.02	0.16/0.12	self/mother	0.31**/0.02	0.12/0.11	0.26/0.02
	self/friend	0.35**/-0.09	0.14/0.12	0.25/-0.09	0.14/0.12	self/father	0.28**/0.09	0.11/0.11	0.25/0.08
Relationship satisfaction	self/parent	-0.08/0.01	0.19/0.13	-0.06/0.01	0.19/0.13	self/mother	-0.25*/0.01	0.13/0.13	-0.22/0.01
	self/friend	-0.09/0.08	0.16/0.12	-0.07/0.09	0.16/0.12	self/father	-0.20†/-0.18	0.13/0.15	-0.19/-0.19
Secure attachment to mother	self/parent	-0.08/-0.17	0.24/0.18	-0.04/-0.10	0.24/0.18	self/mother	-0.01/0.03	0.18/0.17	-0.01/0.02
	self/friend	-0.18/-0.04	0.21/0.21	-0.08/-0.03	0.21/0.21	self/father	0.00/-0.11	0.17/0.17	0.00/-0.07
Secure attachment to partner	self/parent	-0.40*/-0.12	0.20/0.15	-0.22/-0.09	0.20/0.15	self/mother	-0.26*/-0.14	0.15/0.14	-0.17/-0.11
	self/friend	-0.45**/-0.03	0.17/0.14	-0.26/-0.02	0.17/0.14	self/father	-0.23*/-0.30*	0.14/0.14	-0.16/-0.23
Currently married ($n_{\text{yes}} = 21$)	self/parent	-0.44/0.81	0.83/0.62	-0.10/0.24	0.83/0.62	self/mother	0.45/0.88†	0.56/0.53	0.12/0.27
	self/friend	-0.04/0.31	0.68/0.58	-0.01/0.10	0.68/0.58	self/father	0.43/0.15	0.53/0.52	0.13/0.05

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; one-tailed (except for predicting “currently married” by other-ratings, which were two-tailed, because the effects were in the opposite direction of our expectation). SE: Standard Error.

conscientiousness, and agreeableness. However, other-rated personality barely contributed any incremental predictive power in predicting how extraverted and neurotic individuals would later perceive themselves to be.

Our findings are mostly consistent with the SOKA model, which advocates that others-ratings should be more predictive than self-ratings for openness, conscientiousness, and agreeableness, because these traits are highly visible and evaluative. Others are less accurate than the self in judging neuroticism, because this trait concerns one's inner thoughts and feelings, which are less visible to others. The self and others are assumed to be equally accurate in judging extraversion, because this trait is both high in visibility and low in evaluativeness (Beer & Vazire, 2017; Vazire, 2010).

Our results suggest that individuals do not passively internalize the perceptions other people have of them, because in that case other-ratings should show incremental predictive power for all Big Five traits. Instead, individuals might be more like "personality scientists (Robins & John, 1997)" – they are curious about their own personality, they collect data (e.g., ask for interpersonal feedback, observe their own behaviors, and reflect on their past experience), and continuously update their belief regarding how they really are. Perhaps as adolescents grow, the interpersonal and objective feedback they received has made their self-views more realistic. Since the accuracy of adolescents' self-views regarding highly evaluative traits has the most room for improvement, individuals' self-views regarding openness, conscientiousness, and agreeableness may become more accurate, and therefore would then become more in line with how they were perceived by others in the first place.

One exception was that father-rated extraversion at age 17 showed significant incremental predictive power above and beyond adolescents' self-ratings. Perhaps this finding suggests that even for the highly judgeable trait extraversion – high in visibility and low in evaluativeness – adolescents themselves do not have perfect information, and can learn from others about their own personality. However, this could be a chance finding, and therefore more replication studies are needed before drawing conclusions.

Predicting Later Life Outcomes

Consistent with the SOKA model, we found that other-rated openness, conscientiousness, and agreeableness provided incremental predictive power above and beyond self-ratings in predicting a number of life outcomes, covering the domains of educational and occupational achievement, health, relationship quality, and externalizing problems. Since these trait validation criteria were all

based on self-reports, these results strongly suggest that valuable information can be gained by asking others to report on adolescents' openness, conscientiousness, and agreeableness. The SOKA model advocates that self-ratings for these traits are likely to be influenced by various types of self-bias (Beer & Vazire, 2017).

With respect to neuroticism and extraversion, previous research has shown that adolescents' self-rated personality is less stable and less coherent than adults' (Luan et al., 2017; Roberts & DelVecchio, 2000; Soto et al., 2008). In addition, adolescents' frequent self-reflection and a heightened need for self-view clarity (Harter, 2007) might make them more frequently express and discuss their thoughts and feelings to their close others, raising the possibility that other-ratings in adolescence might contribute incremental predictive power for traits neuroticism and extraversion as well. We found some support for this. Specifically, father-rated neuroticism at age 17 significantly predicted less secure attachment to the partner. Moreover, higher parent-rated extraversion predicted lower probability to be in marriage. Importantly, considering the considerable number of analyses, these findings need replications by future studies, and therefore should be interpreted with caution.

Furthermore, we found that at both age 12 and 17, when the significant and positive predictive power of parent-rated conscientiousness was controlled for, the unique predictive power of self-rated conscientiousness significantly but *negatively* predicted educational achievement at age 29, although the literature consistently shows a positive association between conscientiousness and educational achievement (Ozer & Benet-Martínez, 2006; Roberts et al., 2007). The Trait-Reputation-Identity model (McAbee & Connelly, 2016) can potentially provide some clarity to this finding. This theory proposed that when a personality trait is reported by multiple raters, the shared part of multiple-raters represents the effect of that personality *trait*, the unique part of other-rating(s) represents the effect of *reputation*, and the unique part of the self-rating represent the effect of *identity*. Thus, pinpointing which part of personality rating is and isn't correlated with that outcome variable might improve our understanding of why they correlate. In the case of conscientiousness-educational achievement, assuming the shared part of self- and other-ratings represents the effect of trait conscientiousness, the unique (and negative) predictive power of self-ratings we found might indicate that overly positive self-view regarding how conscientious s/he is (i.e., self-enhancement in conscientiousness) might be maladaptive for educational achievement. However, for this specific finding, future studies with preferably many raters are needed to shed more light on this matter.

Limitations and Future Directions

Taken together, our results showed that other-ratings provided incremental information above and beyond self-ratings for all Big Five personality traits, especially for traits that high in visibility and evaluativeness. To our knowledge, the present study provides the first longitudinal evidence regarding the incremental predictive power of other-rated personality in adolescence. However, several caveats need to be mentioned. First, despite our efforts in trying to minimize the number of analyses, still, a considerable number of personality-outcome associations have been investigated, increasing the probability of a chance finding. Thus, it is important for future studies to replicate our findings.

Second, our sample size is modest, which plausibly has limited our statistical power to detect some incremental predictive power of other-rated personality which is less salient. For example, the number of participants who had the experience of hospitalization or policy contact was small. Thus, future studies with larger sample size are needed to fully capture of power of other-rated personality.

Third, we did not have (complete) multi-method data for all outcome variables. All of our trait validation criteria was measured by self-ratings, and therefore our study was a conservative test in demonstrating the incremental predictive power of other-rated personality. However, as there is no single perspective of personality judgment best for all purposes, since each perspective poses unique information, there should be no single method of assessing trait validation criterion that is best for all purpose neither either. Future research with both personality and life outcomes measured with multiple methods are crucial to more thoroughly examine the predictive power of self- vs. other-rated personality.

For example, a recent study was a complementary to our study, where 87 college students' behaviors were tracked with Electronically Activated Recorders (Beer & Vazire, 2017). They found that self-ratings only showed acceptable degrees of predictive power for extraversion, whereas informant ratings showed acceptable predictive power for extraversion, neuroticism, and openness. This study only partially supported the SOKA model, with the finding regarding neuroticism being especially noticeable – Informant-ratings seem to outperform self-ratings in judging neuroticism. One possible reason is that the selection of criteria has a critical influence on the results regarding the predictive power of self- vs. other-rated personality (Schriber & Robins, 2012). In their case, the coders plausibly have similar perspectives as the informants (i.e., base their personality judgments heavily on the overt behaviors). Thus, more studies with different criteria are needed to better understand this question.

Furthermore, it would be interesting for future studies to examine the reasons

why parent-ratings showed higher predictive power than self-ratings for certain life outcomes. It could be that parents indeed were better at utilizing valid behavioral cues and thus made more accurate personality judgments. However, it could also be that the perceptions of parents influence their parenting and subsequent development of adolescents.

Conclusion

The present 18-year longitudinal study demonstrated the incremental predictive power of other-rated personality in adolescence, using self-reported personality and self-reported life outcomes in young adulthood as trait validation criteria. Our results showed the importance of including other-reports on adolescents' personality, especially for highly visible and evaluative traits (i.e., openness, conscientiousness, and agreeableness). To our knowledge, these results provide the first longitudinal support for the SOKA model (Vazire, 2010), which is mostly based on cross-sectional data in adults. The present study sheds light on the criterion validity of personality judgments from various sources, and contributes to better understanding of associations between personality and life outcomes.

Supplemental Materials

Table S1 | Attrition Analyses: Significant Differences Between Complete and Incomplete Cases

Variable	N		SD		95% CI for Mean	
	Complete cases	Cases with missingness	Complete cases	Cases with missingness	Complete cases	Cases with missingness
Self-rated agreeableness at age 12 (Parcel 1)	31	155	0.47	0.56	[3.78, 4.13]	[3.60, 3.78]
Self-rated openness at age 17 (Parcel 3)	31	143	0.36	0.50	[3.89, 4.16]	[3.70, 3.87]

Table S2 | Means, Standard Deviations, and Zero-Order Correlations of All Manifest Variables

	1.PS12A	2.PS12C	3.PS12E	4.PS12O	5.PS12N	6.PP12A	7.PP12C	8.PP12E	9.PP12O	10.PP12N
1 .PS12A	-									
2 .PS12C	.31**	-								
3 .PS12E	.30**	.11	-							
4 .PS12O	.06	.33**	.31**	-						
5 .PS12N	-.31**	-.13	-.49**	-.31**	-					
6 .PP12A	.35**	.14	.01	.03	-.04	-				
7 .PP12C	.08	.42**	-.14	.06	.12	.29**	-			
8 .PP12E	.05	-.03	.42**	.13	-.23**	.27**	.02	-		
9 .PP12O	-.18*	-.20*	-.14	.18*	.00	.13	.17*	.24**	-	
10 .PP12N	-.19*	-.13	-.24**	-.26**	.29**	-.29**	-.26**	-.41**	-.37**	-
11 .PF12A	.07	-.00	-.13	-.05	.14	.20*	.23*	-.02	.10	.06
12 .PF12C	-.04	.20*	-.21*	.10	.11	.10	.46**	-.09	.01	.02
13 .PF12E	-.10	-.11	.27**	.27**	-.21*	.02	-.03	.32**	.17	-.12
14 .PF12O	-.22*	-.07	-.11	.25**	.10	-.05	.09	.03	.39**	-.15
15 .PF12N	.10	.02	-.07	-.17	.03	.05	-.07	-.05	-.18*	.20*
16 .PS17A	.45**	.16*	.15*	-.17*	-.07	.43**	.04	.16*	-.08	-.13
17.PS17C	.20**	.46**	.09	.08	-.06	.07	.39**	-.01	-.23**	-.12
18.PS17E	.19*	.066	.50**	.01	-.30**	.06	-.12	.26**	-.26**	-.07
19.PS17O	-.02	.08	.14	.32**	-.10	.01	.04	.12	.24**	-.20*
20.PS17N	-.062	.03	-.15*	-.09	.22**	.06	.19*	.06	.12	.02
21.PM17A	.28**	.03	.05	-.03	-.03	.47**	.02	.12	.02	-.11
22.PM17C	.16	.27**	-.07	.04	-.03	-.01	.54**	.04	.07	-.25**
23.PM17E	.17*	.02	.40**	.07	-.16	.07	.12	.57**	.09	-.39**
24.PM17O	-.12	-.10	-.10	.16	.01	-.05	.19*	.21	.62**	-.31**

Table S2 | Continued

	1.PS12A	2.PS12C	3.PS12E	4.PS12O	5.PS12N	6.PP12A	7.PP12C	8.PP12E	9.PP12O	10.PP12N
25.PM17N	-.16*	-.02	-.17*	-.12	.24**	-.12	-.09	-.31**	-.30**	.59**
26.PV17A	.24**	.02	-.03	.03	-.01	.38**	.01	.04	-.04	-.01
27.PV17C	.16	.23**	-.18*	-.05	.07	.03	.50**	-.19*	.03	-.12
28.PV17E	.14	-.02	.36**	.10	-.11	.03	.09	.51**	.04	-.33**
29.PV17O	-.08	-.06	-.15	.12	.16	.02	.21*	.07	.44**	-.24*
30.PV17N	-.13	-.09	-.12	-.05	.18*	-.07	-.20*	-.19*	-.12	.39**
31.PS29A	.23**	.01	-.15	-.24**	-.02	.32**	.02	-.13	-.02	-.02
32.PS29C	.10	.26**	.08	.03	-.14	-.05	.25**	-.01	-.14	-.12
33.PS29E	.16	-.01	.32**	-.07	-.08	.00	.00	.21*	-.13	.00
34.PS29O	-.03	-.06	.08	.15	-.03	-.05	.01	.04	.21*	-.03
35.PS29N	-.12	-.05	-.18*	-.20*	.24**	-.08	.07	-.10	.01	.10
36.Attach_mother29	.26**	.07	.15	.05	-.14	.08	.07	.16	-.06	-.13
37.Attach_partner29	.21**	.07	.07	.11	-.27**	.00	.03	-.01	-.02	-.15
38.PoliceContact29	-.11	-.10	-.02	.07	-.04	-.23*	-.11	-.03	.02	.21*
39.Education29	-.06	-.03	-.06	.07	.05	.04	.27**	-.01	.38**	-.23**
40.Hospital29	-.10	-.09	-.00	-.02	-.01	.10	-.01	.05	-.01	.07
41.Income29	-.01	.13	.09	.18	-.15	-.05	.19	.09	.20	-.18
42.Marriage29	-.02	-.02	-.21*	-.15	.02	-.13	.08	-.36**	.03	.09
43.SubstanceUse29	-.16	-.24**	.10	.03	-.03	-.13	-.18*	.12	.06	.12
44.Self-esteem29	.14	.17*	.20*	.06	-.12	.06	.08	.13	-.12	-.07
45.Depression29	-.25**	-.16	-.31**	-.11	.23**	-.03	-.05	-.02	.21*	.08
46.MoralTransgression29	-.18*	-.36**	-.08	-.12	.11	-.08	-.16	.08	.17	.14
47.RelationshipQuality29	.17	-.00	-.04	.12	-.10	.01	.03	-.00	-.05	-.06
<i>M</i>	3.77	3.46	3.94	3.81	2.30	3.76	3.19	3.88	3.96	2.61
<i>SD</i>	0.49	0.59	0.59	0.41	0.48	0.56	0.73	0.70	0.55	0.60

Table S2 | Continued

	11.PF12A	12.PF12C	13.PF12E	14.PF12O	15.PF12N	16.PS17A	17.PS17C	18.PS17E	19.PS17O	20.PS17N
11.PF12A	-									
12.PF12C	.39**	-								
13.PF12E	.16	-.01	-							
14.PF12O	.33**	.35**	.47**	-						
15.PF12N	-.26**	-.16	-.37**	-.36**	-					
16.PS17A	.07	-.02	-.17	-.17	.16	-				
17.PS17C	.09	.22*	-.14	-.13	.01	.19*	-			
18.PS17E	-.08	-.14	.22*	-.03	-.13	.23**	.08	-		
19.PS17O	-.00	.06	.08	.31**	-.13	.08	.23**	.29**	-	
20.PS17N	.14	.06	-.05	-.03	-.01	-.22**	-.16*	-.44**	-.36**	-
21.PM17A	.18	.13	-.14	-.13	.12	.35**	.02	-.05	-.06	.03
22.PM17C	.12	.31**	-.15	-.06	-.06	.03	.49**	-.19*	.03	.21*
23.PM17E	-.01	-.06	.20*	-.05	-.09	.09	.03	.34**	.04	.08
24.PM17O	.16	.11	.16	.32**	-.08	-.12	-.01	-.23**	.20*	.11
25.PM17N	-.02	.01	-.11	-.09	.14	-.13	-.11	-.06	-.25**	.13
26.PV17A	.14	.02	-.10	-.06	.11	.32**	.04	-.06	-.03	-.06
27.PV17C	.17	.28**	-.19	.02	-.07	.10	.53**	-.22**	.04	.03
28.PV17E	-.11	-.17	.20	-.13	-.11	.12	.04	.42**	.08	-.05
29.PV17O	.08	-.02	.15	.29**	-.09	-.01	.05	-.15	.21*	-.04
30.PV17N	-.03	-.07	-.06	-.07	.19	-.12	-.19*	-.15	-.18*	.10
31.PS29A	.13	.06	-.03	-.06	-.06	.34**	-.02	.02	-.13	.08
32.PS29C	.19*	.24*	-.02	.05	-.19*	.05	.60**	.15	.23**	-.19*
33.PS29E	-.12	-.19*	.09	-.22*	.16	.10	.16	.39**	.05	-.03

Table S2 | Continued

	11.PF12A	12.PF12C	13.PF12E	14.PF12O	15.PF12N	16.PS17A	17.PS17C	18.PS17E	19.PS17O	20.PS17N
34.PS29O	.09	.09	.15	.32**	-.06	.03	.13	.07	.49**	-.21*
35.PS29N	.02	.08	-.18	.01	.01	-.09	-.09	-.14	-.13	.37**
36.Attach_mother29	.11	-.06	.05	-.06	-.00	.07	.17*	.03	.01	.03
37.Attach_partner29	-.05	.03	.08	.04	-.06	.06	.13	.05	.05	-.12
38.PoliceContact29	-.23*	-.16	-.06	-.13	.03	-.02	-.14	.04	.08	-.13
39.Education29	.08	.11	.13	.33**	-.04	.04	-.05	-.14	.24**	.09
40.Hospital29	-.04	-.17	-.01	-.14	.11	-.07	-.21*	.05	-.21*	.10
41.Income29	.06	-.00	.30**	.21	-.24*	-.22*	.33**	-.06	.08	-.10
42.Marriage29	.07	.24*	-.13	.12	.06	-.06	.04	-.26**	-.21*	.07
43.SubstanceUse29	-.14	-.15	.12	.17	-.10	-.26**	-.28**	.17*	.04	-.04
44.Self-esteem29	-.04	-.13	.10	-.08	.09	.14	.23**	.15	.14	-.10
45.Depression29	-.02	.06	-.08	.09	-.07	-.22**	-.25**	-.15	-.12	.22**
46.MoralTransgression29	-.13	-.18	-.11	-.05	.07	-.23**	-.20*	.04	-.10	.01
47.RelationshipQuality29	.05	.11	.13	.07	.04	.10	.02	.07	.04	-.18
<i>M</i>	3.71	3.49	3.93	3.88	2.37	3.64	3.29	4.03	3.94	2.23
<i>SD</i>	0.68	0.68	0.62	0.54	0.61	0.55	0.71	0.60	0.42	0.56

Table S2 | Continued

	21.PM17A	22.PM17C	23.PM17E	24.PM17O	25.PM17N	26.PV17A	27.PV17C	28.PV17E	29.PV17O	30.PV17N
21.PM17A	-									
22.PM17C	.16*	-								
23.PM17E	.18*	.15	-							
24.PM17O	.15	.35**	.25**	-						
25.PM17N	-.38**	-.28**	-.47**	-.39**	-					
26.PV17A	.59**	.11	-.01	.01	-.29**	-				
27.PV17C	.14	.69**	-.13	.26**	-.16	.22*	-			
28.PV17E	-.00	.04	.69**	.08	-.37**	.08	-.04	-		
29.PV17O	.11	.32**	-.01	.57**	-.27**	.22*	.44**	.12	-	
30.PV17N	-.09	-.33**	-.24**	-.17	.49**	-.35**	-.36**	-.43**	-.31**	-
31.PS29A	.23*	-.10	-.03	-.09	.01	.21*	.14	-.02	-.06	-.04
32.PS29C	-.16	.35**	-.02	.01	.02	-.15	.42**	-.02	-.02	-.11
33.PS29E	-.02	-.08	.22*	-.12	.07	.05	-.04	.32**	-.01	-.04
34.PS29O	.02	.04	-.08	.25**	-.06	-.07	.09	-.20*	.19	.09
35.PS29N	-.06	.07	.05	.01	.03	-.13	.01	-.03	.05	-.03
36.Attach_mother29	.02	.06	.13	-.01	.03	.07	.13	.14	.05	-.05
37.Attach_partner29	-.01	.17	-.02	.08	-.09	.16	.20*	.06	.10	-.24*
38.PoliceContact29	.05	-.16	-.02	-.03	.02	.04	-.23*	.09	-.07	.09
39.Education29	.03	.33**	.09	.50**	-.26**	.07	.31*	.02	.44**	-.18
40.Hospital29	.03	-.22*	-.00	-.11	.01	.05	-.21*	.05	-.01	.05
41.Income29	-.01	.21*	.06	.36**	-.14	.13	.33**	.17	.29**	-.34**
42.Marriage29	-.11	.08	-.42**	-.04	.19	-.12	.16	-.28*	.00	.02
43.SubstanceUse29	-.14	-.43**	.04	-.25**	.16	-.16	-.39**	.07	-.21*	.15

Table S2 | Continued

	21.PM17A	22.PM17C	23.PM17E	24.PM17O	25.PM17N	26.PV17A	27.PV17C	28.PV17E	29.PV17O	30.PV17N
44.Self-esteem29	-.06	.06	.09	-.02	.09	.00	.13	-.00	.08	-.02
45.Depression29	.03	-.10	-.03	.05	-.00	-.13	-.18	-.05	-.08	.03
46.MoralTransgression29	.07	-.27**	.07	.00	-.01	.08	-.22*	.13	.01	-.02
47.RelationshipQuality29	-.07	-.08	-.11	-.12	.035	.18	.12	.05	.10	-.07
<i>M</i>	3.70	3.27	3.75	4.03	2.39	3.60	3.26	3.71	3.94	2.50
<i>SD</i>	0.62	0.82	0.75	0.58	0.64	0.56	0.81	0.69	0.52	0.58

Table S2 | Continued

	31.PS29A	32.PS29C	33.PS29E	34.PS29O	35.PS29N	36.Attach_mother29	37.Attach_partner29	38.Police Contact29	39. Education29	40. Hospital29
31.PS29A	-									
32.PS29C	-.02	-								
33.PS29E	.07	.24**	-							
34.PS29O	.00	.32**	.26**	-						
35.PS29N	-.12	-.21*	-.34**	-.38**	-					
36.Attach_mother29	.14	.10	.17*	-.06	-.12	-				
37.Attach_partner29	.11	.13	.20*	.16	-.34**	.26**	-			
38.PoliceContact29	-.05	.00	.01	.10	-.01	-.09	.02	-		
39.Education29	.05	-.01	-.05	.25**	-.07	-.09	.06	-.25**	-	
40.Hospital29	.01	-.24**	-.12	-.10	.07	-.15	-.09	.33**	-.19*	-
41.Income29	-.02	.26**	.03	.15	-.13	.18	.27**	.08	.22*	-.13
42.Marriage29	-.03	.13	.02	.07	.03	-.07	.10	.05	-.13	.12
43.SubstanceUse29	-.11	-.09	.02	.04	.05	-.17*	-.08	.35**	-.18*	.21*
44.Self-esteem29	.04	.22**	.41**	.25**	-.45**	.27**	.27**	-.04	-.01	-.14
45.Depression29	-.11	-.27**	-.43**	-.25**	.58**	-.22**	-.30**	.15	-.03	.27**
46.MoralTransgression29	-.08	-.20*	-.05	-.05	.15	-.17*	-.22**	.33**	-.18*	.27**
47.RelationshipQuality29	.14	-.01	.17	.13	-.32**	.17	.55**	.07	.06	-.01
<i>M</i>	3.87	3.88	3.88	4.04	2.21	4.42	4.51	0.11	5.12	0.07
<i>SD</i>	0.49	0.66	0.68	0.49	0.66	0.92	0.76	0.32	1.03	0.25

Table S2 | Continued

	41. Income29	42. Marriage29	43. Substance Use29	44. Self-esteem29	45. Depression29	46. Motral Transgression29	47. Relationship Quality29
41. Income29	-						
42. Marriage29	-0.02	-					
43. Substance29	-0.14	-0.11	-				
44. Self-esteem29	.20*	-0.07	-0.12	-			
45. Depression29	-0.17	.02	.26**	-.68**	-		
46. Transgression29	.07	-0.13	.40**	-.18*	.38**	-	
47. RelationshipS29	.16	.11	-.05	.27**	-.32**	-.20*	-
<i>M</i>	4.14	0.18	2.25	4.27	2.17	1.77	4.42
<i>SD</i>	1.53	0.39	0.61	0.58	0.63	0.70	0.57

Note. * $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed. A: Agreeableness, C: Conscientiousness, E: Extraversion, O: Openness, N: Neuroticism, PS12A/PP12A/PF12A: Personality Self-/Parent-/Friend-reported at age 12 Agreeableness. PS17A/PM17A/PV17A: Personality Self-/Mother-/Father-reported age 17



Chapter 4

See Me Through My Eyes: Adolescent-Parent Agreement in Personality Predicts Later Self-Esteem Development

Author Note:

Luan, Z., Poorthuis, A.M.G., Hutteman, R., Asendorpf, J.B., Denissen, J.J.A. & van Aken, M.A.G. (2018). See me through my eyes: Adolescent-parent agreement in personality predicts later self-esteem development. *International Journal of Behavioural Development*. 42,17-25. doi: 10.1177/0165025417690263

The raw data, analysis code, and measures used for this chapter are stored on the Utrecht University Research Data Server.

Z. Luan conceptualized the study, and all co-authors provided feedback. R. Hutteman, J.J.A. Denissen, J.B. Asendorpf, & M.A.G. van Aken organized data collection. Z. Luan performed data-analysis and interpretation. Z. Luan drafted the manuscript, and all co-authors provided feedback.

Abstract

Achieving a clear view of one's personality is a challenging but crucial developmental task during adolescence, which has enduring influences. This task might be harder if significant others see individuals differently from how the adolescents see themselves. Supporting this, the looking-glass-self theory suggests that significant others constitute a social mirror into which the individual gazes to form his/her self-view. The present study was the first to longitudinally examine whether self-other agreement in personality during adolescence (i.e., self-parent and self-friend agreement at age 12 and self-mother and self-father agreement at age 17) promote self-esteem development from age 17 to 29 ($N = 186$, 53% boys). Results for girls consistently confirmed the hypothesized beneficial effect of self-parent agreement, while the picture was more complicated for boys. That is, for girls, self-parent agreement at age 12 and 17 both predicted steeper increases in self-esteem. For boys, steeper self-esteem development was predicted by higher self-parent agreement at age 12, but unexpectedly, also by lower self-parent agreement at age 17. All these results remained after controlling for (self-rated) personality. Moreover, self-friend agreement did not show any effects on self-esteem development, suggesting that the influence of peers' convergence with self-views during early adolescence may not be as prominent as parents'. Results are discussed from the perspective of self-view formation and maintenance during adolescence and young adulthood. The present study sheds light on the longitudinal effect of one's own view of personality being shared by important others on self-esteem development.

Keywords: self, personality, longitudinal study, youth/adolescence

Introduction

A crucial developmental task during adolescence is to achieve a relatively clear and confident self-view, which has enduring influences on individuals' development across the lifespan (Erikson, 1994). An important part of this task is achieving a clear concept of one's personality. According to the looking-glass-self theory (Cooley, 1902), individuals form their self-views by internalizing the views of their significant others. Metaphorically, the looking-glass-self theory suggests that significant others constitute a social mirror into which individuals gaze to form and evaluate self-views. The opinions of significant others are thus incorporated into one's sense of self (Cooley, 1902).

However, research has shown discrepancies between adolescents' self-viewed personality and their personality as viewed by their significant others (e.g., parents and siblings). On average, self-other agreement in personality during adolescence between adolescents and their family members were moderate (Göllner et al., 2017; Luan et al., 2017). The developmental task of forming a clear and confident self-view may be much more difficult if significant others see individuals' personality in different ways from how individuals see themselves (Koepke & Denissen, 2012; Srivastava, 2012). Contrarily, high agreement between an individual and significant others regarding his/her personality might ease the fulfillment of this task, and in turn boost individuals' subsequent positive development. The aim of the present study was to investigate whether self-other agreement in personality during adolescence promotes self-esteem development from adolescence to young adulthood, using longitudinal data that spans 18 years.

Self-Other Agreement in Personality and Self-Esteem

Parents and peers are among the most significant relationships of adolescents. Parents' views on their children's personality plausibly constitute the very first feedback children receive and thus might maintain long-lasting influences on children's formation and development of self-views. In addition, peer influences on the self-development have been shown to become increasingly important during late childhood to adolescence (Harter, 2007). Therefore, adolescents' agreement with their parents and peers regarding adolescents' personality could promote the formation of a clear and confident self-view. A clear self-view, in turn, has been found to be associated with higher self-esteem (J. D. Campbell, 1990; J. D. Campbell et al., 1996; J. D. Campbell & Lavallee, 1993), this may be because a clear and confident self-view provides a sense of stability and predictability of the self, as well as a base for guiding behaviors and understanding the world (Kwang &

Swann, 2010; Srivastava, 2012; Swann, 2011).

In contrast, when significant others hold different opinions from adolescents themselves, this might cause confusion and concern within the adolescents regarding which characteristics represent their true self (Harter, 2007). The lack of a clear and confident self-view during adolescence, in turn, has been found to be both concurrently and longitudinally associated with internalizing problems, such as depressive and anxiety symptoms (van Dijk et al., 2014). Previous studies have shown that adolescents were much more psychologically affected by unstable and unclear self-representations than younger children (Harter, 2007), this is possibly due to their heightened self-reflection and need for self-view cohesion, which in turn could be detrimental for their self-esteem development.

Although reasonable, the direct link between self-other agreement in personality and self-esteem development has rarely been examined. Exceptions include a cross-sectional study which showed that adolescents' agreement with their significant others regarding their personality was associated with higher concurrent self-esteem (van Aken, van Lieshout, & Haselager, 1995). To date, however, no studies have looked into the effect of self-parent and self-friend agreement on longer-term self-esteem development.

Moreover, previous research has shown that individual differences in self-esteem development can be partly explained by other personality traits (Wagner, Lüdtke, Jonkmann, & Trautwein, 2013). To the extent that Big Five traits overlap with self-esteem, any beneficial effects of self-other agreement in personality might thus be explained, at least partly, by personality *per se*. For instance, more agreeable, conscientious, and emotionally stable individuals show high self-other personality agreement (Human & Biesanz, 2013) as well as other preferable characteristics, such as higher self-esteem (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001). Therefore, associations between self-other agreement in personality and self-esteem development is clearer after controlling for the Big Five traits.

The Present Study

The present study was the first to longitudinally investigate whether self-other agreement in personality during adolescence promotes self-esteem development from age 17 to 29, beyond the main effects of Big Five traits. We tested self-parent agreement and self-friend (same-sex best friend) agreement in early adolescence (age 12) as well as self-mother and self-father agreement in late adolescence (age 17; friends' perceptions of adolescents' personality were not available at that age).

There are different types of self-other agreement in literature. The profile-based approach (i.e., rank order of traits within each individual) and trait-based

approach (i.e., rank order of individuals for each trait) have been outlined as two key applications with different focuses. The choice between a profile-based or a trait-based approach depends on the conceptual focus of the research (Back & Nestler, 2016; Borkenau & Leising, 2016). The present study focused on the profile-based self-other agreement because it more straightforwardly reflects the agreement regarding which personality trait is more central to an adolescent and which trait is less central. High self-parent profile agreement suggests that a person is for example, perceived as more curious than friendly by both herself and her parent.

We expected that self-parent and self-friend agreement during early adolescence (age 12) would predict steeper self-esteem increases from age 17 to 29. During late adolescence (age 17), we expected that self-parent agreement would still show influences on self-esteem development from age 17 to 29. Moreover, we expected that, even after controlling for (self-rated) personality, self-other agreement at age 12 and at age 17 would predict steeper self-esteem increases from age 17 to 29. As to the comparative predictive validity of self-other agreement at age 12 versus age 17, we formulated no hypothesis due to the limited current knowledge.

Furthermore, we explored whether the effect of self-other agreement in personality on self-esteem development differs for boys and girls. Although previous studies suggested a fundamental need for individuals' self-views to be validated by important others, even when the self-views are negative (Kwang & Swann, 2010; Swann, 2011), it remains unclear whether this effect is equally strong for boys and girls. We formulated no hypothesis due to the limited current knowledge.

Method

Participants

Participants were from the Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC; Weinert & Schneider, 1999) that was started in 1984. The LOGIC sample initially contained 230 children who started to attend 20 preschools in the Munich area (on average 3-4 years old; 52% boys). Their first language was German. Schools were selected from a broad spectrum of neighborhoods, and more than 90% of parents asked gave consent for their child's participation.

The present study included four waves of measurements, when participants

were on average 12, 17, 23, and 29 years old. At age 12, 186 participants still participated in the study (53% boys). Scores of self-parent and self-friend agreement on personality were available for 155 and 125 participants, respectively. At age 17, scores of self-mother and self-father agreement were available for 146 and 128 participants, respectively. Scores of self-esteem were available for 174 participants at age 17 and dropped to 153 participants by age 29. We conducted attrition analyses to compare participants with complete cases and participants with missingness, for all research variables. Results showed that the 95% confidence interval for the two group means overlapped for all research variables, indicating that attrition did not result in a bias in the present study (see **Table S1** of the supplemental materials for details).

Measures

Big Five personality traits

At age 12, personality traits were judged by participants themselves, one of their parents (mainly mothers), and one same-sex best-friend. At age 17, personality traits were judged by participants themselves, their mothers, and their fathers. Emotional stability, extraversion, openness, agreeableness, and conscientiousness were rated using 40 bipolar adjective pairs that were obtained from Ostendorf (1990) on a 5-point scale (from 1 = *totally agree with the adjective word on the left side*, to 5 = *totally agree with the adjective word on the right side*); see Asendorpf and van Aken (2003) for details. The eight items per personality dimension were parceled into three indicators to improve reliability (Little et al., 2002). Cronbach's alphas were satisfactory for all judges at both ages, ranging from .67 to .93.

Self-other agreement in personality

Self-other agreement was operationalized as the profile correlation between self- and other-ratings on the 40 items of personality. That is, data were transformed into a format in which each participant had 40 lines of data (i.e., 40 personality items) and six variables (i.e., self-, parent-, and friend-ratings at age 12, and self-, mother-, and father-ratings at age 17). For each participant, four correlation coefficients were calculated based on the scores on the 40 personality items (i.e., self-parent and self-friend agreement at age 12, as well as self-mother and self-father agreement at age 17). Considering its correlational nature, the self-other agreement could, in theory, range from -1 (i.e., totally disagreed) to 1 (i.e., totally agreed).

Self-esteem

At age 17, 23, and 29, global self-esteem was measured by a subscale of the German short versions of the SDQIII (Marsh & O’Neill, 1984). The six items with the highest corrected item-scale correlations in the original questionnaire were selected. Adolescents judged items on a 5-point scale (from 1 = *totally disagree*, to 5 = *totally agree*). Sample items include “Overall, I have a lot of self-confidence”. The six items were parceled into three indicators. Cronbach’s alphas ranged from .76 to .78 across age 17 to 29.

Analytic Strategy

Missing data handling and model fit

Data analyses were conducted with *Mplus* Version 7.31 (Muthén & Muthén, 2015). Missing data were handled using full information maximum likelihood (FIML) estimation, thereby making optimal use of the available data. Model fit was assessed using the comparative fit indices (CFIs) and root-mean-square error of approximation (RMSEA). CFI values of .90 and higher and RMSEA values of .08 and lower reflect an acceptable fit to the data (Marsh et al., 2005).

Measurement invariance from age 17 to 29

We conducted a Confirmatory Factor Analysis (CFA) with the specification of measurement invariance for self-esteem from age 17 to 29. A strict measurement invariance model still showed good model fit, $\chi^2(28) = 37.13$, $p = .116$, RMSEA = 0.04, CFI = 0.98, and was therefore selected as the baseline model for further analyses (see **Table S2** of the supplemental materials for detailed results of model comparison).

Mean-level change of self-esteem from age 17 to 29

Mean-level change of self-esteem was tested by adding the estimation of the intercept and slope from age 17 to 29 to the aforementioned strict measurement invariance model (Latent Growth Curve Models; McArdle & Bell, 2000). We set up two models – a linear model and a flexible model – that differed only in whether the factor loading of the slope at age 29 was fixed or freely estimated. Model fit of both models were acceptable and did not differ significantly (see **Table S3** of the supplemental materials for details), therefore the more parsimonious linear model was chosen for further models.

Predicting self-esteem development by self-other agreement at age 12 and 17

At age 12, predictive effects of self-parent agreement and self-friend agreement

were tested in separate models (Model 1-4 for the four steps of self-parent agreement, and Model 5-8 for self-friend agreement). In Step 1, the predictive validity of self-other agreement was tested without covariates, by regressing the intercept and slope of self-esteem from age 17 to 29 on self-other agreement. In Step 2, it was to test whether the predictive validity of self-other agreement would still hold after controlling for self-rated personality, by entering self-other agreement and self-rated Big Five personality traits into the model simultaneously. In Step 3, the model was further controlled for gender, by entering self-other agreement, personality traits, and gender (0 = boy, 1 = girl) into the model simultaneously. In Step 4, the interaction between self-other agreement and gender was explored, by entering the interaction term (predictors were grand-mean centered prior to calculating the interaction term) and the aforementioned predictors to the model simultaneously. Residuals were allowed to correlate to improve model fit. Similarly, at age 17, predictive effects of self-mother agreement (Model 9-12) and self-father agreement (Model 13-16) on self-esteem development were tested in separate models.

Results

Means, standard deviations, and inter-correlations of all research variables can be found in **Table S4** of the supplemental materials. Self-esteem on average showed linear increases from age 17 to 29, with significant individual differences in both the intercepts and slopes (see Table S3 for details).

Self-Other Agreement During Early Adolescence (Age 12)

We examined whether self-parent agreement at age 12 could explain these individual differences in the intercepts and slopes of self-esteem from age 17 to 29 (see **Table 1**). Self-parent agreement at age 12 (Model 1) predicted steeper self-esteem increases from age 17 to 29. That is, those adolescents whose parents judged their child's personality to be similar to the adolescents' own judgments at age 12 showed a stronger increase in self-esteem from age 17 to 29. This effect still held after controlling for personality (Model 2), speaking against the possibility that this effect is purely an artifact of the highly adaptive personality of the target person (i.e., highly conscientious, agreeable, and emotionally stable). The positive effect of self-parent agreement in personality became marginally significant after controlling for both personality and gender (Model 3).

Next, we explored the self-parent agreement * gender interaction. The interaction was significant only for the *intercept* of self-esteem, but not for the slope (Model 4). We probed the simple trajectory of self-esteem development from age 17 to 29 for boys and girls with 1SD higher or lower than the mean, following Curran, Bauer, & Willoughby (2004). As shown in **Figure 1**, high self-parent agreement at age 12 predicted higher self-esteem at age 17 for girls, but unexpectedly, lower self-esteem at age 17 for boys.

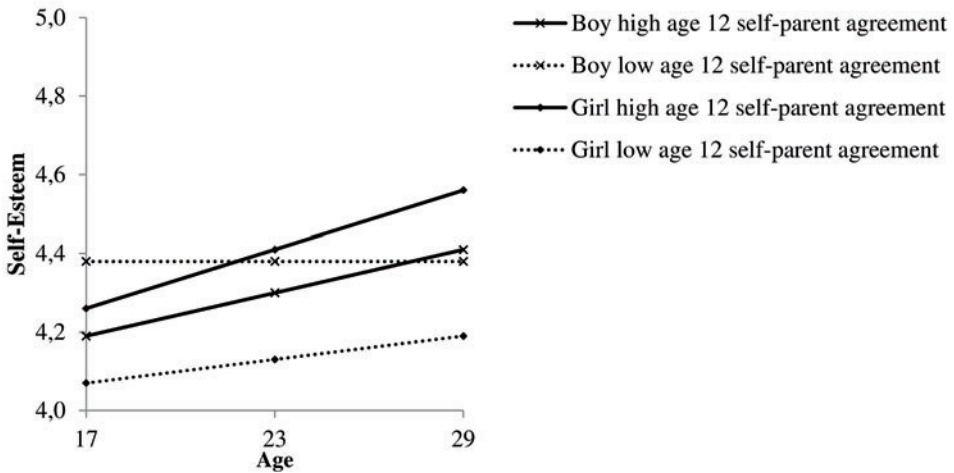


Figure 1. | Self-esteem development of individuals with high or low (mean \pm 1 standard deviation) self-parent agreement at age 12.

Note. $N = 155$.

Similarly, we examined whether self-friend agreement at age 12 predicted self-esteem development (see **Table 2**). The predictive effects of self-friend agreement were non-significant for both intercepts and slopes, both before (Model 5) and after (Models 6 and 7) controlling for personality and gender. The self-friend agreement * gender interaction was also non-significant (Model 8). Thus, the extent to which adolescents agreed with their friends in their personality at age 12 did not predict their self-esteem development from age 17 to 29.

Table 1 | Models Predicting Self-Esteem Development by Self-Parent Agreement in Personality at Age 12

Model	Predictors	$\chi^2(df)$	CFI	RMSEA	Self-Esteem Intercept			Self-Esteem Slope				
					<i>b</i>	95% CI	<i>p</i>	<i>b</i>	95% CI	<i>p</i>	β	
Model 1: Self-other agreement only	Self-other agreement	49.15 (37)	0.97	0.05	-0.05	[-0.40, 0.30]	.786	-0.03	0.49	[0.11, 0.87]	.011	0.38
Model 2: Self-other agreement, control for personality	Self-other agreement	308.78 (249) **	0.96	0.04	-0.22	[-0.67, 0.22]	.327	-0.14	0.47	[0.02, 0.92]	.043	0.36
Model 3: Self-other agreement, control for personality and gender	Self-other agreement	392.79 (272) ***	0.92	0.05	-0.14	[-0.58, 0.30]	.530	-0.09	0.41	[-0.04, 0.85]	.072	0.33
	Gender				-0.18	[-0.35, -0.02]	.028	-0.26	0.12	[-0.04, 0.29]	.134	0.22
Model 4: Self-other agreement * Gender interaction, control for personality	Self-other agreement	424.90 (290) ***	0.90	0.06	-0.02	[-0.43, 0.38]	.914	-0.02	0.36	[-0.07, 0.80]	.102	0.29
	Gender				-0.13	[-0.30, 0.04]	.141	-0.20	0.08	[-0.10, 0.26]	.406	0.13
	Self-other agreement * Gender				0.84	[0.11, 1.57]	.023	0.30	-0.09	[-0.87, 0.68]	.815	-0.04

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 155$. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; CI = confidence interval. Gender: 0 = boys, 1 = girls. Significant results are in **bold**.

Table 2 | Models Predicting Self-Esteem Development by Self-Friend Agreement in Personality at Age 12

Model	Predictors	$\chi^2(df)$	CFI	RMSEA	Self-Esteem Intercept			Self-Esteem Slope				
					b	95% CI	p	β	b	95% CI	p	
Model 5: Self-other agreement only	Self-other agreement	44.19 (37)	0.98	0.04	-0.09	[-0.49, 0.32]	.679	-0.05	0.24	[-0.16, 0.65]	.241	0.17
Model 6: Self-other agreement, control for personality	Self-other agreement	317.75 (249)**	0.96	0.04	-0.36	[-0.87, 0.15]	.168	-0.23	0.22	[-0.29, 0.73]	.396	0.17
Model 7: Self-other agreement, control for personality and gender	Self-other agreement Gender	397.32 (272)***	0.92	0.05	-0.30	[-0.80, 0.20]	.236	-0.20	0.17	[-0.32, 0.66]	.500	0.14
Model 8: Self-other agreement *Gender interaction, control for personality	Self-other agreement Gender	380.79 (290)***	0.92	0.05	-0.26	[-0.82, 0.29]	.355	-0.18	0.15	[-0.43, 0.72]	.615	0.12
	Self-other agreement * Gender				-0.10	[-0.29, 0.10]	.325	-0.15	0.04	[-0.16, 0.24]	.704	0.07
	Self-other agreement * Gender				0.27	[-0.52, 1.06]	.503	0.09	0.03	[-0.76, 0.82]	.944	0.01

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 125$. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; CI = confidence interval. Gender: 0 = boys, 1 = girls. Significant results are in bold.

Self-Other Agreement During Late Adolescence (Age 17)

We examined whether self-parent agreement at age 17 could explain the individual differences in intercepts and slopes of self-esteem from age 17 to 29 (see **Table 3**). Self-mother agreement at age 17 predicted a higher intercept of self-esteem at age 17, but did not predict the slope from age 17 to 29 (Model 9). However, after controlling for personality (Model 10), and further controlling for personality and gender (Model 11), self-mother agreement in personality at age 17 no longer predicted the intercept of self-esteem. Thus, those 17-year old adolescents whose mothers' views of their personality were more congruent with their self-views, showed a higher concurrent level of self-esteem than other adolescents, but this main effect can fully be explained by personality.

The self-mother agreement * gender interaction was significant only for the *slope* of self-esteem from age 17 to 29, but not the intercept (Model 12). Simple trajectory analysis demonstrated that (see **Figure 2**), as expected, girls with higher self-mother agreement at age 17 showed increases in self-esteem ($p = .028$), while girls with lower self-mother agreement showed no changes ($p = .806$). Unexpectedly, boys with lower self-mother agreement showed increases in self-esteem ($p = .047$), while boys with higher self-mother agreement showed no changes ($p = .248$). Examining the region of significance revealed that the slope of self-esteem was significant when self-mother agreement at age 17 was higher than

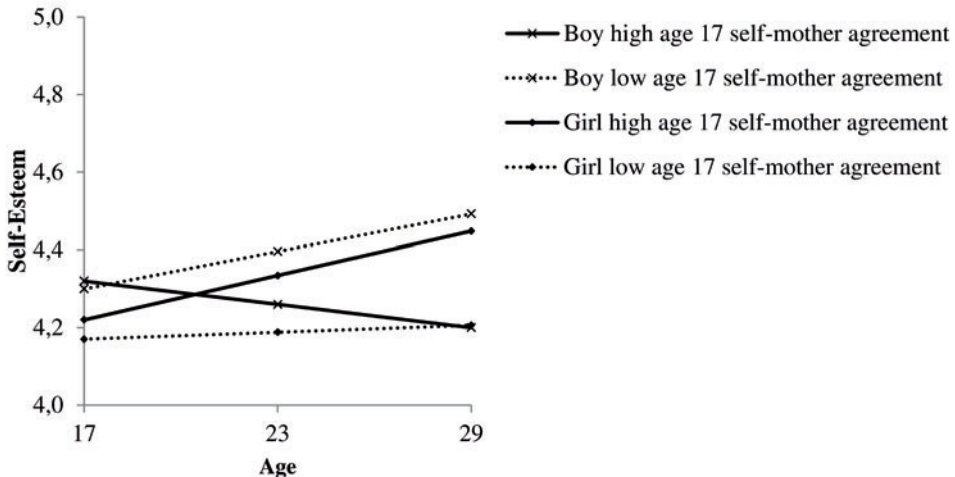


Figure 2 | Self-esteem development of individuals with high or low (mean ± 1 standard deviation) self-mother agreement at age 17.

Note. $N = 146$.

Table 3 | Models Predicting Self-Esteem Development by Self-Mother Agreement in Personality at Age 17

Model	Predictors	$\chi^2(df)$	CFI	RMSEA	<i>b</i>	95% CI	<i>p</i>	β	95% CI	<i>p</i>	β
Model 9: Self-other agreement only	Self-other agreement	54.70 (37)*	0.96	0.06	0.40	[0.05, 0.74]	.025	0.29	[-0.55, 0.19]	.347	-0.16
Model 10: Self-other agreement, control for personality	Self-other agreement	335.09 (251)***	0.95	0.04	-0.04	[-0.36, 0.28]	.810	-0.03	[-0.51, 0.27]	.554	-0.09
Model 11: Self-other agreement, control for personality and gender	Self-other agreement Gender	391.94 (273)***	0.94	0.05	0.02	[-0.30, 0.34]	.914	0.01	[-0.55, 0.23]	.433	-0.12
Model 12: Self-other agreement *Gender interaction, control for personality	Self-other agreement Gender	474.14 (297)***	0.90	0.06	0.07	[-0.27, 0.41]	.679	0.06	[-0.51, 0.25]	.500	-0.13
	Self-other agreement *Gender				-0.11	[-0.27, 0.05]	.179	-0.17	[-0.09, 0.26]	.349	0.16
	Self-other agreement *Gender				0.06	[-0.55, 0.68]	.841	0.02	[0.14, 1.56]	.019	0.40

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 146$. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; CI = confidence interval. Gender: 0 = boys, 1 = girls. Significant results are in bold.

Table 4 | Models Predicting Self-Esteem Development by Self-Father Agreement in Personality at Age 17

Model	Predictors	$\chi^2(df)$	CFI	RMSEA	Self-Esteem Intercept			Self-Esteem Slope				
					<i>b</i>	95% CI	<i>p</i>	β	95% CI	<i>p</i>	β	
Model 13: Self-other agreement only	Self-other agreement	48.09 (37)	0.97	0.05	0.34	[-0.02, 0.70]	.066	0.27	0.03	[-0.37, 0.42]	.889	0.03
Model 14: Self-other agreement, control for personality	Self-other agreement	326.72 (251) ***	0.96	0.04	-0.12	[-0.50, 0.25]	.522	-0.08	0.10	[-0.36, 0.56]	.672	0.08
Model 15: Self-other agreement, control for personality and gender	Self-other agreement Gender	375.23 (273) ***	0.95	0.05	-0.06	[-0.44, 0.32]	.756	-0.04	0.05	[-0.42, 0.51]	.839	0.04
Model 16: Self-other agreement* Gender interaction, control for personality	Self-other agreement Gender	415.55 (298) ***	0.92	0.06	-0.09	[-0.23, 0.05]	.187	-0.13	0.05	[-0.11, 0.21]	.553	0.08
	Self-other agreement *				-0.02	[-0.45, 0.42]	.942	-0.01	-0.18	[-0.66, 0.30]	.463	-0.17
	Gender				-0.10	[-0.29, 0.08]	.272	-0.12	0.14	[-0.04, 0.31]	.130	0.24
	Self-other agreement *				0.04	[-0.64, 0.71]	.920	0.01	0.64	[-0.04, 1.32]	.066	0.29
	Gender											

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 128$. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; CI = confidence interval. Gender: 0 = boys, 1 = girls.

0.61 for girls, and lower than 0.30 for boys. Corresponding to the present sample, these results indicate that the highest 56% girls and lowest 22% boys of our sample showed significant self-esteem increases, while the remaining participants showed no changes.

Self-father agreement at age 17 (see **Table 4**) showed the same pattern as self-mother agreement in predicting self-esteem development (i.e., a positive effect of self-father agreement on the intercept of self-esteem without covariates, and the interaction effect on the slope of self-esteem). However, both effects were only marginally significant (both p -values = .066).

Discussion

The present study was the first to longitudinally investigate whether adolescents' agreement with important others concerning their personality during early and late adolescence promotes self-esteem development from age 17 to 29. We examined whether the predictive validity of self-other agreement still held after controlling for personality, and explored whether this effect of self-other agreement differed for boys and girls.

The looking-glass-self theory advocates that individuals form their self-views by internalizing how significant others perceive them (Cooley, 1902). High self-other agreement in personality might ease the process of adolescents in committing to a clear and confident self-view, which in turn has been positively linked with self-esteem (J. D. Campbell, 1990; J. D. Campbell & Lavallee, 1993; van Aken et al., 1995). In the present study, we filled the gap in the literature by longitudinally testing the direct link between self-other agreement and self-esteem development from adolescence to young adulthood. The hypothesized positive link was consistently confirmed by our data regarding self-parent agreement for girls, but the picture was more complicated for boys.

Specifically, confirming our hypothesis, girls' higher self-parent agreement at age 12 predicted higher self-esteem at age 17 and steeper increases from age 17 to 29. In addition, girls' higher self-parent agreement at age 17 also predicted steeper self-esteem increases from age 17 to 29. These effects all remained after controlling for personality, contradicting the notion that the favorable developmental consequence of self-other agreement in personality is only a by-product of the highly adaptive personality of the target person (i.e., highly conscientious, agreeable, and emotionally stable).

At least for girls, self-parent personality agreement during early adolescence

may thus serve as a preferable base for adolescents' identity exploration and commitment to start from. When parents and their children agree concerning the adolescents' personality, this may be helpful in committing to a clear and confident self-view by the end of adolescence. Having a clear self-view provides individuals a sense of predictability of the self and the world (Kwang & Swann, 2010; Swann, 2011), which in turn facilitates self-esteem development during emerging and young adulthood (J. D. Campbell, 1990; Erikson, 1994).

Findings for boys were less congruent. Boys' higher self-parent agreement at age 12 predicted lower self-esteem at age 17, but steeper self-esteem increases from age 17 to 29 (even after controlling for personality). Unexpectedly, boys' higher self-parent agreement at age 17 predicted *less* self-esteem increases from age 17 to 29.

With respect to this gender difference in the effect of self-parent agreement at age 17, we can provide one speculative explanation. By late adolescence, adolescents have already formed their relatively clear self-views (Meeus, Iedema, Maassen, & Engels, 2005), and parents' opinions become less influential. Therefore, the positive link between self-parent agreement and self-esteem development via clarity in self-view may be largely weakened. This might be especially true for boys, as a previous study has shown that boys become less upset concerning their conflicting attributes across adolescence, while girls become more upset (Harter, Bresnick, Bouchev, & Whitesell, 1997). Therefore, low clarity in their self-view possibly bothers boys to a lesser degree than girls. At the same time, gender identity has also become clearer by late adolescence, with girls being socialized more towards communion ("getting along") and boys being socialized towards more agency ("getting ahead"; Richards & Larson, 1989). This communion vs. agency difference in primary psychological needs from late adolescence onwards might play a prominent role of mediating the link of self-parent agreement at age 17 with self-esteem development.

More specifically, self-parent agreement at age 17 continues promoting girls' self-esteem development, as self-other agreement has been found to nurture interpersonal relationship during adulthood (e.g., intimacy, smooth communication, relationship satisfaction; Human & Biesanz, 2013; Kwang & Swann, 2010; Swann, 2011), fulfilling girls' primary need for communion. In comparison, boys have been socialized in such a way that harmonious relationships become less important for men's self-esteem than women's (Cross, Bacon, & Morris, 2000). Lower self-parent agreement might even become a way for boys to show their gained independence and autonomy from their parents, as this sense of masculinity and control could fulfill boys' primary need for agency, which in turn facilitates their self-esteem development. However, these speculations certainly

await verification by further studies.

Self-friend agreement at age 12 showed no effects on self-esteem development. This might be because a friend's influence at this early phase in adolescence is not as prominent as during late adolescence (Berndt, 1996) – at least when it comes to the effect of personality agreement on self-esteem development. Unfortunately, we did not have data on self-friend agreement at age 17 in the present study, so this explanation awaits future research to verify. Future studies could shed more light on this matter.

Limitations and Future Directions

The present longitudinal study was the first to investigate the effects of adolescent's personality agreement with important others concerning their self-esteem development from adolescence to young adulthood. A number of questions await future studies to shed more light on them. First, it would be interesting for future studies to examine whether the influence of friends' personality agreement increases and the influence of parents' decreases during adolescence and young adulthood. Larger sample sizes and more measurement points would be needed to clearly address this question.

Second, it would have been interesting to depict the trajectory of self-esteem development from age 12 to 29. Unfortunately, in our study self-esteem at age 12 was measured with a different scale (i.e., the German version of the Self-Perception Profile for Children; Harter, 1985). We could not establish measurement invariance even after transforming the 4-point scale score into 5-point scale score and testing measurement invariance at parcel level. Therefore, we could not include this measure in our analyses. It would be interesting for future studies to examine whether the effect of self-other agreement remains the same or changes during other life periods (e.g., when adolescents later become the parents of adolescents).

Third, we did not include a stringent test of the direction of causality. While it is plausible that self-other agreement influences self-esteem, the effect might also flow in the reverse direction or be due to unaccounted third factors. For example, previous research has proposed that individuals are highly motivated to self-verify when they are confronted with discrepant self-views (Kwang & Swann, 2010). Such situations trigger a process of identity negotiation (Swann & Bosson, 2008), in which individuals try to convince interaction partners of the validity of their self-view. It might be that individuals with higher self-esteem levels are more successful at this process. More research is needed to address the antecedents of self-other agreement in personality. For example, self-other agreement might change as a function of relationship quality.

Fourth, some people might intuitively expect that when others see adolescents in a more favorable way than his/her self-view, low self-other agreement might benefit self-esteem development. However, a meta-analysis has shown that people desire to be seen by important others in the same way as they see themselves, even when their self-view is negative. This self-verifying motive is rather strong as long as important others' perceptions of them are not so negative that it leads to the dissolution of their relationships (Kwang & Swann, 2010). More studies with different operationalization of self-other agreement in personality are needed to draw a convergent conclusion (Schriber & Robins, 2012). For instance, the present study focused on the profile agreement based on 40 personality items to increase the usage of available information, future studies could shed more light on this matter with other approaches, such as profile agreement based on more aggregated information, or response surface analysis (Nestler, Grimm, & Schönbrodt, 2015).

Moreover, the present study focused on the self-other agreement, yet other-other agreement in personality might also influence self-esteem development. For instance, when parents' opinions differ from friends' opinions regarding adolescents' personality, reconciling multiple diverging perspectives could also be highly challenging and confusing. Future studies could directly examine this interesting question.

Conclusion

The present 18-year longitudinal study has shown that self-parent agreement (but not self-friend agreement) in personality during early adolescence promotes self-esteem increases from adolescence to young adulthood. This effect remained after controlling for self-rated personality. The same positive effect exists for self-parent agreement during late adolescence, but only for girls. For boys, the effect became negative by late adolescence. The present study increased our knowledge by demonstrating the longitudinal effect of one's own view of personality being shared by important others on self-esteem development.

Supplemental Materials

Table S1 | Attrition Analyses

Variable	N		SD		Mean (95% CI)	
	Complete cases	Cases with missingness	Complete cases	Cases with missingness	Complete cases	Cases with missingness
Sex	74	112	0.50	0.50	[0.38, 0.62]	[0.36, 0.54]
Self-parent agreement_12	74	81	0.23	0.23	[0.48, 0.59]	[0.48, 0.58]
Self-friend agreement_12	74	51	0.24	0.22	[0.47, 0.58]	[0.45, 0.57]
Self-mother agreement_17	74	72	0.22	0.27	[0.54, 0.64]	[0.44, 0.56]
Self-father agreement_17	74	54	0.25	0.26	[0.51, 0.63]	[0.42, 0.56]
SE1_17	74	100	0.59	0.75	[4.13, 4.40]	[4.00, 4.29]
SE2_17	74	100	0.74	0.76	[4.06, 4.40]	[4.03, 4.33]
SE3_17	74	100	0.59	0.77	[3.88, 4.16]	[3.76, 4.07]
SE1_23	74	75	0.69	0.67	[4.22, 4.54]	[4.10, 4.41]
SE2_23	74	75	0.83	0.88	[4.12, 4.51]	[3.86, 4.27]
SE3_23	74	75	0.67	0.66	[3.77, 4.08]	[3.68, 3.99]
SE1_29	74	79	0.55	0.69	[4.36, 4.61]	[4.20, 4.51]
SE2_29	74	79	0.70	0.89	[4.37, 4.70]	[4.15, 4.55]
SE3_29	74	79	0.55	0.74	[3.90, 4.16]	[3.75, 4.08]
A1_12_self	74	112	0.51	0.59	[3.65, 3.88]	[3.61, 3.83]
A2_12_self	74	112	0.53	0.56	[3.69, 3.94]	[3.71, 3.92]
A3_12_self	74	112	0.63	0.70	[3.67, 3.96]	[3.57, 3.83]
C1_12_self	74	112	0.62	0.74	[3.26, 3.55]	[3.25, 3.53]
C2_12_self	74	112	0.59	0.65	[3.28, 3.56]	[3.31, 3.55]
C3_12_self	74	112	0.75	0.76	[3.39, 3.74]	[3.41, 3.69]
E1_12_self	74	112	0.70	0.66	[3.66, 3.98]	[3.75, 4.00]

Table S1 | Continued

Variable	N		SD		Mean (95% CI)	
	Complete cases	Cases with missingness	Complete cases	Cases with missingness	Complete cases	Cases with missingness
E2_12_self	74	112	0.65	0.62	[3.99, 4.29]	[4.00, 4.24]
E3_12_self	74	112	0.78	0.69	[3.62, 3.98]	[3.71, 3.97]
O1_12_self	74	112	0.51	0.52	[3.83, 4.07]	[3.83, 4.03]
O2_12_self	74	112	0.57	0.57	[3.39, 3.66]	[3.56, 3.77]
O3_12_self	74	112	0.47	0.53	[3.77, 3.99]	[3.78, 3.98]
S1_12_self	74	112	0.67	0.59	[3.66, 3.97]	[3.64, 3.86]
S2_12_self	74	112	0.62	0.57	[3.45, 3.74]	[3.43, 3.65]
S3_12_self	74	112	0.61	0.54	[3.63, 3.92]	[3.65, 3.85]
A1_12_parent	74	81	0.54	0.56	[3.61, 3.86]	[3.59, 3.84]
A2_12_parent	74	81	0.54	0.70	[3.73, 3.98]	[3.70, 4.01]
A3_12_parent	74	81	0.66	0.81	[3.64, 3.95]	[3.42, 3.78]
C1_12_parent	74	81	0.76	0.84	[2.81, 3.16]	[2.82, 3.19]
C2_12_parent	74	78	0.68	0.74	[3.19, 3.51]	[3.16, 3.49]
C3_12_parent	74	81	0.87	0.92	[3.07, 3.48]	[2.99, 3.39]
E1_12_parent	74	81	0.70	0.76	[3.76, 4.09]	[3.63, 3.96]
E2_12_parent	74	81	0.68	0.75	[3.84, 4.16]	[3.69, 4.02]
E3_12_parent	74	81	0.85	0.87	[3.78, 4.18]	[3.57, 3.96]
O1_12_parent	74	81	0.63	0.57	[3.97, 4.26]	[3.86, 4.12]
O2_12_parent	74	81	0.63	0.65	[3.80, 4.09]	[3.73, 4.01]
O3_12_parent	74	81	0.59	0.60	[3.78, 4.06]	[3.77, 4.04]
S1_12_parent	74	81	0.74	0.78	[3.33, 3.68]	[3.30, 3.64]
S2_12_parent	74	81	0.60	0.67	[2.99, 3.26]	[2.87, 3.17]
S3_12_parent	74	81	0.66	0.71	[3.47, 3.77]	[3.40, 3.72]

Table S1 | Continued

Variable	N		SD		Mean (95% CI)	
	Complete cases	Cases with missingness	Complete cases	Cases with missingness	Complete cases	Cases with missingness
A1_12_friend	74	51	0.64	0.76	[3.59, 3.89]	[3.47, 3.89]
A2_12_friend	74	51	0.76	0.68	[3.62, 3.97]	[3.51, 3.90]
A3_12_friend	74	51	0.85	0.88	[3.50, 3.89]	[3.34, 3.84]
C1_12_friend	74	51	0.76	0.76	[3.22, 3.57]	[3.22, 3.64]
C2_12_friend	74	51	0.75	0.62	[3.34, 3.69]	[3.24, 3.60]
C3_12_friend	74	51	0.88	0.79	[3.42, 3.83]	[3.27, 3.71]
E1_12_friend	74	51	0.66	0.77	[3.88, 4.18]	[3.51, 3.94]
E2_12_friend	74	51	0.69	0.69	[3.93, 4.25]	[3.76, 4.14]
E3_12_friend	74	51	0.68	0.72	[3.76, 4.08]	[3.51, 3.92]
O1_12_friend	74	51	0.71	0.60	[3.84, 4.17]	[3.83, 4.16]
O2_12_friend	74	51	0.57	0.65	[3.64, 3.90]	[3.44, 3.81]
O3_12_friend	74	51	0.62	0.60	[3.81, 4.10]	[3.71, 4.05]
S1_12_friend	74	51	0.75	0.73	[3.49, 3.83]	[3.46, 3.86]
S2_12_friend	74	51	0.72	0.71	[3.26, 3.59]	[3.28, 3.68]
S3_12_friend	74	51	0.65	0.73	[3.60, 3.90]	[3.61, 4.02]
A1_17_self	74	100	0.63	0.63	[3.52, 3.81]	[3.50, 3.75]
A2_17_self	74	100	0.60	0.56	[3.51, 3.78]	[3.62, 3.84]
A3_17_self	74	100	0.71	0.68	[3.45, 3.78]	[3.43, 3.71]
C1_17_self	74	100	0.73	0.92	[3.05, 3.39]	[2.96, 3.32]
C2_17_self	74	100	0.67	0.72	[3.13, 3.44]	[3.05, 3.34]
C3_17_self	74	100	0.77	0.90	[3.42, 3.77]	[3.18, 3.54]
E1_17_self	74	100	0.66	0.72	[3.80, 4.10]	[3.80, 4.09]
E2_17_self	74	100	0.58	0.66	[4.00, 4.27]	[4.05, 4.31]

Table S1 | Continued

Variable	N		SD		Mean (95% CI)	
	Complete cases	Cases with missingness	Complete cases	Cases with missingness	Complete cases	Cases with missingness
E3_17_self	74	100	0.70	0.72	[3.77, 4.09]	[3.87, 4.15]
O1_17_self	74	100	0.45	0.52	[3.85, 4.06]	[3.80, 4.01]
O2_17_self	74	100	0.56	0.50	[3.65, 3.91]	[3.66, 3.85]
O3_17_self	74	100	0.47	0.50	[3.73, 3.95]	[3.72, 3.92]
S1_17_self	74	100	0.64	0.76	[3.69, 3.99]	[3.67, 3.98]
S2_17_self	74	100	0.63	0.67	[3.40, 3.70]	[3.45, 3.71]
S3_17_self	74	100	0.57	0.64	[3.81, 4.07]	[3.76, 4.01]
A1_17_mother	74	72	0.62	0.65	[3.68, 3.97]	[3.49, 3.79]
A2_17_mother	74	72	0.58	0.70	[3.81, 4.08]	[3.56, 3.89]
A3_17_mother	74	72	0.74	0.81	[3.45, 3.79]	[3.23, 3.61]
C1_17_mother	74	72	0.71	1.02	[2.92, 3.25]	[2.81, 3.29]
C2_17_mother	74	72	0.67	0.94	[3.37, 3.68]	[2.98, 3.42]
C3_17_mother	74	72	0.88	1.05	[3.31, 3.72]	[3.02, 3.51]
E1_17_mother	74	72	0.85	0.88	[3.62, 4.01]	[3.41, 3.83]
E2_17_mother	74	72	0.78	0.79	[3.82, 4.18]	[3.60, 3.97]
E3_17_mother	74	72	0.80	0.82	[3.54, 3.91]	[3.36, 3.75]
O1_17_mother	74	72	0.62	0.61	[4.06, 4.35]	[3.86, 4.15]
O2_17_mother	74	72	0.65	0.69	[3.88, 4.18]	[3.80, 4.12]
O3_17_mother	74	72	0.53	0.63	[3.96, 4.21]	[3.71, 4.00]
S1_17_mother	74	72	0.72	0.89	[3.68, 4.01]	[3.46, 3.88]
S2_17_mother	74	72	0.67	0.71	[3.27, 3.58]	[3.11, 3.44]
S3_17_mother	74	72	0.65	0.82	[3.63, 3.93]	[3.44, 3.83]
A1_17_father	74	54	0.57	0.61	[3.57, 3.83]	[3.46, 3.79]

Table S1 | Continued

Variable	N		SD		Mean (95% CI)	
	Complete cases	Cases with missingness	Complete cases	Cases with missingness	Complete cases	Cases with missingness
A2_17_father	74	54	0.55	0.60	[3.57, 3.83]	[3.47, 3.79]
A3_17_father	74	54	0.74	0.76	[3.32, 3.66]	[3.22, 3.63]
C1_17_father	74	54	0.75	0.95	[2.97, 3.32]	[2.67, 3.19]
C2_17_father	74	54	0.72	0.82	[3.30, 3.63]	[3.07, 3.52]
C3_17_father	74	54	0.91	1.05	[3.19, 3.62]	[2.94, 3.52]
E1_17_father	74	54	0.76	0.77	[3.60, 3.95]	[3.40, 3.82]
E2_17_father	74	54	0.69	0.74	[3.75, 4.07]	[3.60, 4.00]
E3_17_father	74	54	0.74	0.81	[3.48, 3.82]	[3.24, 3.68]
O1_17_father	74	54	0.61	0.57	[3.87, 4.15]	[3.76, 4.08]
O2_17_father	74	54	0.61	0.60	[3.80, 4.08]	[3.76, 4.09]
O3_17_father	74	54	0.54	0.49	[3.80, 4.05]	[3.74, 4.01]
S1_17_father	74	54	0.72	0.77	[3.49, 3.82]	[3.34, 3.77]
S2_17_father	74	54	0.63	0.65	[3.13, 3.42]	[3.04, 3.39]
S3_17_father	74	54	0.63	0.66	[3.54, 3.83]	[3.40, 3.76]

Note. SE_17, SE_23, SE_29 = self-esteem at age 17, 23, and 29; A = Agreeableness (A1: Parcel 1 of Agreeableness), C = Conscientiousness, E = Extraversion, O = Openness, S = Emotional Stability; CI = confidence interval.

Measurement Invariance from Age 17 to 29

As shown in **Table S2** of the supplemental materials, all models from the free model up to the strict measurement invariance model showed acceptable model fit. Comparing model fits with chi-square difference tests, results showed that adding further constraints did not lead to significant decreases in model fit, except from a weak measurement invariance model to a strong measurement invariance model.

Based on the model fit indices, we set up a partial strong measurement invariance model and a partial strict measurement invariance model by freeing the intercept of the self-esteem Parcel 3 at age 17. The partial strong measurement invariance model and the partial strict measurement invariance model both showed acceptable model fit. Moreover, the model fit of the partial strong model was not significantly different from that of the weak measurement invariance model or the partial strict measurement invariance model. Considering that the free model, the weak measurement invariance model, and both partial measurement invariance models all showed indications of overfitting the data (i.e., TLI > 1.00), we decided to build further models basing on the strict measurement invariance model for the sake of parsimony.

Table S2 | Measurement Invariance of Self-Esteem Development form Age 17 to 29

Model	$\chi^2(df)$	RMSEA	CFI	TLI	Model fit compared to the previous model	
					$\Delta\chi^2(\Delta df)$	The compared model
Free model	7.29 (14)	0.00	1.00	1.04		
Weak measurement invariance model	14.60 (18)	0.00	1.00	1.01	7.31 (4)	Free model
Strong measurement invariance model	31.15 (22)	0.05	0.98	0.97	16.55 (4)**	Weak measurement invariance model
Strict measurement invariance model	37.13 (28)	0.04	0.98	0.98	5.98 (6)	Strong measurement invariance model
Partial strong measurement invariance model	19.00 (21)	0.00	1.00	1.01	4.40 (3)	Weak measurement invariance model
Partial strict measurement invariance model	24.69 (27)	0.00	1.00	1.01	5.69 (6)	Partial strong measurement invariance model

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 174$. Free model = CFA model without measurement invariance; weak measurement invariance model = same factor loadings; strong measurement invariance model = same factor loadings and intercepts; strict measurement invariance model = same factor loadings, intercepts, and residual variances. Partial strong measurement invariance model = same as the strong measurement invariance model, with the exception that the intercept of self-esteem Parcel 3 at age 17 was freely estimated; partial strict measurement invariance model = same as the strict measurement invariance model, with the exception that the intercept of self-esteem Parcel 3 at age 17 was freely estimated. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index. **Boldface:** the model selected as the baseline model for further analyses.

Table S3 | *Self-Esteem Development from Age 17 to 29*

Model	$\chi^2(df)$	CFI	RMSEA	$\Delta\chi^2(\Delta df)$	Intercept		Slope		Self-esteem age 23	Self-esteem age 29
					Mean	Variance	Mean	Variance		
LGCM_ linear	39.44 (30)	0.98	0.04	1.15 (1)	4.24***	0.14**	0.09*	0.10*	4.29	4.35
LGCM_ flexible	38.29 (29)	0.98	0.04	--	--	--	--	--	--	--

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 174$. LGCM = Latent Growth Curve Model. The linear model and the flexible model differed only in whether the factor loading of the slope at age 29 was fixed or freely estimated. That is, for both models, the intercept loadings were 1 for all three waves; the slope loadings were 0 at age 17 and 0.6 at age 23. While the slope loading at age 29 was fixed to 1.2 in the linear model, it was allowed to be freely estimated in the flexible model. CFI = comparative fit index; RMSEA = root-mean-square error of approximation. **Boldface**: the model selected as the baseline model for further analyses.

Table S4 | Means, Standard Deviations, and Correlations of All Research Variables

	1.Self-Parent12	2.Self-Friend12	3.Self-Mother17	4.Self-Father17	5.Self-Esteem17	6.Self-Esteem23	7.Self-Esteem29	8.Gender	9.Self-Rating12A
1.Self-Parent12	-								
2.Self-Friend12	.45**	-							
3.Self-Mother17	.43**	.18	-						
4.Self-Father17	.45**	.22*	.76**	-					
5.Self-Esteem17	-.03	.02	.19*	.17	-				
6.Self-Esteem23	.05	.04	.12	.13	.36**	-			
7.Self-Esteem29	.18*	.17	.09	.15	.27**	.43**	-		
8.Gender	.13	-.04	.22**	.15	-.12	-.09	.04	-	
9.Self-Rating12A	.26**	.13	.17*	.29**	.11	.07	.14	.18*	-
10.Self-Rating12C	.21**	.14	-.01	.14	.10	.02	.17*	.09	.31**
11.Self-Rating12E	.42**	.33**	.27**	.26**	.13	.16	.20*	-.06	.30**
12.Self-Rating12O	.27**	.37**	.08	.06	.06	.12	.06	-.29**	.06
13.Self-Rating12S	.32**	.35**	.20*	.23*	.09	.19*	.12	-.05	.31**
14.Self-Rating17A	.27**	.08	.19*	.29**	.17*	.05	.14	.13	.45**
15.Self-Rating17C	.05	-.03	.17*	.25**	.25**	.15	.23**	.09	.20**
16.Self-Rating17E	.20*	.21*	.34**	.43**	.35**	.21*	.15	.10	.19*
17.Self-Rating17O	.18*	.14	.27**	.35**	.36**	.24**	.14	-.19*	-.02
18.Self-Rating17S	-.09	.08	.19*	.22*	.50**	.26**	.10	-.24**	.06
<i>M</i>	0.53	0.52	0.55	0.53	4.12	4.13	4.27	0.47	3.77
<i>SD</i>	0.23	0.23	0.25	0.26	0.59	0.61	0.58	0.50	0.49
<i>N</i>	155	125	146	128	174	149	153	186	186

Table S4 | Continued

	10.Self- Rating 12C	11.Self- Rating 12E	12.Self- Rating 12O	13.Self- Rating 12S	14.Self- Rating 17A	15.Self- Rating 17C	16.Self- Rating 17E	17.Self- Rating 17O	18.Self- Rating 17S
10.Self-Rating12C	-								
11.Self-Rating12E	.11	-							
12.Self-Rating12O	.33**	.31**	-						
13.Self-Rating12S	.13	.49**	.31**	-					
14.Self-Rating17A	.16*	.15*	-.17*	.07	-				
15.Self-Rating17C	.46**	.09	.08	.06	.19*	-			
16.Self-Rating17E	.07	.50**	.01	.30**	.23**	.08	-		
17.Self-Rating17O	.08	.14	.32**	.10	.08	.23**	.29**	-	
18.Self-Rating17S	-.03	.16*	.09	.22**	.22**	.16*	.44**	.36**	-
<i>M</i>	3.46	3.94	3.81	3.70	3.64	3.29	4.03	3.84	3.77
<i>SD</i>	0.59	0.59	0.41	0.48	0.55	0.71	0.60	0.42	0.56
<i>N</i>	186	186	186	186	174	174	174	174	174

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. A = Agreeableness, C = Conscientiousness, E = Extraversion, O = Openness, S = Emotional Stability. 12 = Age 12, 17 = Age 17, 23 = Age 23, 29 = Age 29.

5

Chapter 5

Self-Other Personality Agreement and Internalizing Problems: A Trait Approach using Response Surface Analysis

Author Note:

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The raw data, analysis code, and measures used for this chapter are stored on the Utrecht University Research Data Server.

Z. Luan conceptualized the study, and W. Bleidorn provided feedback. Z. Luan performed data-analysis and interpretation. Z. Luan drafted the manuscript, and W. Bleidorn provided feedback.

Abstract

Achieving a clear self-view is a lifelong task which is particularly salient during adolescence. The degree to which adolescents develop a stable and coherent idea of their own personality can have perennial influences on their mental health and well-being. Theory and research suggest that adolescents have more difficulties developing a coherent self-view when close others see them differently from how they see themselves. In the present study, we investigated the association between the agreement of self- and other reported Big Five personality traits and internalizing problems one year later in a sample of 570 Dutch adolescents, their mothers, friends, and siblings. Using the large sample size, multi-rater assessments, and state-of-the-art Response Surface Analysis techniques, we found little support for the beneficial effect of self-other agreement about Big Five personality traits on mental health in adolescence. Discussion focuses on the theoretical implications and recommendations for future investigations of self-other agreement.

Keywords: self-other agreement, personality traits, internalizing problems, adolescence

Introduction

One of the most important developmental tasks of adolescence is to integrate various aspects of the self to form a clear and stable self-view (Erikson, 1994; Harter, 2007). A significant aspect of this developmental task concerns the development of a coherent idea of one's own personality. To do this, individuals not only observe their own behavior, thoughts, and feelings across time and situations but also internalize feedback from others. For example, the concept of the looking-glass-self (Cooley, 1902; Harter, 2007) suggests that individuals form and maintain self-views by internalizing the views close others have of them. According to this perspective, adolescents whose close others agree with their own perceptions of their personality should be better able to develop a coherent self-view. In contrast, adolescents whose close others disagree regarding their personality perceptions should have more difficulties developing a stable self-view (Srivastava, 2012) and potentially experience more problems.

A large body of literature has associated stable and coherent self-views with several positive outcomes including psychological adjustment and well-being, whereas fragile and incoherent self-perceptions have been associated with internalizing problems (Bleidorn & Ködding, 2013; J. D. Campbell, 1990; J. D. Campbell & Lavelle, 1993; Donahue, Robins, Roberts, & John, 1993; Erikson, 1994; Harter, 2007; van Dijk et al., 2014). In a similar vein, high self-other personality agreement has also been associated with better psychological adjustment (for a review, see Human & Biesanz, 2013). Notably, most research on self-other agreement has focused on adult samples. As such, we know little regarding whether and to what degree the positive implications of self-other agreement and coherent self-views generalize to samples of adolescents. The purpose of the present study was to address this gap by examining the degree to which self-other agreement on Big Five personality traits was associated with internalizing problems in adolescence, using data from 570 Dutch adolescents and their parents, siblings, and friends.

Self-Other Personality Agreement and Mental Health

Several theories and a large body of research have shown that people prefer to be known and understood by others according to how they see themselves (Bleidorn et al., 2016; Edwards et al., 1999; Harms, Roberts, & Winter, 2006). For example, self-verification theory (Swann, 2011; Swann & Buhrmester, 2012) asserts that people strive to be seen by their close others in the same way as they see themselves, even when their self-views are negative. Such strivings are supposed

to provide stability making individual's social experiences more coherent, orderly, and comprehensible than they would be otherwise (Kwang & Swann, 2010; Swann, 2011).

Research on the correlates of self-other personality agreement has shown that high agreement tends to be related to various positive outcomes including better mental health and well-being (Human & Biesanz, 2011, 2013). Research that examined the physiological reactivity and facial expressions suggested that self-verification might promote coping and stress regulation (Ayduk et al., 2013). In addition, higher self-other agreement on various attributes has been associated with a stronger commitment to one's dating partner, greater marital intimacy, and lower rates of separation or divorce (Kwang & Swann, 2010).

In summary, theory and research suggests that there are psychological benefits of high self-other personality agreement. The vast majority of these studies have examined adult samples. Hence, comparatively little is known whether and to what degree these results generalize to adolescents.

Self-Other Personality Agreement in Adolescence

We know relatively little regarding the implications of self-other agreement on mental health and well-being in adolescence. The lack of literature is surprising given the adolescent life stage has been argued to be particularly relevant for the development of a coherent self-views (Erikson, 1994; Harter, 2007). Different theoretical perspectives have come to different predictions regarding the links between self-other agreement and psychological adjustment in adolescence.

Perspectives focusing on adolescents' heightened self-reflections and need for clarity (Harter, 2007) have asserted that adolescents might be especially influenced by the negative implications of low self-other agreement. Specifically, low levels of self-other agreement have been argued to negatively influence the development of a coherent self-view which, in turn, has been associated with lower self-esteem and well-being, and more internalizing problems (J. D. Campbell, 1990; J. D. Campbell & Lavalley, 1993; Donahue et al., 1993; van Dijk et al., 2014). In contrast, self-verifying feedback from close others regarding one's personality has been argued to facilitate the formation and maintenance of a clear and stable self-view, which has been associated with better psychological adjustment and fewer internalizing problems (Srivastava, 2012; Swann, 2011).

Contrarily, other perspectives have suggested adolescents, because they have not yet committed to a strong self-view, may be less impacted by incongruent perceptions of their personalities (Erikson, 1994). For instance, Swann and Buhrmester (2012) have proposed that self-view certainty and accessibility play

important roles in the effects of self-other agreement. Specifically, feedback that contradicts one's self-view might be threatening because that it challenges individuals' stable and committed self-view thereby questioning their life stories and identity (McAdams, 1995). As such, low self-other agreement should have more negative consequences for individuals who are invested in and committed to their self-views (Swann, 2011; Swann & Buhrmester, 2012). Considering that adolescents' self-views are on average less certain than adults' (Meeus, van de Schoot, Keijsers, Schwartz, & Branje, 2010), contradicting feedback regarding their personality might be less threatening to adolescents.

Few studies have looked into the implications of self-other personality agreement in adolescence (Luan et al., 2018, 2017; van Aken et al., 1995). These studies have yielded mixed evidence regarding the theoretical perspectives above. For example, research has shown that adolescents' self-views are less stable than adults' (Luan et al., 2017) and may therefore be less impacted by incongruent feedback from close others. In contrast, high self-other agreement between adolescents and parents has been associated with more frequent and open communication, higher relationship satisfaction, and higher self-esteem (Sillars, Koerner, & Fitzpatrick, 2005). Moreover, neuroimaging research has shown that, compared to adults, adolescents show greater overlap between regions used for self-perception and other-perception when completing a self-reflection task. This finding could be interpreted to suggest that adolescents' self-perceptions may be more dependent on others' perceptions (Pfeifer et al., 2009).

In summary, the mostly indirect findings provide a limited picture of the implications of self-other personality agreement in adolescence. Moreover, the few studies that have examined self-other agreement have used a person-centered approach and examined the similarity of personality profiles (Luan et al., 2018; van Aken et al., 1995). To the best of our knowledge, no study to date has adopted a variable-centered approach to examine the degree to which agreement on individual personality trait dimensions is related to psychological health outcomes. Researchers have argued and shown that judging personality profile and personality trait are not interchangeable and may involve different processes (Allik et al., 2015; Connelly & Ones, 2010; Fetvadjev, Meiring, van de Vijver, Nel, & De Kock, 2018; Hall et al., 2017).

In the present study, we examine the implications of self-other agreement using a trait approach. Here, we define self-other agreement as the extent to which targets and judges agree on targets' levels of personality traits. The trait approach allowed us to examine the correlates of self-other agreement across different trait dimensions and thus provides a more nuanced test of the two theoretical

perspectives described above. Self-other agreement on different personality traits may not be equally impactful for adolescent's mental health and well-being. Specifically, some traits might be more ego-relevant than others, and it is possible that disagreement on traits that are highly evaluative (i.e., highly socially desirable/undesirable, such as conscientiousness, agreeableness, and openness) might be more detrimental than disagreement on traits that are more neutral (e.g., extraversion and neuroticism; Beer & Vazire, 2017; John & Robins, 1993; Vazire, 2010). Moreover, adopting a variable-centered approach allowed us to address several methodical challenges associated with person-centered approaches to self-other agreement. We next turn to these methodical considerations.

Methodological Considerations

How to accurately measure congruence of personality judgment has been the subject of long-standing debate (Wood & Furr, 2016). Recently, studies in personality and social psychology have begun to use polynomial regression in combination with response surface analysis (RSA) to address questions about agreement between self-reported and other measures of personality traits (Bleidorn et al., 2016; Denissen et al., 2018; Franken, Luceulle, Aken, & Ormel, 2017; Weidmann, Schönbrodt, Ledermann, & Grob, 2017). The RSA approach allows researchers to examine different forms of self-other agreement and disagreement while reducing statistical biases and interpretation limitations associated with other approaches such as difference scores, moderated regressions, and raw profile agreement (Barranti et al., 2017; Humberg et al., 2017, 2018). RSA also allows researchers to visualize the pattern of agreement in a three-dimensional response surface plot (Barranti et al., 2017; Shanock, Baran, Gentry, Pattison, & Heggestad, 2010).

For example, the scenario where Sarah and her mother agree on the view that Sarah is highly emotionally stable might have different implications for Sarah's adjustment than the scenario where they agree on the view that Sarah is highly neurotic. One reason is that Sarah in the former case is plausibly indeed highly emotionally stable whereas in the latter case indeed highly neurotic. Research has shown that personality traits are associated with many aspects of individual adjustment including mental health (De Pauw & Mervielde, 2010; Ozer & Benet-Martínez, 2006; Tackett, 2006), and therefore Sarah in the former case is likely to show better adjustment than in the latter case.

For another example, it is unclear whether congruent self- and other-ratings at moderate levels (e.g., Sarah and her mother agree on the view that Sarah is moderately emotionally stable) would predict fewer internalizing problems than

at extreme levels (e.g., Sarah and her mother agree on the view that Sarah is extremely emotionally stable/extremely neurotic). RSA allows us to test whether there are effects of agreement while taking linear and quadratic effects of self- and other-ratings, and their interaction into account (Edwards & Parry, 1993; Shanock et al., 2010).

In terms of how to best measure adolescent internalizing problems, there is no clear answer regarding whose judgment of internalizing problems is the most accurate. On the one hand, the self may have unparalleled access to inner thoughts and feelings that are invisible to others (Vazire, 2010), and therefore self-rated internalizing problems might be the most accurate. On the other hand, aggregating self- and multiple other-ratings of internalizing problems may increase accuracy (Hofstee, 1994). Thus, considering that using self-rated internalizing problems introduces greater shared method-variance between self-rated personality and internalizing problems, we reported results based on aggregated internalizing problems in the manuscript (i.e., averaging self-, mother-, father-, and sibling-ratings), and reported results based on self-rated internalizing problems in the supplemental materials.

The Present Study

In this study, we used data from 570 adolescents, their mothers, siblings, and friends and polynomial regression with RSA to examine whether individual differences in adolescents' agreement with close others regarding their Big Five personality traits were associated with internalizing problems one year later. This approach allowed us to test whether agreement between adolescents and various close others is related to psychological adjustment. In addition, based on previous research on the association between personality and internalizing problems (De Pauw & Mervielde, 2010; Ozer & Benet-Martínez, 2006; Tackett, 2006), we expected to find main effects of self- and other-rated personality on internalizing problems. We especially expected to find main effects of emotional stability and extraversion because current evidence is most consistent regarding these traits (Tackett, 2006).

We further explored two questions. First, if we found an association between self-other agreement on personality and internalizing problems *one year later*, we would then further explore whether this association still hold after controlling for the baseline internalizing problems. However, considering the moderate effect size of self-other agreement (Kwang & Swann, 2010) and the relatively short time lag (i.e., one year), it could be difficult for us to find effects of self-other agreement on *changes* in internalizing problems in one year. Second, we explored whether

disagreement on evaluative traits (i.e., agreeableness, conscientiousness, and neuroticism) would be more detrimental for adolescent's mental health and well-being than disagreement on more neutral traits (e.g., extraversion and neuroticism; Beer & Vazire, 2017; John & Robins, 1993).

Method

Participants and Procedure

Participants were 570 adolescents from 288 Dutch families with both parents and at least two adolescent children. These data were part of a larger project (the longitudinal Family and Personality Research Project; Haselager & van Aken, 1999). A representative selection of 23 municipalities throughout the Netherlands provided lists of families with at least two adolescents between 11 and 16 years old. After sending a letter announcing the study, interviewers called families and invited them to participate, to which 50% of the contacted families agreed. The majority of the respondents were of Dutch origin - In 4% of the families, parents reported that they were not born in the Netherlands (compared with 9% of the general Dutch population; Central Intelligence Agency, 2006). The families belonged primarily to the Dutch middle to upper-middle class. Forty-five percent of fathers and 27% mothers had achieved higher vocational education or a university degree, 25% of fathers and 31% of mothers had achieved intermediate vocational education, and 29% of fathers and 41% of mothers had achieved high school or lower vocational education.

The 288 families completed three annual home interviews with trained interviewers. At each measurement wave, interviewers asked mothers, fathers, and adolescents to each independently complete a questionnaire battery. Additionally, at the second wave, interviewers asked each family member to invite their best friend to participate in the study. These friends were instructed to complete the questionnaire at home and send it back by mail.

For the present investigation, we used data from the second and third waves (here referred to as T1 and T2, collected in 1999 and 2000, respectively) because friend-reports were only available at the second assessment wave. For each target adolescent, we used self-, mother-, sibling-, and friend-reported Big Five personality traits at T1 ($n = 570, 568, 568, \text{ and } 344$, respectively) and examined whether and how the agreement on personality traits was associated with internalizing problems assessed via self-report and other-report one year later ($n = 566$).

Most families participated throughout the study: Both at T1 and T2, 285

families (99%) provided self- and other-report data. Ninety-nine percent of the families provided complete data on the research variables at T1, and 98% at T2. The great majority of missingness came from friend-reports. Attrition analyses showed that compared to adolescents with complete data ($n = 337$), those with missingness ($n = 239$) were more likely to be boys (95% confidence interval: [.53, .64] vs. [.35, .48]). There were no group differences in personality or internalizing problems, indicated by overlapping 95% confidence intervals between the two groups.

At T1, adolescents and siblings were on average 14.50 years old ($SD = 0.80$), best friends were 14.41 years old ($SD = 1.18$), and mothers were 42.70 years old ($SD = 3.25$). The adolescent participants were given CD gift certificates after completion of the questionnaires. As an additional incentive, a lottery was organized in which ten families could win a travel voucher of about 900 Euros.

Measures

Personality

At T1, adolescents' Big Five personality traits were rated by adolescents themselves, their mothers, siblings, and best friends via the Dutch adaptation (Gerris et al., 1998) of the 30 adjective personality makers (6 items per trait) selected from Goldberg, (1992). There were both positively- and negatively-keyed items for extraversion, conscientiousness, and emotional stability, yet agreeableness and openness to experience were measured only by positively-keyed items. Sample items included "sympathetic" and "kind" for agreeableness; "talkative" and "reserved" (reverse coded) for extraversion; "anxious" and "nervous" (both reverse coded) for emotional stability; "careful" and "organized" for conscientiousness; and "imaginative" and "creative" for openness. Personality was rated on a 7-point Likert scale (from 1 = *very untrue of this person* to 7 = *very true of this person*). We calculated mean scores for each personality trait and each reporter (i.e., in total five traits and four reporters). Cronbach's alphas across reporters ranged from .80 to .87 for agreeableness; from .81 to .90 for extraversion; from .77 to .82 for emotional stability; from .85 to .94 for conscientiousness; and from .68 to .86 for openness.

Internalizing problems

At T1 and T2, adolescents, their mothers, fathers, and siblings reported on adolescents internalizing problems, using the subscales of anxiety/depression (5 items; such as "I feel sad and unhappy") and withdrawal (5 items; such as "I behave awkwardly in dealing with others") of the Nijmegen Problem Behaviour List (NPBL; Scholte, Vermulst, & De Bruyn, 2001), which is the Dutch adaptation

of the Child Behaviour Checklist (CBCL; Verhulst, van der Ende, & Koot, 1996). Participants and informants responded to the 10 NPBL items on a 5-point Likert scale (ranging from 1 = *does not apply to this person at all*, to 5 = *applies to this person very well*). We used these scores to compute mean scores for both self-rated and aggregated (i.e., averaging self-, mother-, father-, and sibling-ratings) internalizing problems. Cronbach's alphas at T1 and T2 were .87 and .89 for self-ratings and .91 and .91 for aggregated informant ratings, respectively.

Analytic Strategy

Data were analyzed using the RSA package (Schönbrodt & Humberg, 2017) in the statistical software R (R Core Team, 2017). We used polynomial regression analyses and the RSA to test the joint impact of self- and other-reported Big Five personality traits on adolescents' internalizing problems. To facilitate interpretation, unstandardized predictors were centered on the scale mid-point (i.e., 4 on the 7-point scale, Barranti et al., 2017; Edwards, 1994; Edwards & Parry, 1993). We used multilevel modeling to account for the nested data structure with adolescents nested within families using *lme* function and maximum likelihood (ML) to compare multilevel models (Barranti et al., 2017; Nakagawa & Schielzeth, 2013).

Each type of self-other agreement (self-mother, self-sibling, and self-friend) and each Big Five personality trait were modeled separately. To reduce the false positive rate, we considered findings with $p < .005$ (two-tailed) as significant, and findings with $.005 < p < .05$ as suggestive (Benjamin et al., 2017). As shown in **Equation 1**, polynomial regression analyses estimate an intercept (b_0), linear, quadratic effects of self- and other-reports (b_1 , b_2 , b_3 , b_5), and an interaction effect between the linear effects of self- and other-reports (b_4).

$$\text{Internalizing behavior} = b_0 + b_1*\text{Self-report personality} + b_2*\text{Other-report personality} + b_3*\text{Self-report personality}^2 + b_4*\text{Self-report personality}*\text{Other-report personality} + b_5*\text{Other-report personality}^2 + e \quad (\text{Equation 1})$$

To avoid overfitting of the data, for each self-other dyad, and for each trait, we compared three models based on the Akaike Information Criterion (AIC, lower values indicate better model fit; Burnham & Anderson, 1998). (1) *The self-rating model* only included the self-report terms (i.e., self-report personality and self-report personality²); (2) *The self- and other-rating model* also included the other-report terms (i.e., self-report personality, self-report personality², other-report personality, and other-report personality²); and (3) *the full RSA model* further included the interaction term (i.e., self-report personality, self-report personality²,

other-report personality, other-report personality², and self-report personality * other-report personality). We only examined agreement effects when these model comparison tests indicated that the full RSA model was the best model.

When justified, we extracted five RSA parameters a_1 to a_5 (from b_1 to b_5)¹, and created a three-dimensional response surface (Nestler et al., 2018; Schönbrodt & Humberg, 2017; Shanock et al., 2010). As shown in **Figure 1**, by adding the third dimension, RSA graphs show the level of internalizing problems (i.e., the vertical axis Z) as a function of all possible levels of self- and other-reported Big Five personality traits (i.e., the horizontal axes X and Y).

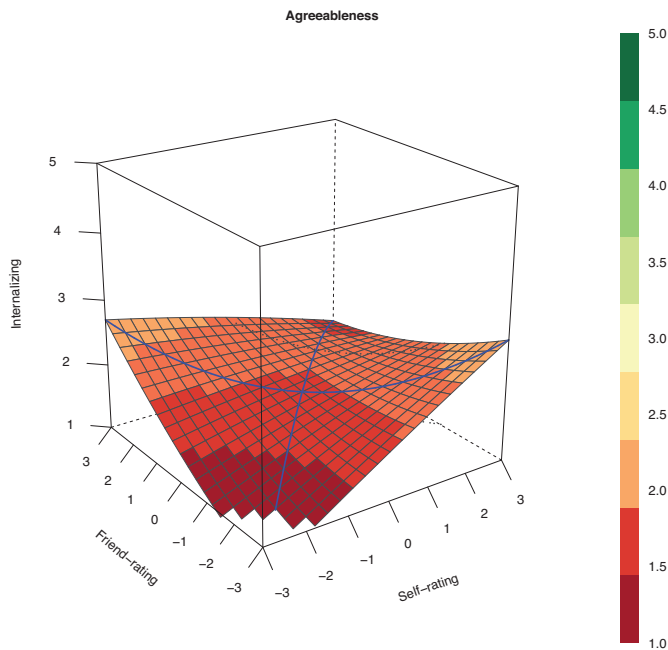


Figure 1. Self- and friend-reported agreeableness and aggregated internalizing problems.

Following the guidelines of establishing a congruence effect (Humberg et al., 2018; Nestler et al., 2018), supports for an agreement effect on internalizing problems would be reflected in the RSA parameters, such that a_4 should be non-zero and a_2 , a_3 , and a_5 should be zero. There is no requirement for a_1 , which represents the main effect of personality while holding the level of self-other agreement consistent and high (Humberg et al., 2018; Nestler et al., 2018). We next explain each of the

¹ $a_1 = b_1 + b_2$; $a_2 = b_3 + b_4 + b_5$; $a_3 = b_1 - b_2$; $a_4 = b_3 - b_4 + b_5$; and $a_5 = b_3 - b_5$ (for details, see Nestler, Humberg, & Schönbrodt, 2018).

RSA parameters in relation to three key features of the response surface: the Line of Congruence, the Line of Incongruence, and the First Principal Axis.

The Line of Incongruence (LOIC)

Parameters a_3 and a_4 assess effects among the LOIC (i.e., an imaginary line where self- and other-reports have opposite scores: $X = -Y$). Parameter a_4 is conceptually similar to the absolute difference score but without its statistic problems (Barranti et al., 2017; Edwards & Parry, 1993). A positive a_4 would indicate higher levels of internalizing problems when self-other agreement is lower.

To establish an agreement effect, a_4 should be significant, and a_3 should be non-significant (Humberg et al., 2018; Nestler et al., 2018). When a_4 is significant (e.g., positive), a significant a_3 would indicate that a certain level of disagreement (instead of perfect agreement) is the most adaptive (i.e., *optimal margin effect*; Nestler et al., 2018). For example, a significant a_3 indicates that instead of perfect agreement, the level of internalizing problems is lowest when self-reported personality is slightly higher than other-reported personality.

The Line of Congruence (LOC)

Parameters a_1 and a_2 assess the effects among the LOC (i.e., an imaginary line where self- and other-reports have identical scores: $X = Y$). They test whether one form of self-other agreement is better than another form (i.e., both views are congruently high vs. low; congruently extreme vs. neutral). Recall the two scenarios mentioned above, where Sarah and her mother agree that Sarah is either highly emotionally stable vs. highly neurotic. In the latter case, Sarah might be more likely to show internalizing problems. This is not the result of self-other agreement, but rather simply an effect of Sarah's level of neuroticism (i.e., it is likely that in the former case Sarah is indeed highly neurotic, whereas in the latter case Sarah is indeed highly emotionally stable), while holding the level of agreement constant (and high). Research has shown that emotional stability correlates with fewer internalizing problems, and these studies were predominantly based on self- or other-reported personality (De Pauw & Mervielde, 2010; Ozer & Benet-Martínez, 2006; Tackett, 2006). Thus, we expected adolescents to show fewer internalizing problems when both views were congruently high (e.g., highly emotionally stable) than congruently low (i.e., a_1 should be negative and significant).

Parameter a_1 reflects the linear effect, whereas a_2 reflects the quadratic effect. Parameter a_2 indicates whether congruent self- and other-ratings on Big Five traits at extreme levels (e.g., extremely emotionally stable or extremely neurotic) would predict more internalizing problems than at moderate levels (e.g., moderately

emotionally stable). To establish an agreement effect, *a2 should be non-significant* (Humberg et al., 2018; Nestler et al., 2018).

The First Principal Axis (FPA)

The final key feature for establishing an agreement effect is the ridge line of a response surface. When a surface has a ridge, this line is the FPA. To establishing an agreement effect, the FPA should equal to the LOC (instead of shifting away from LOC). This condition can be assessed using the parameter *a5*. To establish an agreement effect, *a5 should be non-significant* (Nestler et al., 2018). More detailed explanations of different RSA surfaces can be found in previous literature (Barranti et al., 2017; Humberg et al., 2017, 2018; Nestler et al., 2018).

Covariates

To examine the robustness of results, we also controlled for age (grand-mean centred) and gender (0 = boy; 1 = girl), considering their potential relationship with personality and internalizing problems (Bleidorn et al., 2013; Leadbeater, Kuperminc, Blatt, & Hertzog, 1999).

Self-rated internalizing problems

As previously mentioned, in the manuscript we reported results that were based on aggregated ratings of internalizing problems (i.e., averaging self-, mother-, father-, and sibling-ratings). In the supplemental materials, we reported results using self-rated internalizing problems as the outcome variable (see **Table S1 to S4** and **Figure S1 to S3**).

Results

Table 1 shows the means, standard deviations, and inter-correlations of all focal variables. Data and the code for data analyses are stored on the University Research Data Server, and the Open Science Framework (OSF; https://osf.io/zamn2/?view_only=bb81b816a71644cdaod66f91efab3b57).

Table 2 shows the fit indices of all models, and **Table 3** shows the polynomial regression coefficients and RSA parameters of the best models for all traits. Next, we present the results of the polynomial regressions and, in cases where the full RSA model was the best model, the RSA parameters for each Big Five trait and each dyad.

Table 1. Means, Standard Deviations, and Correlations for All Focal Variables

	Age	Gender	T2Int_Self	T2Int_Agg	T1Int_Self	T1Int_Agg	T1ES_Self	T1ES_Mother	T1ES_Sibling	T1ES_Friend	T1E_Self	T1E_Mother	T1E_Sibling	T1E_Friend
Age	-													
Gender	-.02	-												
T2Int_Self	.14**	.01	-											
T2Int_Agg	.06	-.03	.69**	-										
T1Int_Self	.16**	.02	.67**	.56**	-									
T1Int_Agg	.06	-.01	.52**	.82**	.66**	-								
T1ES_Self	-.10*	-.11*	-.44**	-.35**	-.53**	-.37**	-							
T1ES_Mother	.04	-.12**	-.14**	-.30**	-.14**	-.34**	.32**	-						
T1ES_Sibling	.17**	-.13**	-.11**	-.26**	-.12**	-.28**	.20**	.27**	-					
T1ES_Friend	-.10	-.14**	-.20**	-.13*	-.23**	-.15**	.27**	.19**	.13*	-				
T1E_Self	-.15**	.05	-.47**	-.41**	-.59**	-.43**	.46**	.08	.08	.08	-			
T1E_Mother	-.07	.06	-.24**	-.41**	-.23**	-.41**	.16**	.30**	.11*	.10	.45**	-		
T1E_Sibling	.06	.08	-.21**	-.37**	-.21**	-.38**	.16**	.15**	.53**	.02	.30**	.32**	-	
T1E_Friend	-.09	.11	-.26**	-.22**	-.28**	-.21**	.09	.04	.04	.49**	.32**	.25**	.16**	-
T1C_Self	.05	.10*	-.10*	-.11**	-.09*	-.11*	-.05	-.03	-.02	-.02	.02	-.08*	-.05	-.03
T1C_Mother	-.01	.19**	-.07	-.17**	-.03	-.16**	-.02	.10*	-.01	-.06	-.05	-.02	-.06	-.06
T1C_Sibling	.16**	.16**	-.04	-.10*	.03	-.09*	-.09*	.02	.06	-.08	-.05	.00	.10*	-.09
T1C_Friend	-.01	.07	.04	.00	-.04	-.04	-.06	-.07	-.01	-.07	-.01	.02	.01	.03
T1A_Self	.06	.08	-.25**	-.20**	-.27**	-.22*	.05	-.01	.09*	.04	.29**	.13**	.07	.10
T1A_Mother	-.08	.11*	-.19**	-.29**	-.19**	-.34**	.09*	.11*	.02	.00	.10*	.28**	.05	.07
T1A_Sibling	.09*	.10*	-.14**	-.23**	-.14**	-.25**	.06	.06	.19**	.03	.13**	.10*	.31**	.07
T1A_Friend	.04	.09	-.11*	-.09	-.15**	-.11*	.03	.03	.02	.19**	.13*	.04	.11*	.36**
T1O_Self	.01	-.01	-.11**	-.10*	-.14**	-.14**	-.01	.03	.08	.04	.25**	.13**	.09*	.15**
T1O_Mother	-.07	.18**	-.16**	-.28**	-.19**	-.30**	.16**	.08	.09*	.03	.18**	.28**	.09*	.11*
T1O_Sibling	-.08	.02	-.14**	-.18**	-.10*	-.16**	.05	.10*	.10*	.01	.12**	.12**	.27**	.05

Table 1. Continued

	Age	Gender	T2Int_Self	T2Int_Agg	T1Int_Self	T1Int_Agg	T1ES_Self	T1ES_Mother	T1ES_Sibling	T1ES_Friend	T1E_Self	T1E_Mother	T1E_Sibling	T1E_Friend
T1O_Friend	.05	-0.8	-0.4	-0.3	-0.8	-0.4	.06	.07	.08	.14**	.12*	.14*	.03	.29**
<i>M</i>	14.50	0.51	2.02	1.95	2.01	1.96	4.43	4.65	4.48	4.84	4.98	4.95	4.98	5.22
<i>SD</i>	1.35	0.50	0.65	0.43	0.61	0.42	1.02	1.08	1.03	1.03	1.13	1.20	1.05	1.12
<i>n</i>	570	576	566	570	570	570	570	568	568	344	570	568	568	344

	T1C_Self	T1C_Mother	T1C_Sibling	T1C_Friend	T1A_Self	T1A_Mother	T1A_Sibling	T1A_Friend	T1O_Self	T1O_Mother	T1O_Sibling	T1O_Friend
T1C_Self	-											
T1C_Mother	.54**	-										
T1C_Sibling	.41**	.50**	-									
T1C_Friend	.40**	.29**	.24**	-								
T1A_Self	.26**	.06	.08	.10	-							
T1A_Mother	.14**	.31**	.15**	.12*	.24**	-						
T1A_Sibling	.10*	.12**	.33**	.09	.20**	.25**	-					
T1A_Friend	.10	.03	.09	.23**	.20**	.12*	.11	-				
T1O_Self	.15**	-.01	.03	-.01	.51**	.03	.11**	.08				
T1O_Mother	.06	.23**	.09*	.04	.17**	.42**	.06	.12*	.35**	-		
T1O_Sibling	.07	.09*	.30**	-.01	.18**	.12**	.49**	.04	.34**	.27**	-	
T1O_Friend	.08	.01	.02	.20**	.17**	.08	.05	.52**	.27**	.23**	.15**	-
<i>M</i>	4.35	4.04	4.02	4.62	5.53	5.72	5.15	5.75	4.91	4.84	4.71	4.85
<i>SD</i>	1.20	1.39	1.27	1.17	0.71	0.73	0.99	0.76	0.88	1.14	0.93	0.98
<i>n</i>	570	568	568	344	570	568	568	344	570	568	568	344

Note. **p* < .05, ***p* < .01, ****p* < .001, two-tailed. Int_Self: Internalizing problems – self-ratings; Int_Agg: Internalizing problems – aggregated ratings (i.e., self-, mother-, father-, and sibling-ratings). ES: Emotional stability; E: Extraversion; C: Conscientiousness; A: Agreeableness; O: Openness. Gender: 0 = boy, 1 = girl. Internalizing problems were measured on a 5-point scale (1-5), and Big Five personality traits were measured on a 7-point scale (1-7).

Table 2. Model Comparison: Self- and Other-Rated Big Five Personality Traits and (Aggregated) Internalizing Problems (Without Covariates)

Trait	Self-other agreement	AIC (Self-ratings)	AIC (Self- and other-ratings)	AIC (Full RSA)
Emotional stability	Self-mother	469.84	447.81	449.33
	Self-sibling	471.40	454.16	455.95
	Self-friend	273.76	277.33	279.05
Extraversion	Self-mother	442.89	398.01	398.69
	Self-sibling	443.12	397.53	399.43
	Self-friend	241.75	242.01	243.97
Conscientiousness	Self-mother	536.49	531.79	533.22
	Self-sibling	537.71	539.03	540.84
	Self-friend	306.77	309.10	311.10
Agreeableness	Self-mother	527.43	502.77	504.31
	Self-sibling	528.99	513.98	515.32
	Self-friend	304.01	307.58	303.13
Openness	Self-mother	532.82	486.78	488.78
	Self-sibling	534.23	520.70	522.32
	Self-friend	302.65	305.26	306.74

Note. Best-fitting models (models with the lowest AIC values) **in bold**.

Emotional Stability

As shown in **Table 3**, for self-mother and self-sibling agreement on emotional stability, the self- and other-ratings model was the best model. Specifically, higher self-, mother-, and sibling-rated emotional stability predicted fewer internalizing problems ($ps < .001$). The interaction term between self- and other-ratings did not explain significantly more variance in emotional stability.

For self-friend agreement, the self-rating model was the best model, suggesting that higher self-rated emotional stability predicted fewer internalizing problems ($b = -0.12, p < .001$). Friend-rated emotional stability and its interaction with self-ratings did not explain significantly more variance.

Extraversion

For self-mother and self-sibling agreement on extraversion, the self- and other-ratings model was the best model. Specifically, higher self-, mother-, and sibling-rated extraversion predicted fewer internalizing problems ($ps < .001$). The interaction term between self- and other-ratings did not explain significantly more variance in extraversion.

Table 3. Self- and Other-Rated Big Five Personality Traits and (Aggregated) Internalizing Problems (Without Covariates)

Trait	Self-other agreement	Best model (R^2)	Self-rated personality	Self-rated personality ^a	Other-rated personality	Other-rated personality ^a	Self-rated personality * Other-rated personality
Emotional stability	Self-mother	Self- and other-ratings (63.95%)	-0.11, $p < .001$ [-0.14, -0.08]	0.03, $p = .007$ [0.01, 0.05]	-0.08, $p < .001$ [-0.11, -0.05]	-0.00, $p = .793$ [-0.02, 0.02]	-
	Self-sibling	Self- and other-ratings (62.92%)	-0.14, $p < .001$ [-0.17, -0.11]	0.03, $p = .009$ [0.01, 0.04]	-0.06, $p < .001$ [-0.09, -0.03]	-0.00, $p = .998$ [-0.02, 0.02]	-
	Self-friend	Self-ratings (63.44%)	-0.12, $p < .001$ [-0.16, -0.08]	0.03, $p = .010$ [0.01, 0.06]	-	-	-
Extraversion	Self-mother	Self- and other-ratings (66.20%)	-0.10, $p < .001$ [-0.13, -0.06]	0.01, $p = .347$ [-0.01, 0.02]	-0.09, $p < .001$ [-0.12, -0.06]	-0.00, $p = .939$ [-0.02, 0.02]	-
	Self-sibling	Self- and other-ratings (66.44%)	-0.13, $p < .001$ [-0.16, -0.10]	0.01, $p = .289$ [-0.01, 0.02]	-0.11, $p < .001$ [-0.14, -0.07]	0.01, $p = .142$ [-0.00, 0.03]	-
	Self-friend	Self-ratings (61.65%)	-0.17, $p < .001$ [-0.21, -0.13]	0.03, $p = .006$ [0.01, 0.05]	-	-	-
Conscientiousness	Self-mother	Self- and other-ratings (59.48%)	0.02, $p = .152$ [-0.01, 0.05]	-0.02, $p = .051$ [-0.03, 0.00]	-0.04, $p = .004$ [-0.06, -0.01]	-0.00, $p = .979$ [-0.02, 0.02]	-
	Self-sibling	Self-ratings (59.17%)	-0.00, $p = .960$ [-0.03, 0.02]	-0.02, $p = .015$ [-0.04, -0.00]	-	-	-
	Self-friend	Self-ratings (62.04%)	-0.01, $p = .446$ [-0.04, 0.02]	-0.01, $p = .213$ [-0.03, 0.01]	-	-	-
Agreeableness	Self-mother	Self- and other-ratings (59.08%)	-0.11, $p = .028$ [-0.20, -0.01]	0.02, $p = .250$ [-0.01, 0.05]	-0.16, $p = .009$ [-0.28, -0.04]	0.01, $p = .545$ [-0.03, 0.05]	-
	Self-sibling	Self- and other-ratings (59.07%)	-0.13, $p = .011$ [-0.23, -0.03]	0.01, $p = .456$ [-0.02, 0.05]	-0.03, $p = .202$ [-0.08, 0.02]	-0.02, $p = .062$ [-0.04, 0.00]	-
	Self-friend	Full RSA (64.56%)	0.11, $p = .195$ [-0.06, 0.28]	-0.01, $p = .803$ [-0.05, 0.04]	0.09, $p = .286$ [-0.07, 0.25]	0.02, $p = .367$ [-0.02, 0.07]	-0.09, $p = .011$ [-0.16, -0.02]
Openness	Self-mother	Self- and other-ratings (63.95%)	$a1 = 0.20, p = .149$ [-0.07, 0.46]	$a2 = -0.08, p = .074$ [-0.16, 0.01]	$a3 = 0.02, p = .819$ [-0.16, 0.21]	$a4 = 0.11, p = .037$ [0.01, 0.20]	$a5 = -0.03, p = .421$ [-0.09, 0.04]
	Self-sibling	Self- and other-ratings (61.43%)	-0.02, $p = .407$ [-0.07, 0.03]	0.01, $p = .444$ [-0.01, 0.03]	-0.12, $p < .001$ [-0.16, -0.08]	0.02, $p = .065$ [-0.00, 0.04]	-
	Self-friend	Self-ratings (62.14%)	-0.06, $p = .015$ [-0.12, -0.01]	0.01, $p = .342$ [-0.01, 0.04]	-0.08, $p < .001$ [-0.13, -0.04]	0.01, $p = .274$ [-0.01, 0.04]	-

Note. R^2 refers to the variance explained of the model. The table represents the estimates and 95% confidence intervals of unstandardized regression coefficients, with significant effects ($p < .005$, two-tailed) **in bold**.

For self-friend agreement, the self-rating model was the best model. Self-rated extraversion predicted fewer internalizing problems ($b = -0.17, p < .001$), whereas friend-rated extraversion did not explain significantly more variance.

Conscientiousness

For self-mother agreement, the self- and other-ratings model was the best model. Specifically, mother-rated conscientiousness predicted fewer internalizing problems ($b = -0.04, p = .004$). For self-sibling and self-friend agreement, the self-rating model was the best model, indicating that sibling- and friend-rated conscientiousness did not explain significantly more variance.

Agreeableness

For self-mother and self-sibling agreement regarding agreeableness, the self- and other-ratings model was the best model, suggesting that adding self- and other-rated agreeableness substantially improved model fit, but adding their interaction term did not. Specifically, self-, mother-, and sibling-rated agreeableness predicted fewer internalizing problems. However, the p -values did not meet the cut-off value of .005 ($b_{\text{self}} = -0.11, p = .028$; $b_{\text{mother}} = -0.16, p = .009$). The predictive validity of sibling-rated agreeableness was negative and non-significant ($b_{\text{sibling}}^2 = -0.02, p = .062$).

For self-friend agreement, the full RSA model was the best model. RSA parameters and **Figure 1** show that self-friend agreement on agreeableness predicted fewer internalizing problems, however, the p -value did not meet the cut-off value of .005 ($a_4 = 0.11, p = .037$). The other RSA parameters were all non-significant (all $ps > .05$).

Openness

For self-mother and self-sibling agreement on openness, the self- and other-ratings model was the best model. Mother- and sibling-rated openness significantly predicted fewer internalizing problems ($b_{\text{mother}} = -0.12, p < .001$; $b_{\text{sibling}} = -0.08, p < .001$). Adding the interaction term between self- and other-rated openness did not explain significantly more variance.

For self-friend agreement, the self-rating model was the best model. Self-rated openness predicted fewer internalizing problems, but the p -value did not meet the cut-off value ($b = -0.07, p = .047$). Friend-rated openness did not explain significantly more variance.

Controlling for Age and Gender

To examine the robustness of the findings, we also report results with age and gender controlled (see **Table 4** and **Table 5**). Results were almost identical to those reported in **Table 3**, with two minor changes. First, for self-friend agreement on extraversion, the quadratic term of self-rated extraversion became significant ($b = 0.03, p = .004$). Second, for self-mother agreement on conscientiousness, the p -value of the linear effect of mother-rated conscientiousness did not meet the cut-off value anymore ($b = -0.03, p = .010$).

Table 4. Model Comparisons: Self- and Other-Rated Personality and (Aggregated) Internalizing Problems (Controlling for Age and Gender)

Trait	Self-other agreement	AIC (Covariates)	AIC (Covariates + Self-ratings)	AIC (Covariates + Self- and other-ratings)	AIC (Covariates + Full RSA)
Emotional stability	Self-mother	538.70	467.82	443.07	444.47
	Self-sibling	540.14	469.70	447.12	449.03
	Self-friend	306.01	272.55	275.62	277.43
Extraversion	Self-mother	538.70	444.31	401.01	401.71
	Self-sibling	540.14	444.54	400.13	449.03
	Self-friend	306.01	241.44	242.23	244.12
Conscientiousness	Self-mother	538.70	536.52	533.77	535.17
	Self-sibling	540.14	537.94	538.83	540.65
	Self-friend	306.01	307.40	309.81	311.80
Agreeableness	Self-mother	538.70	526.73	505.11	506.68
	Self-sibling	540.14	528.54	512.61	514.16
	Self-friend	306.01	304.26	307.55	303.68
Openness	Self-mother	538.70	532.19	490.65	492.65
	Self-sibling	540.14	533.85	520.96	522.67
	Self-friend	306.01	302.36	304.88	306.54

Note. For each trait and each dyad, four candidate models were compared. The first model only includes the covariates; the second model adds the self-report terms; the third model further adds the other-report terms; and finally, the fourth model further adds the interaction term. Best models (models with the lowest AIC values) **in bold**.

Table 5. Self- and Other-Rated Personality and (Aggregated) Internalizing Problems (Controlling for Age and Gender)

Trait	Self-other agreement	Best model (R^2)	Self-rated personality	Self-rated personality ²	Other-rated personality	Other-rated personality ²	Self-rated personality* Other-rated personality
Emotional stability	Self-mother	Covariates + self- and other-ratings (64.63%)	-0.11, $p < .001$ [-0.14, -0.08]	0.02, $p = .012$ [0.01, 0.04]	-0.08, $p < .001$ [-0.11, -0.05]	-0.00, $p = .783$ [-0.02, 0.02]	-
	Self-sibling	Covariates + self- and other-ratings (63.92%)	-0.14, $p < .001$ [-0.16, -0.11]	0.02, $p = .021$ [0.00, 0.04]	-0.07, $p < .001$ [-0.10, -0.04]	0.00, $p = .903$ [-0.02, 0.02]	-
	Self-friend	Covariates + self-ratings (65.29%)	-0.12, $p < .001$ [-0.16, -0.08]	0.03, $p = .011$ [0.01, 0.06]	-	-	-
	Self-mother	Covariates + self- and other-ratings (66.27%)	-0.10, $p < .001$ [-0.13, -0.06]	0.01, $p = .285$ [-0.01, 0.03]	-0.09, $p < .001$ [-0.12, -0.06]	-0.00, $p = .939$ [-0.02, 0.02]	-
Conscientiousness	Self-sibling	Covariates + self- and other-ratings (66.58%)	-0.13, $p < .001$ [-0.16, -0.09]	0.01, $p = .272$ [-0.01, 0.03]	-0.11, $p < .001$ [-0.14, -0.07]	0.01, $p = .126$ [-0.00, 0.03]	-
	Self-friend	Covariates + self-ratings (63.22%)	-0.17, $p < .001$ [-0.21, -0.13]	0.03, $p = .004$ [0.01, 0.05]	-	-	-
	Self-mother	Covariates + self- and other-ratings (59.57%)	0.02, $p = .203$ [-0.01, 0.05]	-0.02, $p = .055$ [-0.03, 0.00]	-0.03, $p = .010$ [-0.06, -0.01]	-0.00, $p = .916$ [-0.02, 0.02]	-
Agreeableness	Self-sibling	Covariates + self-ratings (59.63%)	-0.00, $p = .961$ [-0.03, 0.02]	-0.02, $p = .019$ [-0.04, -0.00]	-	-	-
	Self-friend	Covariates (64.12%)	-	-	-	-	-
	Self-mother	Covariates + self- and other-ratings (59.28%)	-0.11, $p = .026$ [-0.20, -0.01]	0.02, $p = .244$ [-0.01, 0.05]	-0.15, $p = .013$ [-0.27, -0.03]	0.01, $p = .577$ [-0.03, 0.05]	-
	Self-sibling	Covariates + self- and other-ratings (59.70%)	-0.13, $p = .009$ [-0.23, -0.03]	0.01, $p = .438$ [-0.02, 0.05]	-0.03, $p = .174$ [-0.08, 0.01]	-0.02, $p = .060$ [-0.04, 0.00]	-
Openness	Self-friend	Covariates + full RSA (66.13%)	0.11, $p = .195$ [-0.06, 0.28]	-0.01, $p = .692$ [-0.05, 0.03]	0.08, $p = .316$ [-0.08, 0.24]	0.02, $p = .346$ [-0.02, 0.07]	-0.09, $p = .016$ [-0.16, -0.02]
	Self-mother	Covariates + self- and other-ratings (63.83%)	$a1 = 0.19, p = .162$ [-0.08, 0.46]	$a2 = -0.07, p = .084$ [-0.15, 0.01]	$a3 = 0.03, p = .772$ [-0.16, 0.21]	$a4 = 0.10, p = .052$ [0.00, 0.20]	$a5 = -0.03, p = .354$ [-0.09, 0.03]
Openness	Self-sibling	Covariates + self- and other-ratings (62.02%)	-0.02, $p = .400$ [-0.07, 0.03]	0.01, $p = .455$ [-0.01, 0.03]	-0.12, $p < .001$ [-0.16, -0.08]	0.02, $p = .073$ [-0.00, 0.04]	-
	Self-friend	Covariates + self- and other-ratings (63.99%)	-0.06, $p = .017$ [-0.12, -0.01]	0.01, $p = .387$ [-0.01, 0.04]	-0.08, $p < .001$ [-0.13, -0.04]	0.01, $p = .256$ [-0.01, 0.04]	-
	Self-mother	Covariates + self-ratings (63.99%)	-0.07, $p = .055$ [-0.14, 0.00]	0.00, $p = .882$ [-0.03, 0.04]	-	-	-

Note. For each trait and each dyad, four candidate models were compared (smaller AIC values indicate better models). The first model only includes the covariates; the second model adds the self-report terms; the third model further adds the other-report terms; and finally, the fourth model further adds the interaction term. R^2 refers to the variance explained of the model. The table represents the estimates and 95% confidence intervals of unstandardized regression coefficients, with significant effects ($p < .005$, two-tailed) in bold.

Discussion

According to several theories of the self, close others' perceptions of one's personality are important for the formation of a stable and coherent self-view, which in turn has been associated with better mental health and well-being (Cooley, 1902; Donahue et al., 1993; Erikson, 1994; van Dijk et al., 2014). Past research has mostly focused on self-other personality agreement in adult samples (Human & Biesanz, 2011, 2013; Kwang & Swann, 2010; Swann & Buhrmester, 2012), leaving it open whether the implications of self-other personality agreement can be generalized to adolescents.

In the present study, we examined two alternative perspectives on the developmental consequences of self-other personality agreement in adolescence. On the one hand, self-other personality agreement may also promote the mental health and well-being of adolescents, who may be particularly vulnerable to incongruent personality feedback because they are in the middle of identity development (Erikson, 1994; Srivastava, 2012). On the other hand, research has shown that self-other personality agreement is especially impactful when the self-view is certain and accessible (Swann & Buhrmester, 2012). Since adolescents have often not committed to a stable identity yet (Erikson, 1994; Meeus, van de Schoot, Keijsers, Schwartz, & Branje, 2010), they may be better able to cope with the incongruent feedback regarding their personality traits.

We examined these competing perspectives using multi-informant data from a large sample of adolescents and their close others and employing state-of-the-art statistical analyses. Overall, we found very little evidence for the beneficial effects of self-other personality agreement on adolescents' mental health. Specifically, across the five personality traits and three self-other dyads, there was only one marginally significant result involving self-friend agreement on agreeableness ($b = 0.11, p = .037$).

This finding appears to support theoretical perspectives that emphasize that adolescents are still in the process of developing a stable identity and have not yet made a strong commitment to a particular self-view (Erikson, 1994; Meeus, van de Schoot, Keijsers, Schwartz, & Branje, 2010). As such, adolescents should be better able to cope with contradicting feedback regarding their personality than adults (Human & Biesanz, 2011, 2013; Kwang & Swann, 2010). Adults who receive incongruent feedback regarding their personalities might feel misunderstood and/or pressure to reorganize or reevaluate their self-views. In contrast, adolescents might perceive new and potentially incongruent feedback regarding their personality traits as less self-threatening.

It is also possible that agreement with close others on the broad Big Five personality traits is less relevant for adolescents' mental health than agreement on other aspects of the self, such as values, goals, or personality profile. A previous study has shown a positive association between adolescent's self-parent agreement on personality profile and self-esteem development in adulthood, even after controlling for the main effects of personality (Luan et al., 2018). Researchers have advocated that profile accuracy and trait accuracy may involve different processes and should not be assumed interchangeable (Borkenau & Leising, 2016; Connelly & Ones, 2010; Hall et al., 2017). It might be that adolescent's agreement with close others regarding which of their personality is more central, which is less central (i.e., agreement on personality profile) is more important for their maintenance of clear self-views, as compared to agreement on the absolute level of certain trait (i.e., agreement on personality trait). Perhaps agreement on the configuration of adolescent personality provides a common ground for setting priority that capitalizes on the most central aspects of adolescent's personality (e.g., goal convergence regarding getting along vs. getting ahead; Gebauer et al., 2015; Richards & Larson, 1989). Future studies are needed to replicate and extend the current findings before we can draw conclusions. In addition, beyond self-other agreement on personality, future studies could investigate the implications of different forms of self-other agreement on mental health and well-being, such as on values, goals, as well as religious and political beliefs.

Rather than effects of self-other agreement, we found several main effects of both self-reported and other-reported personality traits on internalizing problems assessed one year later. Specifically, adolescents showed fewer internalizing problems when they or their close others described them as being high in emotional stability, extraversion, conscientiousness, and openness. This is consistent with previous research on the associations between Big Five personality traits and internalizing problems (De Pauw & Mervielde, 2010; Ozer & Benet-Martínez, 2006; Tackett, 2006). These results provide an important replication and extension of the literature, given that we used both self- and informant-reports to assess both personality and internalizing problems, demonstrating the utility of multi-informant studies in better predicting, diagnosing and understanding adolescent's mental health. Taken together, using RSA we only found main effects of self- and other-rated personality, but no effects of self-other agreement regarding personality traits on adolescents' internalizing problems one year later.

Limitations and Future Directions

This study has several strengths. First, compared to previous approaches, RSA has the advantage that the fit of alternative models can be examined in addition to main effects and agreement effects. In this way, this study provided a rigorous test of how competing hypotheses regarding the implications of self-other personality agreement in adolescence. In addition, the large sample size and multi-rater assessments enabled a high-powered examination of the response surface patterns. Nevertheless, this study needs to be considered in the light of important limitations.

First, our sample was composed of adolescents from intact families from a Western individualistic country, and our findings may be less likely to generalize to other cultures and other age groups. Perhaps in cultures with higher levels of uncertainty avoidance and/or individualistic than our sample (Hofstede, 1994), self-other agreement might be more impactful for mental health. Perhaps this is because that self-view clarity is more important in cultures of high uncertainty avoidance, and that a consistent self-view is more accessible for people from more individualistic cultures.

Second, we did not have friend-rated internalizing problems at T2. Therefore, our results might underestimate the predictive power of friend-rated personality as compared to self-, mother-, and sibling-rated personality.

Third, our personality measure was very broad, and therefore we may not be able to capture more nuanced inter-judge discrepancies in the perceptions of adolescents' personality. It might be interesting for future studies to examine the effect of self-other personality agreement at the level of more specific personality characteristics.

Fourth, we were unable to examine the long-term effects of self-other agreement on internalizing problems. It may be that self-other agreement influences adolescent's psychological adjustment in a more gradual way. Future studies are needed to examine such long-term effects of self-verifying views of close others on well-being and mental health.

Conclusion

The present study was the first to investigate the association between self-other personality agreement and internalizing problems in adolescence using Response Surface Analyses. Using multi-informant data from a large sample of adolescents and their close others and employing state-of-the-art statistical analyses, we found very little evidence for the beneficial effects of self-other personality agreement

on adolescents' mental health. Our results suggest that adolescents may be better at tolerating incongruent feedback regarding their broad personality traits than adults. Future research that studies different forms of self-other agreement will contribute important insight on the implications of self-other agreement on individual's mental health and well-being across the lifespan.

Supplemental Materials

Self-Rated Internalizing Problems as Outcome Variable

In this section, we report results using self-rated internalizing problems as the outcome variable in **Table S1 and S2** (without covariates), and **Table S3 and S4** (controlling for age and gender). Overall, the effects of other-rated personality were largely reduced when self-rated internalizing problems was used as the outcome variable. Only mother-rated openness was still related to internalizing problems (without covariates: $b = -0.12$, $p < .001$; controlled for age and gender: $b = -0.11$, $p = .003$). Since results were highly similar with or without covariates, we only report results without covariates (**Table S1 and S2**).

Table S1. Model Comparisons: Self- and Other-Rated Personality and (Self-Rated) Internalizing Problems (Without Covariates)

Trait	Self-other agreement	AIC (Self-ratings)	AIC (Self- and other-ratings)	AIC (Full RSA)
Emotional stability	Self-mother	995.74	999.11	1001.04
	Self-sibling	996.35	1000.11	1001.77
	Self-friend	582.24	582.58	584.44
Extraversion	Self-mother	977.53	980.63	982.10
	Self-sibling	977.20	979.05	980.74
	Self-friend	553.22	552.55	546.93
Conscientiousness	Self-mother	1106.26	1110.23	1111.48
	Self-sibling	1106.96	1110.28	1111.78
	Self-friend	645.07	646.01	646.29
Agreeableness	Self-mother	1076.44	1072.63	1074.45
	Self-sibling	1077.37	1073.30	1074.19
	Self-friend	628.61	631.91	622.43
Openness	Self-mother	1105.48	1100.26	1094.64
	Self-sibling	1106.11	1104.89	1105.92
	Self-friend	644.10	647.43	647.94

Note. Best models (models with the lowest AIC values) **in bold**.

Table S2. Self- and Other-Rated Personality and (Self-Rated) Internalizing Problems (Without Covariates)

Trait	Self-other agreement	Best model (R^2)	Self-rated personality	Self-rated personality ^{a2}	Other-rated personality	Other-rated personality ^{a2}	Self-rated personality * Other-rated personality
Emotional stability	Self-mother	Self-ratings (33.35%)	-0.27, $p < .001$ [-0.32, -0.21]	-0.01, $p = .441$ [-0.05, 0.02]	-	-	-
	Self-sibling						
	Self-friend						
Extraversion	Self-mother	Self-ratings (30.92%)	-0.30, $p < .001$ [-0.36, -0.24]	0.02, $p = .136$ [-0.01, 0.05]	-	-	-
	Self-sibling						
	Self-friend	Full RSA (38.87%)	-0.35, $p < .001$ [-0.43, -0.27] $a1 = -0.45, p < .001$ [-0.56, -0.34] -0.03, $p = .255$ [-0.07, 0.02]	0.02, $p = .234$ [-0.01, 0.06] $a2 = 0.08, p = .004$ [0.03, 0.13] -0.03, $p = .052$ [-0.06, 0.00]	-0.10, $p = .029$ [-0.19, -0.01] $a3 = -0.25, p < .001$ [-0.37, -0.13]	-0.01, $p = .562$ [-0.05, 0.03] $a4 = -0.06, p = .206$ [-0.14, 0.03]	0.07, $p = .007$ [0.02, 0.11] $a5 = 0.03, p = .214$ [-0.02, 0.09]
Conscientiousness	Self-mother	Self-ratings (21.63%)					
	Self-sibling						
	Self-friend						
Agreeableness	Self-mother	Self- and other-ratings (24.79%)	-0.08, $p = .345$ [-0.26, 0.09]	-0.04, $p = .151$ [-0.11, 0.02]	-0.13, $p = .279$ [-0.35, 0.10]	0.01, $p = .884$ [-0.07, 0.08]	-
	Self-sibling	Self- and other-ratings (24.14%)	-0.07, $p = .437$ [-0.25, 0.11]	-0.06, $p = .071$ [-0.12, 0.00]	0.04, $p = .340$ [-0.04, 0.12]	-0.04, $p = .013$ [-0.08, -0.01]	-
	Self-friend	Full RSA (39.90%)	0.38, $p = .008$ [0.11, 0.67] $a1 = 0.64, p = .006$ [0.19, 1.10]	-0.08, $p = .028$ [-0.15, -0.01] $a2 = -0.28, p < .001$ [-0.42, -0.14]	0.26, $p = .068$ [-0.02, 0.54] $a3 = 0.12, p = .443$ [-0.19, 0.44]	0.01, $p = .891$ [-0.07, 0.08] $a4 = 0.14, p = .115$ [-0.03, 0.30]	-0.21, $p < .001$ [-0.33, -0.09] $a5 = -0.08, p = .129$ [-0.19, 0.02]
Openness	Self-mother	Full RSA (24.46%)	-0.06, $p = .232$ [-0.16, 0.04]	-0.03, $p = .166$ [-0.08, 0.01]	-0.12, $p < .001$ [-0.20, -0.05]	-0.02, $p = .331$ [-0.05, 0.02]	0.08, $p = .006$ [0.02, 0.14]
	Self-sibling	Self- and other-ratings (23.39%)	-0.05, $p = .354$ [-0.14, 0.05]	-0.01, $p = .560$ [-0.06, 0.03]	$a3 = -0.06, p = .343$ [-0.07, 0.19]	$a4 = -0.13, p = .011$ [-0.24, -0.03]	$a5 = -0.02, p = .596$ [-0.08, 0.04]
	Self-friend	Self-ratings (28.04%)	-0.03, $p = .589$ [-0.15, 0.09]	-0.04, $p = .118$ [-0.10, 0.01]	-0.08, $p = .052$ [-0.16, 0.00]	0.01, $p = .660$ [-0.03, 0.05]	-

Note. R^2 refers to the variance explained of the model. The table represents the estimates and 95% confidence intervals of unstandardized regression coefficients, with significant effects ($p < .005$, two-tailed) in bold.

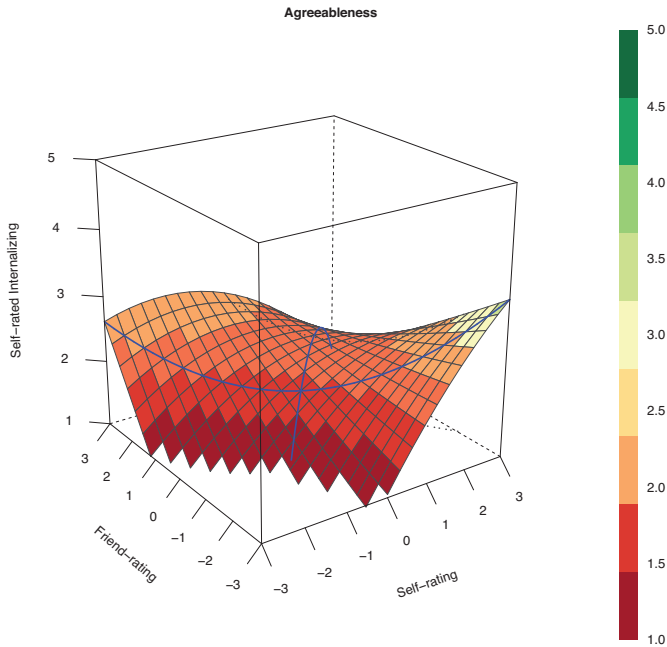


Figure S1. Self- and friend-reported agreeableness and self-rated internalizing problems.

Again, the full RSA model was the best model for self-friend agreement on agreeableness (see **Figure S1**). Specifically, self-friend agreement was not associated with internalizing problems ($a_4 = 0.14, p = .115$). Also, a_2 was negative and significant, indicating that adolescents reported fewer internalizing problems when both ratings converged on indicating either high levels or low levels of agreeableness (vs. moderate levels; $a_2 = -0.28, p < .001$).

In addition to self-friend agreement on agreeableness, the full RSA model was the best model also for self-friend agreement on extraversion and self-mother agreement on openness. For self-friend agreement on extraversion (see **Figure S2**), first, self-friend agreement was not associated with internalizing problems ($a_4 = -0.06, p = .206$). Second, adolescents showed more internalizing behaviors when they described themselves as less extraverted (vs. more extraverted) than their friends did ($a_3 = -0.25, p < .001$). Third, when self- and friend-views were congruent, adolescents showed more internalizing problems when both views were congruently low (i.e., barely extraverted) than congruently high (i.e., highly extraverted; $a_1 = -0.45, p < .001$). The levels of internalizing problems were particularly high when both views were extremely low (i.e., at the lowest levels of extraversion; $a_2 = 0.08, p = .004$).

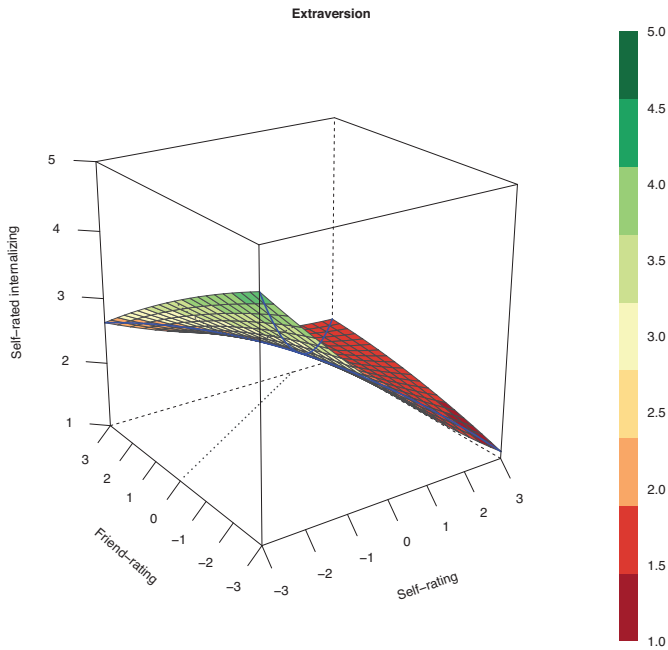


Figure S2. Self- and friend-reported extraversion and self-rated internalizing problems.

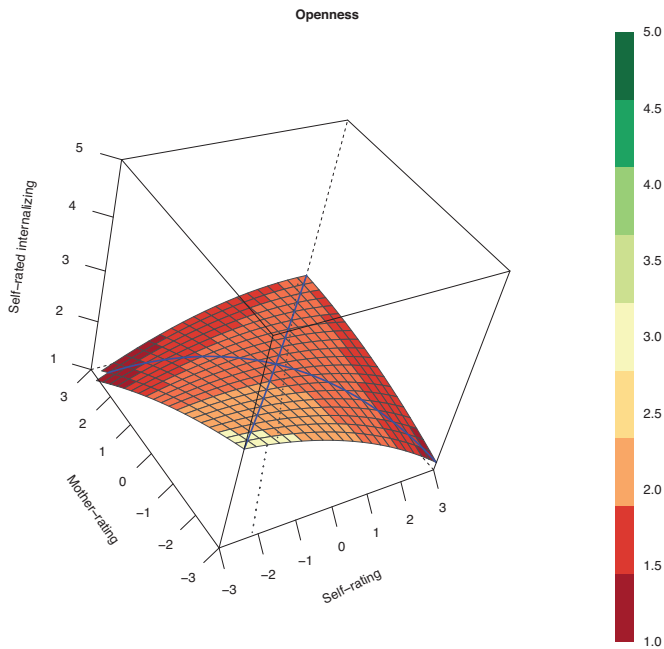


Figure S3. Self- and mother-reported openness and self-rated internalizing problems.

For self-mother agreement on openness, first, higher self-mother agreement on openness predicted more internalizing problems, but the p -value did not meet the cut-off value of .005 ($a_4 = -0.13, p = .011$). The response surface in **Figure S3** shows that adolescents with highly open self-views showed extremely low levels of internalizing problems regardless of how they were seen by their mothers. However, for other adolescents (i.e., adolescents with neutral or non-open self-views), the level of internalizing problems was lower when mothers saw them as being more open to experience. Second, when self- and mother-ratings were congruent, adolescents showed fewer internalizing problems when both mother and self-reported openness were congruently high instead of congruently low ($a_1 = -0.19, p = .003$).

Table S3. Model Comparisons: Self- and Other-Rated Personality and (Self-Rated) Internalizing Problems (Controlling for Age and Gender)

Trait	Self-other agreement	AIC (Covariates)	AIC (Covariates + Self-ratings)	AIC (Covariates + Self- and other-ratings)	AIC (Covariates + Full RSA)
Emotional stability	Self-mother	1100.33	991.29	994.44	996.37
	Self-sibling	1100.91	992.00	995.11	996.47
	Self-friend	647.08	583.15	583.76	585.59
Extraversion	Self-mother	1100.33	977.25	980.30	981.80
	Self-sibling	1100.91	976.68	977.60	979.45
	Self-friend	647.08	555.77	555.00	549.74
Conscientiousness	Self-mother	1100.33	1095.83	1099.82	1101.23
	Self-sibling	1100.91	1096.26	1098.80	1100.37
	Self-friend	647.08	641.37	642.06	643.20
Agreeableness	Self-mother	1100.33	1062.23	1060.63	1062.39
	Self-sibling	1100.91	1062.90	1057.89	1059.28
	Self-friend	647.08	624.73	627.85	619.38
Openness	Self-mother	1100.33	1095.07	1091.22	1085.86
	Self-sibling	1100.91	1095.54	1095.40	1096.59
	Self-friend	647.08	641.19	644.37	645.17

Note. For each trait and each dyad, four candidate models were compared (smaller AIC values indicate better models). The first model only includes the covariates; the second model adds the self-report terms; the third model further adds the other-report terms; and finally, the fourth model further adds the interaction term. Best models (models with the lowest AIC values) **in bold**.

Table S4 Self- and Other-Rated Personality and (Self-Rated) Internalizing Problems (Controlling for Age and Gender)

Trait	Self-other agreement	Best model (R^2)	Self-rated personality	Self-rated personality ²	Other-rated personality	Other-rated personality ²	Self-rated personality *	Other-rated personality *
Emotional stability	Self-mother	Covariates + self-ratings (35.01%)	-0.26, $p < .001$ [-0.31, -0.21]	-0.02, $p = .320$ [-0.05, 0.02]	-	-	-	-
	Self-sibling							
	Self-friend							
Extraversion	Self-mother	Covariates + self-ratings (31.68%)	-0.29, $p < .001$ [-0.35, -0.23]	0.02, $p = .209$ [-0.01, 0.05]	-	-	-	-
	Self-sibling							
	Self-friend	Covariates + full RSA (39.01%)	-0.35, $p < .001$ [-0.42, -0.27]	0.02, $p = .264$ [-0.02, 0.06]	-0.09, $p = .035$ [-0.18, -0.01]	-0.01, $p = .520$ [-0.05, 0.03]	0.07, $p = .009$ [0.02, 0.11]	
Conscientiousness	Self-mother	Covariates + self-ratings (25.07%)	$a1 = -0.44, p < .001$ [-0.55, -0.33]	$a2 = 0.07, p = .007$ [0.02, 0.13]	$a3 = -0.25, p < .001$ [-0.37, -0.13]	$a4 = -0.06, p = .198$ [-0.14, 0.03]	$a5 = 0.03, p = .214$ [-0.02, 0.09]	
	Self-sibling		-0.03, $p = .179$ [-0.08, 0.01]	-0.03, $p = .041$ [-0.06, -0.00]	-	-	-	
	Self-friend							
Agreeableness	Self-mother	Covariates + self- and other-ratings (28.27%)	-0.12, $p = .186$ [-0.29, 0.06]	-0.04, $p = .199$ [-0.10, 0.02]	-0.09, $p = .440$ [-0.32, 0.14]	-0.00, $p = .969$ [-0.07, 0.07]	-	-
	Self-sibling	Covariates + self- and other-ratings (28.40%)	-0.10, $p = .254$ [-0.28, 0.07]	-0.05, $p = .100$ [-0.11, 0.01]	0.03, $p = .485$ [-0.05, 0.11]	-0.04, $p = .014$ [-0.08, -0.01]	-	-
	Self-friend	Covariates + full RSA (42.24%)	0.34, $p = .019$ [0.06, 0.62]	-0.07, $p = .040$ [-0.14, -0.00]	0.24, $p = .093$ [-0.04, 0.52]	0.01, $p = .896$ [-0.07, 0.08]	-0.20, $p = .001$ [-0.31, -0.08]	$a5 = -0.08, p = .154$ [-0.18, 0.03]
Openness	Self-mother	Covariates + full RSA (27.18%)	-0.06, $p = .260$ [-0.16, 0.04]	-0.04, $p = .110$ [-0.09, 0.01]	-0.11, $p = .003$ [-0.18, -0.04]	-0.02, $p = .255$ [-0.06, 0.02]	0.08, $p = .007$ [0.02, 0.14]	
	Self-sibling	Covariates + self- and other-ratings (26.97%)	$a1 = -0.17, p = .006$ [-0.29, -0.05]	$a2 = 0.02, p = .534$ [-0.04, 0.08]	$a3 = 0.05, p = .404$ [-0.07, 0.18]	$a4 = -0.14, p = .008$ [-0.24, -0.04]	$a5 = -0.02, p = .547$ [-0.08, 0.04]	
	Self-friend	Covariates + self-ratings (31.37%)	-0.02, $p = .787$ [-0.13, 0.10]	-0.05, $p = .062$ [-0.11, 0.00]	-	-	-	-

Note. For each trait and each dyad, four candidate models were compared (smaller AIC values indicate better models). The first model only includes the covariates; the second model adds the self-report terms; the third model further adds the other-report terms; and finally, the fourth model further adds the interaction term. R^2 refers to the variance explained of the model. The table represents the estimates and 95% confidence intervals of unstandardized regression coefficients, with significant effects ($p < .005$, two-tailed) in bold.



Chapter 6

General Discussion

As a multifaceted construct, personality is like a mountain. It may take on different shapes when looking from different perspectives – far or near, high or low, outside or inside. Its view may be colored when looking through different lenses. The current personality literature is primarily built on the “insider’s views” (i.e., self-reports of personality), presumably because of the practical efficiency of this method and the reasonable assumptions that the self maintains the richest information about his/her personality and is motivated to provide thoughtful judgments. However, the (implicit) assumption in the literature that changes in self-reported personality reflect “true” trait changes disregards several critical limitations of the self-report method, such as blind spots and self-representation motives (e.g., Paulhus & Vazire, 2007; Vazire, 2010; Vazire & Carlson, 2011). The overarching aim of this dissertation was to investigate the multifaceted nature of personality in a developmental framework. By complementing self-reports with personality judgments from multiple knowledgeable informants, this dissertation takes us one step closer to the core of personality and its development.

Specifically, this dissertation longitudinally examined three research questions regarding the enduringness of personality - temporal consistency and interjudge consistency - from late childhood to young adulthood. The empirical chapters of this dissertation were mainly guided by models derived from adult literature with predominantly cross-sectional designs, namely the Self-Other Knowledge Asymmetry Model (the SOKA model; Beer & Vazire, 2017; Vazire, 2010) and self-verification theory (Swann, 2011; Swann & Buhrmester, 2012). In this final chapter, the findings are first summarized and then discussed for each of the three main research questions. This chapter concludes with a discussion on strengths and limitations of the present dissertation and directions for future research.

Temporal Consistency of Personality from Multiple Perspectives

The first main question of this dissertation concerns the temporal consistency of personality as judged from multiple perspectives. Considering the limitation regarding the accuracy of self-reports caused by both informational and motivational factors (Paulhus & Vazire, 2007), this dissertation also included personality reports by informants who arguably know the targets the best (i.e., family members and best friends; Connelly & Ones, 2010).

The aggregation principle proposes that aggregating good information, in general, leads to greater accuracy (Hofstee, 1994). Guided by this principle, this dissertation investigates the level of interjudge consistency regarding youth

personality development, aiming to contribute a piece of information regarding the *uncertainty* we have when claiming “true” personality changes from late childhood to young adulthood. The simple principle is that in general, the fewer knowledgeable perspectives verify certain patterns of personality change (during certain life phases or after certain life events), the greater uncertainty we have to interpret these changes as “true” trait changes (instead of merely changes in self-perceptions or reputations).

For instance, if students truly become more open to experience and conscientious after an international student exchange year, these changes should reflect in personality reports by multiple perspectives (e.g., self-, peer-, and parent-reports). In contrast, if these positive personality changes only emerged in self-reports but not verified by other perspectives, then the alternative explanation that the international exchange only changes self-perceptions but not “true” Big Five traits became an especially important empirical question. Research has shown that such life events increase self-esteem (Hutteman, Nestler, Wagner, Egloff, & Back, 2014), which may, in turn, changes self-reported personality. Similarly, research has also shown increases in self-esteem from adolescence to middle adulthood (Orth, Robins, & Widaman, 2012), the life phases when personality maturation is theorized to take place (Denissen, van Aken, et al., 2011; Roberts et al., 2008). Therefore, before researchers all dive into examining the probable causes of personality changes, multi-informant studies are valuable for more accurate interpretations of personality change/consistency. An accurate interpretations of the temporal consistency of personality lays a reliable foundation and point to promising directions for future research on the underlying mechanisms, since different forms of changes (e.g., “true” trait change vs. changes in self-perception) may be associated with different underlying mechanisms.

Chapter 2 included two longitudinal studies that investigated the temporal consistency of personality from late childhood to young adulthood, in terms of mean-level change and rank-order stability of Big Five personality traits, as perceived from multiple perspectives. **Study 1** examined the relative long-term development of personality from late childhood to young adulthood (i.e., from age 12 to 29), based on self- and parent-reports of personality. **Study 2** investigated personality development annually throughout adolescence (i.e., from age 12 to 18), based on self-, mother-, father-, and sibling-reports of personality. The following sections discuss our three main findings regarding interjudge consistency on mean-level change and rank-order stability of personality, as well as the generalizability of the SOKA model (Vazire, 2010) to describing youth personality development.

Interjudge (In-)Consistencies Regarding Personality Maturation

Results of **Chapter 2** revealed interjudge consistencies as well as discrepancies regarding mean-level change of personality from late childhood to young adulthood.

Personality maturation: reflected in both self- and other-reports

In our data, multiple perspectives verified the maturity principle (Denissen, van Aken, et al., 2011; Roberts et al., 2008). Looking at longer-term of development, our results revealed that both the self- and parent-reports showed increases in agreeableness, conscientiousness, and openness from late childhood to young adulthood. This result speaks against the alternative explanations that the observed pattern of personality maturation purely reflects youth's increasingly positive self-perceptions and/or diplomatic response style (towards greater social desirability).

Personality maturation may be attributed to both biological and environmental factors (Bleidorn, 2015). As to biological factors, researchers have argued that during adolescence and early adulthood, the connectivity between control-related prefrontal brain regions and reward-related subcortical brain regions increases, which contributes to the development of self-control (Casey & Caudle, 2013). This increase in self-control capacity may manifest in growth in both communal and agentic ("getting along" and "getting ahead"; Gebauer et al., 2015; Richards & Larson, 1989) self-regulatory traits, such as agreeableness and conscientiousness.

As to environmental factors, researchers advocate that age-graded life events may drive personality maturation, as transitioning into adult roles comes with higher expectations on individuals (Bleidorn et al., 2013; Roberts et al., 2005). For example, research has shown positive effects of establishing the first long-term romantic relationship, school graduation, transitioning to the labor force, and having children on personality maturation (Bleidorn, 2012, 2015; Bleidorn et al., 2013; Hutteman, Bleidorn, et al., 2014; Jokela et al., 2011; Neyer & Asendorpf, 2001; Specht, Egloff, & Schmukle, 2011). Further supporting this explanation, a large-scale cross-cultural study showed that personality maturation emerges earlier in cultures where people entered the labor force at younger ages (Bleidorn et al., 2013).

Interjudge discrepancies on personality maturation

In addition to these interjudge consistencies in personality maturation, different perspectives also vary in the degree to, and the traits in which, they observe maturation and the disruption of it. Looking at longer-term development, parent-reports depicted brighter developmental trajectories from late childhood

to young adulthood. Specifically, parent-reports showed steeper increases in conscientiousness and openness than self-reports. Moreover, only parents saw their children as becoming increasingly emotionally stable, whereas self-reports showed no changes.

When taking a closer look at personality development in adolescence, parents and adolescents saw maturation in different traits. Whereas adolescents perceived themselves as being increasingly agreeable, conscientious, and open to experience, parents saw adolescents mature in terms of becoming increasingly emotionally stable. Moreover, our data confirmed the disruption hypothesis in adolescence (Denissen et al., 2013; Soto & Tackett, 2015; van den Akker et al., 2014), *but only in parents' eyes*, such that youth were seen by their mothers and fathers as becoming decreasingly agreeable and open to experience.

Thus, results suggested that personality maturation and the disruption of it is, at least partly, a social construction. The fact that the disruption of personality maturation in our data only emerged in both parents' ratings but not in self- or sibling-ratings increases our *uncertainty* level when interpreting such developmental trends as "true" trait changes. We acknowledge that, with only a handful of personality judges available in our datasets, interjudge consensus does not guarantee "true" trait changes, and similarly interjudge discrepancies do not guarantee the absence of "true" trait changes. However, the fact that our studies - with only a few highly knowledgeable personality judges - already captured several interjudge discrepancies in personality ratings calls for more scientific attention on this matter. Therefore, more longitudinal studies with additional personality judges (and preferably also objective measures) as well as even larger sample sizes are needed to clarify the temporal consistency of personality and shed light on causes of these interjudge discrepancies.

Explanations for the interjudge discrepancies

Regarding reasons for these interjudge discrepancies, besides differences in *access to personality-related information* (Vazire, 2010), another possibility is that judges *interpret target's daily behaviors differently*. In our study, parents may interpret adolescents' more matured daily behaviors as indicators of increased emotional stability, whereas adolescents felt that they were just as emotionally vulnerable as they were before. Instead, adolescents may attribute their more matured daily behaviors to increased self-regulatory traits (i.e., agreeableness and conscientiousness).

In addition, changes in personality judgments may partly reflect *changes in the target-judge relationship*. Supporting this notion, a longitudinal study on

newlywed adults showed increases in self-rated conscientiousness, agreeableness, and emotional stability, whereas decreases in spouse-rated conscientiousness, agreeableness, extraversion, and openness over the course of two years. Importantly, changes in marital satisfaction correlated with changes in spouse-ratings but not self-ratings (Watson & Humrhouse, 2006). Therefore, the disruption in maturation reflected in both parent-ratings in our data may be partly due to separation-individualization process in the adolescent-parent relationship (Koepeke & Denissen, 2012). That is, the disruptions in personality maturation reflected in parent-ratings may be (partly) because of decreases in parents' perceived relationship satisfaction with adolescents during the separation-individualization process, which explains why self- and sibling-ratings did not show disruptions in personality maturation. Future studies could examine the co-development between personality judgment and interjudge relationships in adolescence to test this explanation.

Youth's Personality Reports Are Less Stable than Adult's

In **Chapter 2**, we also found that adolescents' self-ratings showed lower rank-order stability than parent-ratings. Adolescents' ratings of others' personality were even less stable than rating themselves. The lower stability of adolescents' personality judgments may be explained by active explorations of identity in adolescence and highly fluctuating emotional experiences (Arnett, 1999; Erikson, 1994).

These results have some implications for selecting judges of adolescent personality. On the one hand, the separation-individualization process (Koepeke & Denissen, 2012) may undermine the informativeness of parent-ratings and boost the informativeness of friend-ratings in adolescence. On the other hand, our results showed that adolescents' ratings of their own and others' personality are less stable than adults' ratings. Taken together, it may be particularly important for adolescent personality researchers to include more frequent personality measures as well as multiple personality judges (both peers and adults) to achieve the most *informative* and *stable* personality ratings with high predictive power.

Extend the SOKA Model to Youth Personality Development

Our results showed that interjudge discrepancies regarding personality consistency – mean-level change and rank-order stability – did not emerge in the highly visible and neutral traits that are regarded as the “good traits” (Connelly & Ones, 2010; Funder, 2012), but were repeatedly observed in less visible and/or more evaluative traits (i.e., conscientiousness, openness, neuroticism, and

agreeableness), which is consistent with the prediction of the SOKA model (Vazire, 2010). In a similar vein, results regarding interjudge consistency showed that self-other agreement was higher for more visible and behavioral-oriented traits (e.g., conscientiousness and extraversion) than for less visible traits (e.g., neuroticism). Self-parent agreement on neuroticism dropped to a non-significant and small level at age 17, and self-parent agreement on agreeableness dropped to a non-significant and small level at age 29.

Taken together, results of **Chapter 2** confirmed and expanded the predictions from the SOKA model (Vazire, 2010) to *youth personality development*, by showing fewer interjudge differences in the development (i.e., mean-level change and rank-order stability) of more visible traits (i.e., extraversion and conscientiousness) than the development of less visible and/or more evaluative traits (e.g., neuroticism and openness), and by showing higher levels of interjudge agreement on more visible and neutral traits.

The Unique Insights of Other-Reported Personality

According to the SOKA model (Vazire, 2010), personality traits that are low in visibility and/or high in evaluativeness should show more interjudge differences (e.g., conscientiousness, agreeableness, and openness), because of informational and motivational factors (e.g., unavailability of valid cues and self-representation motives). **Chapter 2** confirmed the generalizability of this prediction to *describe* youth personality development. However, little was known regarding the *predictive power* of each perspective, which was ***the second main question*** of this dissertation. **Chapter 3** was the first longitudinal study to test the unique insights of other-reports of adolescents' personality, using future personality and life outcomes as trait validation criterion.

The SOKA model (Vazire, 2010) proposed a self-other knowledge asymmetry, such that self-ratings should be more accurate for less visible traits (e.g., neuroticism), other-ratings should be more accurate for highly visible and evaluative traits (e.g., conscientiousness, agreeableness, and openness), and the self- and other-ratings should be equally accurate for highly visible and neutral traits (e.g., extraversion). Thus, according to the SOKA model (Vazire, 2010), other-ratings should provide incremental predictive power above and beyond adolescent self-ratings for personality traits that are high in visibility and evaluativeness (e.g., conscientiousness, agreeableness, and openness). The SOKA model has been tested in cross-sectional studies with adult samples and received partial support

(Beer & Vazire, 2017; Vazire, 2010).

However, the degree to which these predictions could generalize to the longitudinal predictive power of adolescents' personality remains unknown. In addition, we could not infer from the SOKA model whether other-ratings would also provide incremental predictive power for other traits (e.g., extraversion and neuroticism). That is, although on average self-ratings may be equally accurate or even more accurate than other-ratings for these traits (Vazire, 2010), it is still possible for other-ratings to maintain some unique insights.

Other-ratings could be especially informative in adolescence, considering the relatively low stability of adolescent personality judgments of themselves and others (**Chapter 2**). In addition, adolescent's frequent self-reflection and the heightened need for self-view clarity (Harter, 2007) may lead to more self-disclosure of thoughts and feelings to their close others, which may make their close others highly knowledgeable personality judges, even for less visible traits such as neuroticism. **Chapter 3** investigated the incremental longitudinal predictive power of other-reports of adolescents' personality (at age 12 and 17) in predicting future personality and life outcomes (e.g., internalizing and externalizing problems, educational and occupational attainments, and relationship quality at age 29).

Others Showed Unique Insights in Foreshadowing Future Personality and Life Outcomes

Results of **Chapter 3** supported the unique insights of close others regarding adolescent's personality by showing that personality reported by parents and friends contributed unique insight in foreshadowing future personality and various life outcomes, especially for the highly visible and evaluative traits (i.e., *conscientiousness, agreeableness, and openness*).

Other-rated *extraversion and neuroticism* also showed unique insights for some outcome variables. For instance, parent-rated extraversion provided incremental predictive power above and beyond adolescent self-ratings in predicting later self-rated extraversion and marriage. Parent-rated neuroticism provided incremental predictive power in predicting future lower secure attachment to romantic partners. These results strongly supported the utility of including other-reports in boosting the predictive power of personality, given that all trait validation criteria in this study were based on self-reports.

Explanations for Close Others' Unique Insights

This section outlines possible explanations for the unique insights of close others, including informational and motivational factors, judgment style, and

impact of others' perceptions, most of which were mentioned in the SOKA model (Vazire, 2010).

Informational factor

Informational factors include interjudge differences in their access to valid cues (Funder, 1995, 2012). Other-ratings may pick up trait-relevant information that is located at individuals' blind spots, and thereby contribute valid information that is unavailable to the self (Luft & Ingham, 1955). In addition, the self may be overwhelmed by the abundant self-relevant information, and show difficulties in seeing the forest for the trees (Sande, Goethals, & Radloff, 1988; Vazire & Carlson, 2011). For instance, individuals could think of several occasions when they are calm or nervous, dominant or deferential, and other-regarding or self-centered. It may be challenging for the self to mentally aggregate this rich information and form a general self-perception (Vazire & Carlson, 2011).

Motivational factor

Our results showed that other-ratings are especially informative for traits that are high in visibility and evaluativeness (i.e., conscientiousness, openness, and agreeableness), which is consistent with the SOKA model (Vazire, 2010). For instance, other-rated conscientiousness and openness consistently showed high predictive power in foreshadowing future educational attainment and work income, whereas self-ratings in many cases showed no predictive power at all. One explanation for this interjudge difference in longitudinal predictive power is, as proposed by the SOKA model (Beer & Vazire, 2017; Vazire, 2010), that these traits provide others with sufficient valid cues for accurate personality judgment (i.e., high visibility), and make self-ratings more susceptible to various *self-bias* (i.e., high evaluativeness).

On a practical note, our results showed that when the aim is to predict youth future educational and occupational attainment, other-ratings are particularly informative. Besides abovementioned results regarding highly visible and evaluative traits, additional analyses focusing on educational attainment and work income further revealed that parent-rated neuroticism showed incremental predictive power in predicting lower educational attainment and lower work income. Friend-rated extraversion and neuroticism also showed incremental predictive power in predicting (higher and lower, respectively) work income.

Judgment style

Other-ratings may contribute useful information that is available to the self but *not utilized in self-ratings*. Specifically, researchers have argued that self-ratings could be overly dependent on inner thoughts and feelings instead of *overt behaviors* (Andersen, 1984; Beer & Vazire, 2017). Consider the example of judging the extraversion level of people who have good social skills but do not enjoy the extensive social interactions. Self-ratings may be relatively more dependent on their lack of inner pleasure and joy at these work-related social activities. In comparison, other-ratings may be more dependent on their overt competent social behaviors. It is possible that other-rated extraversion can provide incremental predictive power over self-ratings in predicting work income, assuming that appearing/acting to be socially active in professional settings (i.e., having an extraverted professional reputation) was one of the driving forces of the link between extraversion and the income boost.

Moreover, consider that the targets in our sample were adolescents, another explanation for the unique insight of other-ratings is that parent-ratings of these traits might be more based on the *dominant evaluative criteria in the adult world*. For instance, parent-rated conscientiousness and openness may be more dependent on their children's behaviors in the academic domain (e.g., finish homework on time and get good grades). In comparison, self-ratings may be more dependent on their behaviors in the social domain (e.g., be responsible to their friends and try novel recreational activities). Future studies could combine quantitative and qualitative approaches to shed light on the processes of adults' and adolescents' personality judgments. For example, it would be interesting to examine age- and role-related differences in the detection and utilization of trait-relevant cues (Funder, 1995, 2012) that are in either academic or social domain.

Impact of others' perceptions

Others are important aspects of individuals' social environment (Back et al., 2011; Srivastava, 2012). Research has shown that others' perceptions of individuals' attributes could impact their subsequent development (Denissen, Schönbrodt, van Zalk, Meeus, & van Aken, 2011; Rosenthal & Jacobson, 1968). It is possible that close others' perceptions of one's personality, even when they do not reflect the target's "true" personality trait, can still impact the target's developmental outcomes (Back et al., 2011). First, other peoples' *untrue* perceptions may change target's personality over time (e.g., through social interaction/exclusion), and become the truth. For example, peers' untrue perceptions of someone's personality – based on stereotypes of the social group the target belongs to – over time may

become the his/her “true” personality (“S/he comes from that social group, so s/he should be disagreeable” → socially excluding this agreeable adolescent → this agreeable adolescent becomes indeed disagreeable over time as a result of peer exclusion).

Second, it is possible that in some cases it is one’s *reputation* that matters (for certain outcomes), regardless of whether there is any truth in it. Recall the example of people who have good social skills but do not enjoy the extensive social interactions. This type of people can leave others an extraverted professional impression (if they want to), since other-ratings are more dependent on their overt competent social behaviors. It is possible that other-rated extraversion can provide incremental predictive power over self-ratings in predicting work income, assuming that appearing/acting to be socially active in professional settings (i.e., having an extraverted professional reputation) was one of the driving forces of the link between extraversion and income.

To test this explanation, future studies (with more personality measures) could employ the Trait-Reputation-Identity Model (McAbee & Connelly, 2016) to tease apart the relationships between life outcomes and “true” personality *trait* (i.e., interjudge consensus), *reputation* (i.e., unique insights of other-perceptions), and *identity* (i.e., unique insights of self-perceptions). This approach could illuminate whether certain link between personality and life outcome is driven by the effects of *underlying traits*, and/or *the ways individuals’ personalities are construed by themselves and others*. This line of research enables more accurate interpretations of the links between personality and life outcomes, and points to promising directions for future studies on the underlying mechanisms of these links.

In summary, our results demonstrated the unique insight of other-ratings of adolescent personality, indicating the utility of including other-reports when predicting future personality and life outcomes, especially when the aim is to predict future educational and occupational attainment.

Impacts of Interjudge Consistency Regarding Adolescents’ Personality

Chapter 2 and 3 studied the temporal consistency and interjudge consistency of personality from late childhood to young adulthood, as well as the longitudinal predictive power of each perspective. **Chapter 2** showed that there are substantial individual differences in the degree of interjudge agreement – some individual’s personality was perceived more consistently than others’. Since close others are

valuable sources of information for individuals to form and maintain their self-views (Cooley, 1902; Srivastava, 2012), **the third main question** of this dissertation concerns the possible impacts of various degrees and forms of interjudge (in-) consistency regarding adolescents' personality on their adjustment over time.

Previous research suggested that interjudge agreement was related to better target adjustment (Human & Biesanz, 2011, 2013; Kwang & Swann, 2010; Swann, 2011; Swann & Buhrmester, 2012), which focuses on adult samples. The implication of self-other agreement regarding *adolescent's* personality remains an uncharted research area. This is surprising since this life stage is characterized by the rapid development of clear and coherent self-views (Erikson, 1994; Harter, 2007).

The generalizability of previous findings to adolescent samples is unclear. On the one hand, previous research is based on plausible arguments that are likely to be universal, and therefore it is reasonable to expect that the positive effects of self-other agreement also exist in adolescence. Specifically, self-verification theory (Swann, 2011; Swann & Buhrmester, 2012) advocates that individuals have a fundamental need to maintain consistency and coherence in self-views, because a clear and coherent self-view provides individuals with a base for organizing life stories, understanding the world, and making critical decisions. Based on the important role of close others on the maintenance of self-view clarity, self-verification theory proposed that individuals desire to be seen by close others in the same way as their self-views, be the self-views positive or negative (Kwang & Swann, 2010; Swann, 2011). Self-verification theory also proposes that self-other agreement has the pragmatic function of smoothing relationships. That is, self-other agreement may provide a "shared-reality" in the relationship, which gives rise to intimate communication that builds on the feeling of being understood (Kwang & Swann, 2010; Swann et al., 1994). Furthermore, one may even expect self-other agreement to be more impactful for adolescents than adults, considering adolescents' relatively limited cognitive capacity for integrating inconsistent input (Harter, 2007).

On the other hand, it is also possible that adolescents are not affected by self-other disagreement regarding their personality. Specifically, Swann and Buhrmester (2012) proposed that people strive for self-verifying feedback because the opposite would challenge their heavily invested self-views, and thereby challenge how their entire life stories are organized. Accordingly, self-verification should be most influential when people's self-views are *certain and accessible*, which may not be the case for adolescents. Since adolescents are still in the process of exploration and integration, their self-views may not be as committed as adults' (Erikson, 1994). Consequently, perhaps lack of self-other agreement is less threatening for adolescents, and could even be informative for some of them.

Chapter 4 and Chapter 5 put these two perspectives to a test. Specifically, this dissertation explored the implications of self-other agreement on adolescent's *personality profile (Chapter 4)* and *personality traits (Chapter 5)*, respectively, as research has shown that these two types of personality agreement are not interchangeable (Allik et al., 2015; Connelly & Ones, 2010; Hall et al., 2017). Results suggested that the implication of self-other personality agreement seems to depend on the type of agreement (i.e., profile agreement vs. trait agreement), and targets' gender as well as developmental stage (i.e., early vs. late adolescence).

Self-Other Agreement on Personality Profile: A Mixed Blessing

Using longitudinal data that spans 18 years, **Chapter 4** examined the associations between self-other agreement (with parents and friends) on *personality profile* in early and late adolescence and later self-esteem development, while taking the main effects of personality into account. Consistent with previous research in adulthood (Human & Biesanz, 2013; Swann, 2011; Swann & Buhrmester, 2012), our findings regarding agreement on personality profile suggested that how people are perceived by their close others (i.e., parents) interacts with their self-views in determining their adjustment. However, our results suggested that individuals' need for verification of their self-views may depend on their developmental phase and gender.

Specifically, results for girls consistently confirmed self-verification theory, while results were less consistent for boys. That is, for girls, self-parent agreement at age 12 and 17 both predicted steeper self-esteem increases. For boys, steeper self-esteem increases were not only predicted by higher self-parent agreement at age 12 but unexpectedly, also by lower self-parent agreement at age 17. In addition, self-friend agreement did not show any effects on self-esteem development.

Self-parent profile agreement in early adolescence

We found that adolescents' agreement with parents on their personality profile was beneficial for both genders in early adolescence, but by late adolescence, the beneficial effect was exclusive to girls. The beneficial effect in early adolescence might be because that during early adolescence, when the separation-individualization process has not fully kicked in (Koepke & Denissen, 2012), parents are still (among) adolescents' most trusted authorities. Feedback from parents that verifies adolescents' self-views may smooth adolescent-parent relationship and provide adolescents with a clear base to for their identity exploration (Kwang & Swann, 2010; Swann, 2011; Swann & Buhrmester, 2012), which in turn may promote adolescents' adjustment over time.

Self-parent profile agreement in late adolescence

However, by late adolescence, adolescents may have already formed clearer self-views, and parents' views become less important (Koepke & Denissen, 2012; Meeus, van de Schoot, Keijsers, Schwartz, & Branje, 2010). Then, the association between self-parent agreement and adjustment through *self-view clarity* may be much weakened, especially for boys. Research has shown that boys become decreasingly upset about their conflicting attributes across adolescence, whereas girls become increasingly so (Harter et al., 1997).

Instead, the mediating role of *gender identity* may increase in adolescence, such that girls are being socialized more towards communion while boys are socialized towards more agency (getting along vs. getting ahead; Richards & Larson, 1989). Thus, self-parent agreement in late adolescence continuing promoting girls' adjustment may be due to its function of smoothing relationship, fulfilling girls' primary need for communion. Boys may be socialized in such a way that harmonious relationship becomes less impactful for men's adjustment than women's (Cross et al., 2000), at least in terms of their relationship with parents. Thus, lower self-parent agreement might even become a way for boys to demonstrate their independence and autonomy, fulfilling boys' primary need for agency. However, this speculative explanation must be tested with future studies.

Together, these results suggest that individuals may have multiple social needs (Kwang & Swann, 2010), and their relative strength may differ between boys and girls and could change over the course of developmental stages. It is important for future studies to examine the moderators and mediators of the relationship between individuals' adjustment (e.g., well-being and independent and creative thinking) and agreement on personality profile with different close others.

Self-Other Agreement on Personality Traits

Chapter 5 investigated self-other agreement on adolescents' Big Five *personality traits*. Adolescents' agreement with parents, friends, and siblings were linked to internalizing problems using a one-year longitudinal study. Polynomial regressions and the Response Surface Analyses (Edwards, 2007; Edwards & Parry, 1993; Humberg et al., 2018; Nestler et al., 2018; Shanock et al., 2010) were conducted to take the main effects of personality into account and provide nuanced examinations of different forms of agreement and disagreement.

With a thorough examination of different personality traits and target-judge dyads with a large sample size, we barely found any associations between self-other agreement on personality traits and adolescents' internalizing behaviors. That is, across 15 models there was only one case supporting the beneficial effect of self-

other personality agreement (i.e., higher self-friend agreement on agreeableness predicted fewer internalizing problems one year later), which may be a chance finding.

Explanations for the Impacts of Profile Agreement and Trait Agreement

Researchers have argued that agreement on personality profile and personality traits capture different questions (Back & Nestler, 2016; Borkenau & Leising, 2016; Connelly & Ones, 2010). Previous research has shown that judges' profile accuracy only correlates moderately with trait accuracy in well-acquainted as well as first impression situations, indicating that the two types of agreement may involve different psychological processes (Allik et al., 2015; Hall et al., 2017). I can provide three explanations for the different implications of profile agreement vs. trait agreement on youth's adjustment.

Agreement on personality profile may be more important for self-view clarity

The “epistemic” reason for the positive developmental implications of adolescents' profile agreement is that perhaps adolescents' agreement with their parents regarding which of their personality trait is more central and which is less central (i.e., agreement on their *personality profile*; e.g., Is my “signature trait” friendly or intelligent?) may be more important for their maintenance of clear self-views. Self-view clarity, in turn, could promote their adjustment (J. D. Campbell, 1990; van Dijk et al., 2014). In comparison, adolescents' agreement with close others regarding the absolute level of their certain trait (i.e., agreement on a *personality trait*; e.g., Am I highly friendly or moderately friendly?) may not be the top issue they are trying to figure out about themselves.

Agreement on personality profile may facilitate priority setting

The “pragmatic” reason for the positive developmental implications of adolescents' profile agreement is that perhaps agreement with close others on the configuration of their personality (i.e., profile agreement) provides a common ground for *setting priority that capitalizes on the most central aspects of adolescent's personality*, such as communal vs. agentic traits (“getting along” vs. “getting ahead”; Gebauer et al., 2015; Richards & Larson, 1989). This convergence on priorities and goals between adolescents and their close others (e.g., whether to take the time helping classmates or focus on his/her own studies), in turn, may promote adjustment. Future studies could illuminate this issue by testing the possible mediators of the link between adjustment and self-other agreement on personality profile (e.g., goal convergence).

Agreement on personality profile may capture nuanced interjudge differences

Another possible explanation for the different findings regarding agreement on personality profile and personality trait is the *response style* (He et al., 2017; He & van de Vijver, 2013). Profile agreement is less affected by some of the individual differences in response styles, such as the systematic tendency to give higher or more extreme scores, as compared to trait agreement. Specifically, following the recommendation of previous researchers (e.g., Barranti, Carlson, & Côté, 2017), our operationalization of trait disagreement reflects absolute differences between self- and other-ratings, which is more affected by interjudge differences in response styles. In comparison, profile disagreement reflects interjudge disagreement regarding the *intra*judge ranking across traits, and therefore is less affected by response style. Both approaches are valuable for a comprehensive understanding of personality judgment (Back & Nestler, 2016; Borkenau & Leising, 2016).

In addition, the profile agreement captures nuanced item-level interjudge differences. However, item-level analysis was not feasible with the trait approach using Response Surface Analysis, considering the total number of the models we ran was already large. Thus, trait agreement reflects adolescent's agreement with their close others regarding a very broad personality trait (e.g., agreeableness), which may miss more nuanced interjudge differences. Future studies could zoom in onto self-other personality agreement on facet level.

Overall, these findings once again emphasize the importance of including multiple perspectives to better understand the aspects of personality that are potentially socially constructed, and the possible implications of the match between personality perceptions on individuals' adjustment. The mixed findings regarding the implications of self-other personality agreement indicate that adolescents' social needs are too complicated and nuanced to be explained by one dominant motive (Kwang & Swann, 2010). It is therefore important for future studies to, for example, consider gender differences and address the delicate interplay among multiple motives (e.g., to be seen by close others in a self-verifying vs. positive vs. self-enhancing vs. objective way) at various developmental stages to shed more light on this matter.

Strengths, Limitations, and Future Directions

The present dissertation used comprehensive longitudinal datasets and the state-of-the-art statistical techniques to shed light on some basic and important questions regarding the structure of youth personality, namely the temporal

consistency and the interjudge consistency of personality and the implications of personality and personality consistency on people's life success over time. Answers to these questions contribute to better describing, explaining, and predicting the development of individual competence across the lifespan, thereby taking us one step closer to understanding the core of personality and its development. However, several caveats of the present dissertation need consideration.

One important limitation is that the present dissertation is built on the questionnaire method exclusively. It would be crucial for future studies to include other methodologies (e.g., public records, physiological data, behavioral observations, and interviews) to advance our knowledge on the nature of personality consistency and inconsistency across time and perspectives, as well as the accuracy of each perspective using multiple trait validation criteria (Robins & John, 1997; Wrzus & Mehl, 2015).

The second limitation is that the personality judges included in the present dissertation were all the close others of the targets (i.e., parents, best friends, and siblings), who may perceive the targets more positively than some other perspectives, such as colleagues, strangers, and competitors (Connelly & Ones, 2010; Hall et al., 2017; Hirschmüller, Egloff, Nestler, & Back, 2013). Again using the metaphor of mountain to describe the multifaceted nature of personality, this dissertation addressed little of the darker side of the mountain, which may provide valuable incremental predictive power. In addition, the moderate number of personality judges available in our datasets limits the resolution we have when picturing the "core" of personality. Therefore, it would be crucial for future studies with additional personality judges, preferably also including those less susceptible to "the letter of recommendation effect" (i.e., overly positive ratings by close others; Leising, Erbs, & Fritz, 2010), to provide a more complete picture of individual's personality.

Third, since this dissertation was the first to examine self-other agreement on personality in adolescence, it did not yet include direct tests of the underlying mechanisms. For instance, this dissertation did not test important mediators and moderators of the link between self-other personality agreement and adjustment. Future studies could shed light on the underlying mechanisms by including moderators and mediators such as self-view clarity, uncertainty avoidance, close others' acceptance, and goal congruence.

Specifically, one critical open question to date is the interplay among multiple human motives regarding the self-relevant input they wish to receive from close others (Kwang & Swann, 2010; Sedikides & Strube, 1997). Robins and John (1997) proposed four metaphors for understanding individuals as self-perceivers with

different dominant motives: *the Scientist*, *the Consistency Seeker*, *the Politician*, and *the Egoist*. Their dominant motive is to achieving *accuracy*, *consistency*, *popularity*, and *self-enhancement*, respectively (Robins & John, 1997). Although these motives are all reasonable and beneficial in some ways, they may not be fulfilled simultaneously. Thus, it remains unclear how these various forms of self-relevant feedback lead to individual's short- and long-term developmental outcomes in different domains (e.g., psychological comfort, personality maturation, and creative solutions). It is also unclear if and in what ways these associations are moderated by factors such as personality, relationship quality, developmental stage, and mood. For example, research has shown that the desire for self-verification is particularly intense when the self-view is certain and accessible, and when the rejection rate by the judge is not high (e.g., in an established marriage instead of a dating relationship; Kwang & Swann, 2010; Swann, 2011). Future studies could shed more light on the interplay among multiple motives.

Fourth, this dissertation focuses on the (in-)consistency between personality perceived from the inside and the outside (i.e., self-other agreement; Vazire, 2006). However, inconsistent feedback among close others may also cause confusion. For instance, disagreement between parents and friends regarding adolescent's personality could also be detrimental to youth's formation and maintenance of clear self-views. Also, it remains unknown whether being able to find some close other to verify one's self-view would be sufficient for one's adjustment, or individuals need verifications from most close others. If the former is the case, it may be more difficult for research to capture the effect of self-other agreement, as it may be diluted across different target-judge dyads (e.g., individuals who do not receive verification from family members may select friends who can provide it). Therefore, future studies could examine the implications of interjudge (in-) consistency that goes beyond self-other agreement.

Fifth, this dissertation focuses on the effects of adolescents' agreement with close others regarding their personality profile and Big Five personality traits. However, agreement with close others on other matters may be even more important. For instance, research has shown the influences of youth's agreement with parents regarding their internalizing and externalizing problems, pubertal development, and family climate on their adjustment (De Los Reyes & Kazdin, 2005; Human et al., 2016; Laird & De Los Reyes, 2013). Also, self-other agreement on personal values is substantial and similar in size to self-other agreement on Big Five personality traits (Dobewall, Aavik, Konstabel, Schwartz, & Realo, 2014). It would be interesting for future studies to examine the potential implications of self-other agreement on other matters (e.g., values, goals, and political and

religious views) and integrate findings across domains (Back & Vazire, 2015).

Lastly, the samples of this dissertation were composed of participants from Western individualistic countries, and our findings may not generalize to other cultures. Findings from a recent cross-cultural investigation suggest that self-other agreement may partly depend on which traits and relationship dyads are more culturally salient, and differs across trait agreement and profile agreement (Fetvadjev et al., 2018). It is also possible that self-other agreement would be more essential for individual's adjustment in some cultures – perhaps in cultures with higher levels of uncertainty avoidance and/or individualism (Hofstede, 1994) – than other cultures. It may be the case that self-view clarity is more important in cultures of high uncertainty avoidance, and that a consistent self-view is more accessible for people from more individualistic cultures. It would be interesting for future studies to shed light on the implications of interjudge agreement across different cultures.

Conclusion

The present dissertation enhanced our understanding of the multifaceted nature of personality and its development from late childhood to young adulthood. Results from this longitudinal investigation showed that personality and its development are at least partly socially constructed, and the level of social consensus on personality is meaningfully related to individuals' adjustment over time. Therefore, multi-informant studies are crucial for a more accurate understanding of the temporal consistency of personality, as well as the influences of personality trait, social perceptions, and social consensus on individuals' success across the lifespan.

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Summary in Dutch

**Samenvatting in
het Nederlands**

Persoonlijkheid is een veelzijdig construct dat je zou kunnen vergelijken met een berg. Een berg kan verschillende vormen aannemen naargelang het perspectief van waaruit het wordt bekeken: van veraf of dichtbij, van boven of beneden, van buiten of van binnen. Zo kan ook persoonlijkheid er anders uitzien als het vanuit verschillende perspectieven wordt bekeken. De huidige persoonlijkheidsliteratuur richt zich voornamelijk op het perspectief van de persoon zelf omdat zelfrapportage van persoonlijkheid de meest efficiënte methode is. Verder wordt vaak gedacht dat personen zelf over de rijkste informatie over hun persoonlijkheid beschikken en dat zij gemotiveerd zijn om weloverwogen uitspraken over de eigen persoonlijkheid te doen. De (impliciete) assumptie in de literatuur is dat veranderingen in zelf gerapporteerde persoonlijkheid “ware” persoonlijkheidsveranderingen reflecteren. Hierbij worden dan echter belangrijke tekortkomingen van de zelfrapportage methode genegeerd, zoals blinde vlekken en de neiging jezelf beter voor te doen dan je bent (Paulhus & Vazire, 2007; Vazire, 2010; Vazire & Carlson, 2011). Het overkoepelende doel van deze dissertatie was om de veelzijdige aard van persoonlijkheid vanuit een ontwikkelingspsychologisch perspectief te onderzoeken. Door zelfrapportages aan te vullen met oordelen over de persoonlijkheid van verschillende goed geïnformeerde anderen, zoals ouders en vrienden, brengt deze dissertatie ons een stap dichterbij de kern van persoonlijkheid en haar ontwikkeling.

De empirische hoofdstukken van deze dissertatie zijn gebaseerd op theoretische modellen afkomstig uit de literatuur naar persoonlijkheid van volwassenen, namelijk het *Self-Other Knowledge Assymetry Model (the SOKA model)*; Beer & Vazire, 2017; Vazire, 2010) en de *Self-verification Theory* (Swann, 2011; Swann & Buhrmester, 2012). Onderzocht werd of deze modellen ons ook kunnen helpen bij het begrijpen van de persoonlijkheidsontwikkeling van adolescenten. In **Hoofdstuk 2** werd de temporele consistentie van persoonlijkheid onderzocht, waarbij persoonlijkheid vanuit meerdere perspectieven (zelf-, ouder-, en broer- of zus-rapportage) werd bekeken van de late kindertijd tot in de jonge volwassenheid. In **hoofdstuk 3** werd de bruikbaarheid onderzocht van ieder perspectief (zelf-, ouder- en vriendrapportage) in het voorspellen van persoonlijkheid en levenskwaliteit. In **hoofdstuk 4 en 5** werd onderzocht of de mate waarin beoordelaars het eens waren over de persoonlijkheid van adolescenten gerelateerd was aan ontwikkelingsuitkomsten. Hierbij werden zowel de profielbenadering (**Hoofdstuk 4**) als de trek-benadering (**Hoofdstuk 5**) gebruikt. Voor deze dissertatie is gebruik gemaakt van longitudinale data van de *Munich Longitudinal Study* over een tijdspanne van 29 jaar (LOGIC; $N = 230$ bij Wave 1; Weinert & Schneider, 1999) en longitudinale data van het Nederlandse Longitudinale

Familie en Persoonlijkheid Onderzoek Project waarin alle gezinsleden over elkaar rapporteerden (G&P; $N = 288$ families bij Wave 1; Haselager & van Aken, 1999).

Temporele consistentie van persoonlijkheid vanuit meerdere perspectieven

Persoonlijkheid kan volgens het Big Five persoonlijkheidsmodel verdeeld worden in vijf dimensies: extraversie, aangenaamheid, nauwkeurigheid, neuroticisme/emotionele stabiliteit en openheid voor nieuwe ervaringen/intellect (McCrae & Coste, Jr., 1999; McCrae & John, 1992). De temporele consistentie van persoonlijkheid kan worden bestudeerd door te kijken naar de gemiddelde niveauperandering en naar de rangordeinstabiliteit (Denissen, van Aken, & Roberts, 2011; van Aken, Hutteman, & Denissen, 2011).

Gemiddelde niveauperandering van persoonlijkheid is de mate waarin het niveau van persoonlijkheidsstreken in een groep van individuen toeneemt of afneemt. Onderzoek heeft uitgewezen dat mensen gemiddeld nauwkeuriger, aangener en emotioneel stabiel worden over tijd. Dit is met name het geval gedurende de late adolescentie en jonge volwassenheid. Deze algemene ontwikkelingstrend wordt het *“maturity principle”* genoemd (Roberts, Walton, & Viechtbauer, 2006; Roberts, Wood, & Caspi, 2008). Recentelijk hebben onderzoekers zich afgevraagd of het *maturity principle* ook van toepassing is op de persoonlijkheidsontwikkeling van de late kindertijd tot het eind van de adolescentie. Zij vonden een tijdelijke onderbreking in persoonlijkheidsrijping: de gemiddelde niveaus van aangenaamheid, nauwkeurigheid en openheid voor ervaringen daalden tussen de late kindertijd en vroege adolescentie, gevolgd door een snelle toename van de late adolescentie tot jonge volwassenheid (de *“disruption hypothesis”*; Denissen, van Aken, Penke, & Wood, 2013; Soto & Tackett, 2015).

Rangordeinstabiliteit verwijst naar de mate waarin individuen hun relatieve positie (rang) binnen een groep individuen behouden over tijd. Een meta-analyse over rangordeinstabiliteit van de Big Five persoonlijkheidskenmerken (Roberts & DelVecchio, 2000) toonde aan dat de stabiliteit matig is gedurende de kindertijd (.31), toeneemt van .54 gedurende de jongvolwassenheid tot .64 op 30-jarige leeftijd, tot gemiddeld .74 bij ouderen, waarbij steeds naar een tijdsinterval van 6.7 jaar werd gekeken. Over de ontwikkeling worden de persoonlijkheid dus steeds stabiel.

Voorgaande studies waren voornamelijk gebaseerd op zelfrapportages van persoonlijkheid, alhoewel de validiteit van zelfrapportage voor het meten van

ware persoonlijkheidsontwikkeling nog onbekend is. Cross-sectionele studies bij volwassenen tonen slechts matige overeenstemming tussen oordelen van verschillende beoordelaars over persoonlijkheid, wat leidt tot methodologische en praktische problemen in onderzoek en in klinische diagnoses (zie Connelly & Ones, 2010; De Los Reyes & Kazdin, 2005 voor reviews). Vanwege de potentiële verschillen tussen beoordelaars, is het belangrijk om eerst helder te krijgen op welke manier persoonlijkheid daadwerkelijk verandert, voordat de factoren die aanzetten tot deze persoonlijkheidsveranderingen worden onderzocht. Een alternatieve interpretatie voor het “*maturity principle*” is bijvoorbeeld dat mensen wanneer zij ouder worden niet in toenemende mate consciëntieus, nauwkeurig, aangenaam en emotioneel stabiel worden, maar dat zij hun persoonlijkheid op een meer diplomatieke of sociaal wenselijke manier *waarnemen of rapporteren*.

(In)consistenties tussen beoordelaars van persoonlijkheidsontwikkeling

In deze dissertatie werd de temporele consistentie van persoonlijkheid van de late kindertijd tot de jonge volwassenheid onderzocht, door gebruik te maken van zelfrapportages aangevuld met rapportages door ouders en broers en zussen (**Hoofdstuk 2**). Door meerdere perspectieven mee te nemen werd inzicht verkregen over de mate van zekerheid over veranderingen in persoonlijkheid. Hoe meer perspectieven zelf gerapporteerde persoonlijkheidsveranderingen verifiëren, hoe groter de zekerheid waarmee veranderingen in zelfrapportages kunnen worden geïnterpreteerd als “werkelijke” persoonlijkheidsveranderingen. Bij verschillen tussen beoordelaars in verandering in persoonlijkheid, neemt de onzekerheid over de “werkelijke” persoonlijkheid juist toe. De volgende stap is dan om de oorzaken en gevolgen van de verschillen tussen persoonlijkheidsoordelen te achterhalen.

Hoofdstuk 2 bestaat uit twee studies. **Studie 1** onderzocht de langetermijnontwikkeling van persoonlijkheid, van 12 tot 29 jaar, gebaseerd op zelf- en ouderrapportages van persoonlijkheid. **Studie 2** onderzocht de jaarlijkse persoonlijkheidsontwikkeling tijdens de adolescentie (van 12 tot 18 jaar), gebaseerd op zelf-, moeder-, vader- en broers en zussenrapportages van persoonlijkheid.

De verschillende perspectieven in onze data bevestigden het *maturity principle* (Denissen, van Aken, et al., 2011; Roberts et al., 2008). Wanneer gekeken werd naar langetermijnontwikkeling (**studie 1**), wezen zowel zelf- als ouderrapportages op toenamen in aangenaamheid, nauwkeurigheid en openheid vanaf de late kindertijd tot de jonge volwassenheid. Deze resultaten gaan in tegen het idee dat

het geobserveerde patroon van persoonlijkheidsrijping slechts een weerspiegeling is van de toename van positieve zelfpercepties en/of diplomatische responsstijl.

Daarnaast bleek uit de resultaten dat er ook verschillen waren tussen beoordelaars. Ouders en kinderen verschilden in de trekken waarbij zij rijping (*maturation*) en *disruption* observeerden en in de mate waarin zij dat observeerden. Wanneer gekeken werd naar langetermijnontwikkeling, bleek dat ouderrapportages een positiever beeld schetsten van de ontwikkelingstrajecten van hun kinderen van de late kindertijd tot de jongvolwassenheid dan de kinderen zelf. In **studie 2**, waarin werd ingezoomd op de adolescentie, bleek dat ouders en adolescenten rijping zagen in verschillende persoonlijkheidstrekken.

Bovendien bevestigde onze data de *disruption hypothesis* in de adolescentie (Denissen et al., 2013; Soto & Tackett, 2015; van den Akker et al., 2014), echter alleen op basis van ouderrapportage. Ouders zagen een dip bij hun adolescenten in aangenaamheid en openheid voor ervaringen. De resultaten suggereren dat persoonlijkheidsrijping en de tijdelijke dip daarin in ieder geval deels een sociale constructie zijn.

Persoonlijkheidsoordelen van jongeren zijn minder stabiel dan die van volwassenen

Zelfrapportages van persoonlijkheid door adolescenten waren minder stabiel over tijd dan ouderrapportages. Oordelen van adolescenten over de persoonlijkheid van anderen waren nog minder stabiel dan hun zelfrapportages (**Hoofdstuk 2**). De lagere stabiliteit van persoonlijkheidsbeoordelingen door adolescenten kan mogelijk worden verklaard door de actieve verkenning van hun identiteit en de sterk fluctuerende emotionele ervaringen gedurende de adolescentie (Arnett, 1999; Erikson, 1994).

Deze resultaten zetten aan het denken over wie het beste oordeel kan geven over de persoonlijkheid van adolescenten. Door het losmaakproces in de adolescentie (Koepke & Denissen, 2012) en het grotere belang van leeftijdsgenoten worden de oordelen van ouders mogelijk minder informatief en de oordelen van de adolescent zelf en van zijn vrienden juist informatiever. Alleen zijn de oordelen van adolescenten, dus ook die over vrienden, minder stabiel dan oordelen van volwassenen en daarmee mogelijk minder betrouwbaar. We bevelen wetenschappers die onderzoek doen naar de persoonlijkheid van adolescenten daarom aan om frequentere persoonlijkheidsmetingen uit te voeren door meerdere beoordelaars (zowel leeftijdsgenoten als volwassenen), om de meest informatieve en stabiele

persoonlijkeitsbeoordelingen met een hoge voorspellende waarde te verkrijgen.

Uitbreiding van het SOKA model met persoonlijkheidsontwikkeling van adolescenten

Het SOKA model (Vazire, 2010) stelt dat de persoon zelf bevoorrecht is, omdat het toegang heeft tot gedachten en gevoelens die onzichtbaar zijn voor anderen en daardoor wellicht nauwkeuriger is in het beoordelen van persoonlijkheidskenmerken met lage zichtbaarheid, zoals neuroticisme. Omdat er substantiële individuele verschillen zijn in de mate en richting van *self-bias*, zouden anderen nauwkeuriger zijn in het beoordelen van persoonlijkheidskenmerken met een hoge mate van wenselijkheid (zoals nauwkeurigheid en openheid/intellect). De persoon zelf en anderen zouden even nauwkeurig zijn in het beoordelen van persoonlijkheidskenmerken die hoge zichtbaarheid hebben en neutraal zijn (zoals extraversie). Het SOKA model is getoetst met cross-sectionele studies met volwassen steekproeven en werd deels ondersteund (Beer & Vazire, 2017; Vazire, 2010).

Hoofdstuk 2 bevestigde de voorspellingen van het SOKA model (Vazire, 2010) en breidde deze uit om persoonlijkheidsontwikkeling van adolescenten te beschrijven. Dit hoofdstuk toonde namelijk aan dat er een hogere mate van consensus tussen beoordelaars was voor meer zichtbare en neutrale persoonlijkheidstrekken. Daarnaast waren er minder verschillen tussen verschillende beoordelaars wanneer het de ontwikkeling betrof van de relatief zichtbare persoonlijkheidstrekken, (zoals extraversie en nauwkeurigheid), dan wanneer het de ontwikkeling van minder zichtbare persoonlijkheidstrekken betrof (zoals neuroticisme) dan wel de ontwikkeling van persoonlijkheidstrekken met een hoge mate van wenselijkheid (zoals openheid/intellect).

De unieke inzichten over persoonlijkheid gerapporteerd door anderen

Hoofdstuk 3 was de eerste longitudinale studie die de unieke inzichten van persoonlijkheidsbeoordelingen door anderen in de adolescentie onderzocht. In dit hoofdstuk werd de voorspellende waarde onderzocht van oordelen van anderen over de persoonlijkheid van adolescenten (op 12- en 17-jarige leeftijd) in het voorspellen van de latere persoonlijkheid en ontwikkelingsuitkomsten op 29-jarige leeftijd, zoals internaliserende en externaliserende problemen, onderwijs- en beroepsgerelateerde prestaties en relatiekwaliteit. Uit de resultaten bleek dat nabije

anderen unieke inzichten hebben aangaande de persoonlijkheid van adolescenten. Persoonlijkheidsoordelen van ouders en vrienden verbeterden de voorspelling van toekomstige persoonlijkheid en verscheidene ontwikkelingsuitkomsten bovenop de voorspellende waarde van zelfrapportage. Dit gold met name voor de sterk zichtbare en wenselijke persoonlijkheidstrekken, zoals nauwkeurigheid, aangenaamheid en openheid voor nieuwe ervaringen.

Impact van overeenstemming tussen beoordelaars van de persoonlijkheid van adolescenten

Nabije anderen kunnen waardevolle informatiebronnen zijn voor individuen om hun beeld van zichzelf te vormen en behouden (Cooley, 1902; Srivastava, 2012). In deze dissertatie werd de relatie onderzocht tussen de mate van overeenstemming tussen beoordelaars over de persoonlijkheid van adolescenten en de ontwikkelingsuitkomsten van deze adolescenten (**Hoofdstuk 4 en 5**). Eerder onderzoek onder volwassenen wees op de mogelijke voordelen van overeenstemming van persoonlijkheidsoordelen tussen beoordelaars (Human & Biesanz, 2011, 2013). *Self-verification theory* (Swann, 2011; Swann & Read, 1981) stelt dat mensen door nabije anderen op dezelfde manier willen worden gezien als dat zij zichzelf zien – zelfs wanneer deze oordelen negatief zijn – omdat op die manier het beeld dat een persoon van zichzelf heeft consistent blijft en dit de onderlinge communicatie zou vergemakkelijken (Swann, 2011; Swann & Buhrmester, 2012; Swann & Read, 1981).

Eerdere studies richtten zich uitsluitend op overeenstemming in persoonlijkheidsoordelen in de volwassenheid. Het is interessant om de impact van overeenstemming in persoonlijkheidsoordelen ook in de adolescentie te onderzoeken, omdat adolescenten hun beeld van zichzelf nog aan het ontwikkelen zijn. Enerzijds zou overeenstemming tussen de eigen persoonlijkheidsoordelen en de persoonlijkheidsoordelen van anderen belangrijker kunnen zijn voor adolescenten dan voor volwassenen. Vergeleken met volwassenen beschikken adolescenten over een beperkte cognitieve capaciteit om tegengestelde informatie te integreren en reflecteren ze vaker op zichzelf (Harter, 2007). Daardoor zouden adolescenten psychologisch meer geraakt kunnen worden door feedback die inconsistent is met het beeld dat ze van zichzelf hebben (Harter, 2007). Juist omdat adolescenten nog in ontwikkeling zijn, zouden ze wellicht gevoeliger voor externe invloeden dan volwassenen kunnen zijn (Srivastava, 2012).

Anderzijds is het ook mogelijk dat overeenstemming tussen eigen

persoonlijkheidsoordelen en die van anderen juist minder impact heeft op adolescenten dan op volwassenen, omdat adolescenten nog niet hebben gecommiteerd aan één duidelijk en coherent beeld van zichzelf. Swann en Buhrmester (2012) stelden dat feedback die inconsistent is met het eigen oordeel vooral bedreigend is als individuen al sterk hebben geïnvesteerd in hun beeld van zichzelf, waardoor het ook al hun eerdere *life stories* ter discussie stelt. De behoefte aan zelfverificatie is het sterkst als een individu erg zeker is van zijn beeld van zichzelf (Swann & Buhrmester, 2012). Aangezien adolescenten vaak nog bezig zijn met de exploratie en integratie van het zelf, zijn hun oordelen over zichzelf wellicht niet zo vaststaand al die van volwassenen (Erikson, 1994). Een gebrek aan overeenstemming tussen persoonlijkheidsoordelen van zichzelf en anderen is wellicht minder bedreigend voor adolescenten en misschien zelf informatief voor sommigen van hen.

In **Hoofdstuk 4 en Hoofdstuk 5** worden deze twee perspectieven onderzocht. In **hoofdstuk 4** werd de relatie onderzocht tussen overeenstemming in persoonlijkheidsoordelen in de vroege en late adolescentie (respectievelijk op 12-jarige en 17-jarige leeftijd) en de ontwikkeling van zelfwaardering in de volwassenheid. Meisjes met een grote mate van overeenstemming in persoonlijkheidsoordelen met ouders op 12- en 17-jarige leeftijd bleken een sterkere toename in zelfwaardering te hebben van 17 tot 29 jaar. Voor jongens gold dit alleen voor de oordelen op 12-jarige leeftijd. Verrassend genoeg bleek dat jongens met *lagere* mate van overeenstemming met ouders op 17-jarige leeftijd een sterkere toename in zelfwaardering lieten zien tussen 17 en 29 jaar. De overeenstemming in persoonlijkheidsoordelen van adolescenten en hun beste vrienden bleek geen voorspellende waarde te hebben voor de ontwikkeling van zelfwaardering.

In **Hoofdstuk 5** werd met behulp van een eenjarige longitudinale studie de overeenstemming tussen adolescenten en hun ouders, vrienden, en broers en zussen op de Big Five persoonlijkheidstrekken gerelateerd aan de mate waarin adolescenten internaliserende problemen ervaren. In een grondig onderzoek naar verschillende persoonlijkheidstrekken en verschillende combinaties van beoordelaars, met een grote steekproef, werden nauwelijks relaties gevonden tussen de overeenstemming tussen beoordelaars over persoonlijkheidstrekken enerzijds en internaliserende problemen bij adolescenten anderzijds. Slechts in één geval werd een gunstig effect gevonden van overeenstemming tussen beoordelaars, wat ook door toeval zou kunnen zijn, gezien het grote aantal statistische toetsen in deze studie.

Uit deze twee studies kan worden geconcludeerd dat de impact van overeenstemming tussen persoonlijkheidsoordelen afhangt van de precieze manier waarop overeenstemming wordt gemeten (profielbenadering of trek-benadering), met wie het oordeel over de persoonlijkheid wordt vergeleken (ouders, vriend,

broer/zus), de ontwikkelingsfase van de adolescent (vroeg of late adolescentie) en de sekse van de adolescent.

Afsluiting

In deze dissertatie is gebruikt gemaakt van omvangrijke longitudinale datasets en geavanceerde statistische technieken om licht te werpen op enkele basale en belangrijke vragen over de structuur van persoonlijkheid van adolescenten, met name de consistentie van persoonlijkheidsoordelen over tijd en tussen verschillende beoordelaars en de impact van persoonlijkheid en persoonlijkheidsconsistentie op ontwikkelingsuitkomsten van adolescenten. Persoonlijkheid en haar ontwikkeling blijken deels sociale constructies te zijn en de mate van overeenstemming over persoonlijkheid is gerelateerd aan ontwikkelingsuitkomsten van adolescenten. Kluckhohn en Murray (1953) schreven: *“Every person is like all other persons, like some other persons, and like no other person.”* Wellicht geldt hetzelfde voor persoonsperceptie – wellicht is ieder perspectief zoals alle andere perspectieven, zoals sommige andere perspectieven en zoals geen enkel ander perspectief. Het meenemen van verscheidene perspectieven op persoonlijkheid zou ons een stap dichterbij kunnen brengen bij het begrijpen van de kern van persoonlijkheid en haar ontwikkeling.



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I love you all!

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我爱你们！]

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About the Author

Biography

Ziyan Luan started her PhD project during the summer of 2014 at the Department of Developmental Psychology at Utrecht University. Before that, she graduated from a three-year master program from the Department of Developmental Psychology at East China Normal University in Shanghai, China. Her dissertation focuses on personality development as judged from multiple perspectives as well as the predictive power of personality on life success. This dissertation was funded by the Jacobs Foundation and the International Society for the Study of Behavioural Development (JF-ISSBD) mentored fellowship program for early career scholars.

During her PhD project, Ziyan visited the Department of Psychology at the University of California, Davis, USA (January to June, 2017). Ziyan presented her work at several international conferences and workshops, such as the LIFE Academy of the International Max Planck Research School (Germany, 2015), meetings of the Association for Research in Personality (ARP; USA, 2015; 2017), and the International Society for the Study of Behavioral Development (ISSBD meetings: China, 2014; Lithuania, 2016; ISSBD regional workshops: Switzerland, 2015; Italy, 2018).

Ziyan has received several awards and travel grants, such as an EAPP scholarship (by European Association for Personality Psychology), an ICPS travel grant (by International Conference of Psychological Science), a CSC excellent overseas PhD candidate award (by China Scholarship Council), and ISSBD travel grants. One of her publications has been selected as a SAGE Insight post.

Scientific Publications

* Manuscript included in this dissertation

† Equal contribution

- ***Luan, Z.**, Hutteman, R., Denissen, J.J.A., Asendorpf, J.B. & van Aken, M.A.G. (2017). Do you see my growth? Two longitudinal studies on personality development from childhood to young adulthood from multiple perspectives. *Journal of Research in Personality*, 67, 44-60. doi: 10.1016/j.jrp.2016.03.004
- ***Luan, Z.**, Poorthuis, A.M.G., Hutteman, R., Asendorpf, J.B., Denissen, J.J.A. & van Aken, M.A.G. (2018). See me through my eyes: Adolescent-parent agreement in personality predicts later self-esteem development. *International Journal of Behavioural Development*, 42, 17-25. doi: 10.1177/0165025417690263
- ***Luan, Z.**, Poorthuis, A.M.G., Hutteman, R., Denissen, J.J.A., Asendorpf, J.B. & van Aken, M.A.G. (2018). Unique predictive power of other-rated personality: An 18-year longitudinal study. Revision submitted.
- ***Luan, Z.**, & Bleidorn, W. (2018). Self-other personality agreement and internalizing problems in adolescence. Manuscript in preparation for submission.
- †Hu, Y., †**Luan, Z.**, Ma, J., Dubas, J.S., Deher, J-C., & Xi, J. (2018). Indirect reciprocity in adolescence: Evidence from incentivized inequality-related economic paradigms. Manuscript in preparation for submission.
- Zhao, X., Haste, H., Selman, R., & **Luan, Z.** (2014). Compliant, cynical, and critical: Civic narratives of Chinese youth. *Youth & Society*, 1-26. doi: 10.1177/0044118X14559504
- Sang, B., Deng, X., & **Luan, Z.** (2014). Which emotional regulatory strategy makes Chinese adolescents happier? A longitudinal study. *International Journal of Psychology*, 49, 513-518. doi: 10.1002/ijop.12067
- Deng, X., Sang, B., & **Luan, Z.** (2013). Up- and down- regulation of daily emotion: An experience sampling study of Chinese adolescents' regulatory tendency and effect. *Psychological Reports*, 113, 552-565. doi:10.2466/09.10.PRO.113x22z4

