Summer 8-15-2017

The Developmental Interplay of Personality and Relationship Quality in Young Adulthood

Kelci Harris
Washington University in St. Louis

WASHINGTON UNIVESITY IN ST. LOUIS

Department of Psychological and Brain Sciences

Dissertation Examination Committee:
Joshua Jackson, Chair
Tammy English
Andrew Knight
Randy Larsen
Simine Vazire

The Developmental Interplay of Personality and Relationship Quality in Young Adulthood

by
Kelci Harris

A dissertation presented to
The Graduate School
of Washington University in
partial fulfillment of the
requirements for the degree
of Doctor of Philosophy

August 2017
St. Louis, Missouri

Table of Contents

List of Figures

List of Tables

Acknowledgments

Thank you to Josh Jackson and Simine Vazire for their patience and constant support throughout my graduate career. I've learned so much from both of you. I will always appreciate how much freedom, guidance, and encouragement you have given me to explore my interests. I couldn't have asked for two better advisors.

Thank you to my lab mates for all of the laughter and good conversation, for being sounding boards for *all* sorts of ideas and questions, and for being dedicated readers of my White Board Comics. You've made the past five years a lot more fun.

Thank you to the administrative staff at in the Department of Psychological and Brain Sciences for being endlessly helpful.

Thank you to my friends for listening to me complain and being the best distractions.

Thank you to my family for all the prayers and encouraging words.

Most of all, thank you to my parents for being the best parents for me.

Kelci Harris

Washington University in St. Louis

August 2017

ABSTRACT OF THE DISSERTATION

The Developmental Interplay of Personality and Relationship Quality in Young Adulthood

by

Kelci Harris

Doctor of Philosophy in Psychological and Brain Sciences

Washington University in St. Louis, 2017

Professor Joshua Jackson, Chair

I used the framework of the personality-relationship transaction to examine the co-development of personality and relationship quality during college in three different relationship contexts: an aggregate of friends, romantic partner dyads, and friend dyads. I treat the personality-relationship transaction as a dyadic process, rather than an ego-centric one, by including friends' and romantic partners' reports of personality and relationship quality. I created a multivariate latent growth curve model version of the Actor Partner Interdependence Model to test how personality and relationship quality co-developed. Initial correlations between personality and relationship quality reflect what is seen in previous work; self-reported extraversion, agreeableness, conscientiousness, and openness are positively correlated with friendship quality, and openness is negatively correlated with romantic relationship quality. There were very few associations between initial personality and relationship quality and changes in either domain. A notable exception was that changes in openness to experience were influenced by relationship quality in all three relationship contexts. Changes in personality and relationship quality were uncorrelated in all three relationship contexts. Overall, the results suggest that personality and relationships develop independently of each other, after taking their initial associations into account.

Section 1: Introduction

How do relationships shape people? How do people shape their relationships? As is often the case, folk wisdom offers conflicting viewpoints. The vernacular is peppered with sayings like "be careful of the company you keep" right alongside other sayings like "you can't change people." These sayings promote the seemingly incompatible ideas that people, especially close others, influence each other through their relationships, but also, that people will be who they are. In this paper I explore the interplay between personality and relationship quality in young adults to determine just how much one person can influence another.

1.1 Personality development in young adulthood

During young adulthood, people experience a great deal of changes to their circumstances. It should therefore be no surprise that personality is less stable in young adulthood compared to other life stages (Roberts, Walton, & Viechtbauer., 2006; Specht, Egloff, & Schmukle et al., 2011). There are several ways to conceptualize personality change and stability, including rank-order stability, mean-level change, and individual differences in change. No matter how change is conceptualized, there is evidence that it is occurring in young adulthood.

Rank-order stability examines personality change and stability in the context of a group. It measures the changes in how people's traits rank relative to other group members (Donnellan, Conger, & Burzette, 2007; Lüdtke, Roberts, Trautwein, & Naggy, 2011; Roberts, Caspi, & Moffit, 2001; Specht et al., 2011). Does the quietest person in the room one year remain the quietest person in the same room two years later? If the quite people become loud, and the loud people become quite, then there is low rank-order stability; if the quiet people remain quiet, and the loud people remain loud, there is high rank-order stability. Donnellan and colleagues (2007)

found that the average test-retest correlation for the MPQ across a 10-year period from late adolescence to young adulthood was .47. Other studies have found similarly modest correlations for rank-order stability in young adulthood (Roberts et al., 2001; Robins, Fraley, Roberts, & Trzesniewski, 2001; Stein, Newcomb, & Bentler, 1986). These are medium-sized correlations, but they are much lower than what is seen in middle-age and older adulthood (Specht et al., 2011). In general, there is still a modest amount of shuffling in rank-order that occurs during young adulthood.

Another way to examine personality change is to look at mean-level change. Mean-level change shows how the group tends to change as a whole. As a group, do young adults become kinder? More responsible? There are normative mean-level changes that young adults tend to undergo. A meta-analyses conducted by Roberts and colleagues (2006) and several longitudinal studies (e.g. Durbin et al., 2016; Lüdtke et al., 2011; Specht et al., 2011; Roberts et al., 2001) have shown that young adults tend to increase in extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. The normative changes that people experience during college can be explained by the maturity principal. According to the maturity principle, personality develops in ways to make people more psychosocially mature (Donnellan et al., 2007; Roberts et al., 2001). By becoming more confident, calm, kind, and responsible, people are becoming more equipped to deal with all that comes with being an adult: from fiscal responsibilities to familial obligations.

There are normative trends for how young adults change but that does not mean that everyone adheres to them. There are individual differences in trait change, just as there are individual differences in traits (Roberts & Mrozcek, 2008). Even though, as a group, college students tend to become more extraverted, there will be some students who become more

introverted, or do not change on extraversion at all. Individual differences in trait change have been found for all of the Big Five traits in young adulthood (Donnellan et al., 2007; Durbin et al., 2016; Lüdtke et al., 2011). These individual differences have been attributed to two things: characteristics of the individual, such as sex and personality, and life experiences.

Characteristics of an individual can impact the way personality traits change. One example of this is an individual's sex. There is some evidence that for certain traits, males and females show different trajectories of trait change (Donnellan et al., 2007; Durbin et al., 2016; Lüdtke et al., 2011). For example, males and females experience decreases in neuroticism in young adulthood, but females do so at a slower rate than males (Lüdtke et al., 2011). Individual differences in personality traits are also associated with individual differences in trait change. One idea for how individual differences in traits affect trait change is based on the maturity principle. If someone is already mature at the start of young adulthood, they have less maturing to do so they should exhibit less change than someone who is less mature (Donnellan et al., 2007). For instance, the normative trend in young adulthood is to become more conscientious, but a highly conscientious college student might be expected to undergo less change in conscientiousness throughout college than a less conscientious peer because they do not need to become more conscientious. Alternatively, according to the corresponsive principle, people should change in ways to make them more like themselves (Roberts, Wood, & Caspi, 2008). According to this principle, an already highly conscientious student might be expected to become conscientious.

Life experience also contributes to individual differences in personality change. The situations people find themselves in significantly affect the trajectory of personality development. Lüdtke et al. (2011) found that individuals who went to work after graduating high

school experienced steeper increases in conscientiousness and slower increases in agreeableness than individuals who went to college. Jackson, Thoemmes, Jonkmann, Lüdtke, and Trautwein (2012) similarly found that life experiences, specifically joining the military or not, have a long-term influence the trajectory of personality change in young adults. The effect of life experiences on personality change reveals that the environments people are in are important to personality development.

1.2 Process of personality development

How does the environment get under the skin to influence personality change and stability? Barring brain injury or some other way in which the physical environment directly affects one's physiology, what is it about one's life experiences that can direct personality development? Some theories of personality development highlight the importance of the environment in personality change, and propose that changes in personality are driven in part by external factors. Social investment theory begins to offer an explanation for how the outside moves in.

According to social investment theory, personality change can be brought about by attaining and committing to adult social roles like being a worker, a spouse, a parent, and a member of the community (Lodi-Smith & Roberts, 2007). These new roles are associated with personality development because the adoption of social roles comes with new expectations, which are thought to shift people's behaviors. For example, as a member of a community, like a volunteer organization, people are expected to not only think about what they can get from the community, but also how they can contribute. As people live up to or fail to meet these expectations, they are rewarded or punished, respectively, further shaping behavior. Not everyone will shift his or her behavior, however. Those that attempt to meet the social role expectations indicate that someone is committed to and invested in the social role. Ultimately,

investment within a role can lead to a shift in one's identity; instead of just being someone who works, one identifies as a worker. Over time, the cumulative effect of the behaviors required to meet expectations can spill over into other social roles and contexts. A woman might become more organized from auditing taxes for the IRS, and over time her increased organizational skills could bleed into her life outside of work, and she may become an overall more conscientious person.

A number of studies have shown that role attainment and investment are associated with personality development. A meta-analysis by Lodi-Smith and Roberts (2007) showed that investing in family life, work, religion, and volunteering are associated with higher levels of agreeableness, conscientiousness, and emotionally stability. Another recent study (Bleidorn et al., 2013) found that in countries around the world, the trajectory of maturational personality change corresponds with the average age people take on adult roles in those countries. In countries with a younger average age for marriage and childbirth, the typical increases in openness to experience in young adulthood are mitigated. In countries where the average age for entering the work force is lower, people seem also increase in emotional stability, agreeableness, and neuroticism at a younger age. (Bleidorn et al., 2013). However, not all social roles are associated with changes. A recent study found that parenthood does not lead to significant differences in how people change in emotional stability, conscientiousness, and agreeableness; parents and non-parents change at the same rate (van Scheppingen, Jackson, Specht, Hutterman, Denissen, & Bleidorn, 2016).

The sociogenomic model expands upon social investment theory by offering further explanation for how roles and experiences are potentially important for personality development. This model is composed of four parts - biological factors, the environment, traits, and states -

that interact with each other to create personality change and stability (Roberts & Jackson, 2008). Most relevant to this paper is the idea that traits and the environment can influence each other through states. The environment in the sociogenomic model includes the social roles that were the focus of social investment theory, but it is actually much broader than that. "Environment" refers to not only to social roles, but also to anything external to the individual that can influence them, such as physical space, culture, parenting, and relationships. With its environmental component the sociogenomic model is extending social investment theory by providing a model that explains just how context can influence personality development over time. In this model, traits affect states, or how someone thinks, feels, and behaves in any given moment, and the states can influence the environment. For example, someone high in extraversion might see a group of people they don't know at a party, and go talk to them. By talking, the extravert has changed his environment from being alone to being surrounded by people. The sociogenomic model also suggests that, with time, the environment can affect traits (Roberts & Jackson, 2008) by having a steady influence on states that so that an individual can acquire the "skills" necessary for to increase or decrease in a trait. If someone who is less extraverted is in an environment where he has to regularly talk to people he doesn't know (i.e. constantly put in a sociable state), the experience of talking to strangers builds up, and this consistent state could lead to changes in trait extraversion over time.

Both social investment theory and the sociogenomic model emphasize the importance of the environment on personality development. Social investment theory focuses on the transition to adult roles, whereas the sociogenomic model applies to the environment more broadly. It is useful to think about both of these models in the context of relationships, and to consider how a relationship could be an environment for fostering personality change and stability.

1.3 Relationships and Personality Development

Relationships provide a context for personality change and stability through similar mechanisms of change as social investment theory (or through the same mechanisms if the relationship is one of the roles the theory considers important, like a spouse). The effects of relationships on changes in personality are sometimes known as socialization effects (Wrzus & Neyer, 2016). As with social investment theory, there are expectations, demands, and contingencies in relationships (Roberts et al., 2008). People in relationships have expectations and demands for how they should relate to each other, and how they should behave. There might be expectations for a friend to be available to talk and offer support. There might be demands that a romantic partner is faithful and reliable. When these expectations and demands are met, they are rewarded; when they are violated, they are punished. As people strive to meet these expectations and demands in relationships, consistent changes in behavior can lead to personality change, as outlined by the sociogenomic model. The trait-state-environment interaction plays out, wherein the relationship is the environment causing press (Back et al., 2011). In other words, people's traits might impact their relationships through their state thoughts, feelings and behaviors, and also their relationships might influence their traits by putting expectations and constraints on their states.

This pattern of trait change might hold especially true during life transitions. When undergoing a life transition, such as starting one's first job or entering new romantic relationship, relationships can be a context for personality change (Lang, Reschke, & Neyer, 2006). Transitions can propel change by forcing people into new social roles and new environments that place new constraints and expectations on their relationships. When a couple starts dating, though they might have known each other for a while, their relationship is now in a different context. As people shift into the new social role of being a romantic partner, their personalities

change. There are different social expectations that surround their relationship. Trying to meet these new expectations can stretch people to behave differently than they normally would, and over time these new behaviors may lead to personality change. Indeed, there is evidence of personality change that is catalyzed by dating. When people enter into their first adult romantic relationship, they tend to become more extraverted, emotionally stable, and conscientious (Neyer & Asendorpf, 2001; Neyer & Lehnart, 2007). This holds true even after accounting for initial differences in the personalities of people whose relationship statuses changed or who stayed single. Perhaps a newly coupled individual was quite neurotic and prone to argue, but to meet the relationship expectations of getting along well and not constantly arguing, the highly neurotic person might try to be more forgiving and not be so bothered by little things. Over time, he might actually become less irritable. These studies demonstrate how a transition from one relationship context to another, in this case from not romantically involved to being romantically involved, can influence personality change.

There are a couple of ways in which relationships, because they are environments created by two people, can influence states within the sociogenomic model. One way is with feedback, in which other people observe one's behavior and offer suggestions on how to change (Roberts et al., 2008). For example, a constantly tardy friend could be alerted to how their tardiness negatively affects the other friend. Maybe he is always late meeting for lunch, which causes the other friend to be late returning to work from his lunch break. The late friend could try harder to be on time because of this feedback. Another way relationships can create constraints is through modelling. In modelling one individual observes another and tries to emulate the other person's behavior (Roberts et al., 2008). Maybe instead of the tardy friend being told that he is always tardy, he observes that his friend is always early to wherever they are meeting. He might

appreciate and admire that trait in his friend, and strive to be timelier himself. These two cases demonstrate how each person's thoughts, feelings, and behaviors in a relationship can place constraints on the other.

Alternatively, instead of facilitating personality change, relationships could help stabilize personality (Lang et al., 2006). According to the corresponsive principle of personality development, life experience can work to make people more like themselves (Roberts et al., 2008). People might attempt to adjust to new life circumstances by shaping their relationships in ways that make themselves more comfortable. Often times, people shape their relationships in ways consistent with their current personality. In this case, relationships are used like a self-regulatory strategy, wherein people make adaptations to the relationship in ways that validate who they are, rather than pushing themselves to be different. Who people select as relationship partners, and where they spend time with other people can aid personality stability. There is some evidence that people befriend others who are similar to themselves (Selfhout et al., 2010). Perhaps there is something about a place or event that attracts similar people, who wind up befriending each other and reinforcing the traits that drew them together in the first place. As another example, an introverted person might construct a relationship that suits her introversion by inviting a friend to hang out one-on-one rather than going out to the club with a large group. By choosing to stay within her quiet and sparsely populated comfort zone, the introverted person is engaging in behaviors that reinforce her low level of extraversion. Thus, when relationships are used in a regulatory way – i.e. adapting or selecting into trait consistent situations – relationships may lead to greater stability in personality.

1.3.1 Friendship as a context for development

The majority of work on personality and relationships is focused on romantic relationships, with few studies examining other types of relationships. This is oversight is

unfortunate because friendships serve many important roles and are critical for effective functioning. Across the lifespan friends are sources of trust, acceptance, and social support (Davis & Todd, 1982; Davis & Todd, 1985; Uchino, Cacioppo, & Kiecolt-Glaser, 1996; Zimet, Dahlem, Zimet, & Farley, 1988). People with good friendships are happier and healthier (Demir & Weitekamp, 2007; Heller et al., 2004; Mendes de Leon, 2005; Sherman, Lansford, & Volling, 2006). As people get older, the number of friends they have declines as friendships take a backseat to other priorities like work or family (Wzrus, Zimmermann, Mund & Neyer, 2015). In adolescence and young adulthood, however, friendships serve as key relationships (Reitz, Zimmermann, Hutteman, Specht, & Neyer, 2014; Wagner, Lüdtke, Roberts, & Trautwein, 2014; Wzrus et al., 2015). Friends serve an important function during young adulthood, especially at college, where so much of one's time is spent with friends. Friends share classes, meals, and living spaces in college. There is also a sense that people have more freedom in friend selection in college than they did ever before. College students have more control over the environments they find themselves in than they did as children and teenagers, and thus, they have also more control over the people they encounter and befriend. Given the importance of friends in college and young adulthood, it is worth examining the role friends within the personality-relationship transaction.

Part of the rationale behind why there are more studies of romantic relationships than friendships is that people are thought to be more invested in and interdependent with romantic partners (Lin & Rusbult, 1995). Both friendships and romantic relationships have expectations for emotional closeness and reciprocity, but these expectations are greater in romantic relationships than they are in friendships (Neyer, Wrzus, Wagner, & Lang, 2011). On top of these shared expectations, romantic partners have stronger and more explicit expectations of

exclusivity and commitment (Harris & Vazire, 2016). Finally, people are more selective about romantic partners than they are about friends, presumably because of the expectations for commitment and exclusivity (Fuhrman, Flannagan, & Matamoros, 2009; Sprecher & Regan, 2002). The additional set of norms and expectations for romantic partners promotes greater investment and closeness between romantic partners than between friends. Being more invested and more interdependent in a relationship could increase the degree to which one person influences another.

However, it is possible, though, that young adults, especially college students, are no more invested and interdependent with their romantic partners than with their friends. The median age for marriage in the United States is increasing (D'Vera Cohn, Wang, & Livingston, 2011) – in 2010 the median age of marriage for men was 29 and for women was 26, a three year increase from the median ages in 1990 – and in the interim friends might be fulfilling some social and emotional needs that romantic partners fulfilled in the past. Thus, for young adults, college students in particular, the effects found in the personality-relationship transaction for friendships might be on similar to those found in romantic relationships.

1.4 Personality-Relationship Transaction

The personality-relationship transaction is a dynamic transaction between personality traits and relationship quality (Neyer & Asendorpf, 2001). By examining how people affect their relationships and how relationships, in turn, affect people, the personality-relationship transaction, like the sociogenomic model, focuses on how traits can affect a person's environment, and vice versa. The personality-relationship transaction can be broken down into four parts. First, the concurrent association between personality and relationship quality must be established in order to understand how personality and relationships are associated at any given moment in the relationship. At any point in a relationship, how is agreeableness correlated with

relationship quality? Next, the impact personality has on later relationship quality, and the impact relationship quality has on later personality must be unpacked. Does agreeableness predict relationship quality in the future? Does relationship quality predict agreeableness in the future? Finally, the association between any changes in personality and changes in relationship quality must be explored. Do people who become more agreeable also experience improvements in their relationship quality?

1.4.1 Concurrent Associations between Personality and Relationship Quality

The first step of the personality-relationship transaction is to examine the initial associations between personality and relationship quality. Every friendship is unique, but there are some consistent ways in which the Big Five personality traits are associated with friendship quality. High extraversion has been shown time and again to be associated with positive self-reported friendship satisfaction and quality (Berry, Willingham, & Thayer, 2000; Festa, McNamara Barry, Sherman, & Grover, 2012; Wilson, Harris, & Vazire, 2015). However, a couple of studies have shown that high extraversion is unrelated to friend-reported friendship quality (Berry et al., 2000; Festa et al., 2012). Similarly, agreeableness is also positively related to friendship quality (Berry et al., 2000; Demir & Weitekamp, 2006; Festa et al., 2011). Neuroticism tends to be negatively associated with friendship quality (Lang et al., 1998). Conscientiousness is associated with better friendship quality and less conflict (Berry et al., 2000; Demir & Weitekamp, 2006; Jensen-Campbell & Malcolm, 2007; Mund & Neyer, 2014). Openness has the least consistent effect on friendship quality out of the other Big Five traits, but it has been shown to be beneficial when handling conflict (Berry et al., 2000; Park & Antonioni, 2007).

In romantic relationships, self-reported extraversion is associated with better romantic relationship quality (Donnellan, Conger, & Bryant, 2004; Dyrenforth, Kashy, Donnellan, &

Lucas, 2010; Malouff, Thorsteinsson, Schutte, Bhullar, & Rooke, 2010; Solomon & Jackson, 2014). This is true for agreeableness as well (Dyrenforth et al., 2010; Karney & Bradburry, 1995; Malouff et al., 2010). High neuroticism is often associated with worse relationship satisfaction (Dyrenforth et al., 2010; Karney & Bradburry, 1995; Malouff et al., 2010). Studies that have found significant effects for conscientiousness have shown it to have a positive association with relationship quality (Dyrenforth et al., 2010; Malouff et al., 2010; Solomon & Jackson, 2014). The association between openness to experience and relationship quality is less clear cut. A meta-analysis found no association (Malouff et al., 2010), and two panel studies found effects in opposite directions (Dyrenforth et al., 2010). It is clear that personality and relationship quality are associated with each other when assessed concurrently, but how do traits and relationship quality influence each other over time?

1.4.2 Longitudinal Effects of Personality on Relationship Quality

Personality predicts later friendship quality, extending upon the cross-sectional associations between personality and friendship quality. Extraversion predicts increases in closeness and importance in friendships (Neyer & Asendorpf, 2001; Mund & Neyer, 2014). Agreeableness is associated with placing more importance on relationships in general (Mund & Neyer, 2014). Neuroticism is associated with increased insecurity in friendship (Neyer & Asendorpf, 2001; Mund & Neyer, 2014). High conscientiousness at age 12 predicted higher self-reported friendship quality in young adulthood (Lansford, Yu, Petit, Bates, & Dodge, 2014). High conscientiousness also predicts feeling less insecurity in friendships 15 years later (Mund & Neyer, 2014). While there is some evidence that personality has prospective effects on friendship quality, not every test of the personality-relationship transaction finds evidence to support this (Hill, Turiano, Mroczek, & Roberts, 2012; Sturaro, Denissen, van Aken, & Asendorpf, 2008; Neyer & Lehnart, 2007).

Lehnart and Neyer (2006) found that the duration of romantic relationships influenced how they were affected by personality. In longer term relationships neuroticism predicted a decrease in dependency. In shorter-term romantic relationships, conscientiousness predicted increased dependency on a romantic partner. While Mund and Neyer (2014) did not find any association between personality and changes in romantic relationships other studies found that neuroticism predicts declines in relationship satisfaction in romantic relationships (Donnellan et al., 2004; Solomon & Jackson, 2014). Openness to experience has also been shown to be associated with steeper declines in romantic relationship quality, and lead to divorce (Solomon & Jackson, 2014). In sum, personality seems to influence how relationships develop.

1.4.3 Longitudinal Effects of Relationship Quality on Personality

The majority of the effects in studies examining whether relationship quality affected personality change were null (Hill et al, 2012; Mund & Neyer, 2014; Neyer & Asendorpf, 2001; Neyer & Lehnart, 2007; Sturaro et al., 2008), however, there were a few findings that showed relationship quality predicted personality change. For example, Neyer and Asendorpf (2001) found that across a four-year period, relationship insecurity led to increases in neuroticism, whereas conflict with friends and romantic partners preceded decreases in neuroticism eight years later (Mund and Neyer,2014). This latter result is a bit counter intuitive, but the authors argued that by engaging in conflict with people close to them, and, most importantly, by resolving that conflict, individuals high in neuroticism are able to see that conflict does not have to be anxiety provoking, and thus they should relax. However, another study found that conflict with parents led to increases in neuroticism, and conflicts with a best friend led to decreases in extraversion and self-esteem between ages 17 and 23 (Sturaro et al., 2008), so that process may not extend to other traits or relationships. Other aspects of relationship quality beyond conflict can also influence personality development. Sturaro and colleagues (2008) also found that

support from a best friend can lead to increases in extraversion. Mund and Neyer (2014) found that closeness in a romantic relationship predicted decreases in agreeableness. In long term couples, greater dependency in a relationship led to decreases in neuroticism, and greater relationship security can predict increases in conscientiousness (Lehnart & Heyer, 2006). The pattern of results from previous research seems to suggest that ongoing relationships might change personality, but the effects are inconsistent.

1.4.4 Associations between Personality Change and Relationship Quality Change

The final association tested by the personality-relationship transaction is how personality and relationships change together. Can changes in personality be linked to changes in relationship quality? There is some evidence for correlated change, but, once again, there were more null associations in these studies than significant ones (Asendorpf & van Aken, 2003; Lehnart & Neyer, 2006; Mund & Neyer, 2014; Neyer & Lehnart, 2007; Sturaro et al., 2008). The predominately null results suggest that the associations between personality change and relationship quality change are small. When effects are found, previous research suggests that as people mature, their friendships also appear to improve. Adolescents who became more agreeable experienced increases in social support from friends (Asendorpf & van Aken, 2003) and experience less conflict with a friend (Sturaro et al., 2008). People who increase in extraversion become closer to and have more contact with friends (Mund & Neyer, 2014), and report increases in social support (Asendorpf & van Aken, 2003; Sturaro et al., 2008). Conversely, going against the grain of maturational change has a negative association with changes in friendship quality. Increases in neuroticism correlated with increases in insecurity and decreases in contact with peers (Lehnart & Neyer, 2006; Neyer & Lehnart, 2007). Increases in

neuroticism have been found to be associated with overall decreases in relationship satisfaction (Lehnart & Neyer, 2006).

1.4.5 Conceptualizing Friendship in the Personality-Relationship Transaction

With the exception of Sturaro et al. (2008), previous research on personality and friendship development has not examined friend dyads. Unlike the studies of the personality-relationship transaction in romantic relationships, which examine the personality-relationship transaction dyadically within pairs of romantic partner, the few studies that have examined the effect friends have on personality development aggregate relationship quality with all the friends in one's network into one measure of friendship quality (e.g. Neyer & Lehnart, 2001). By choosing to operationalize friendship as an aggregate instead of a dyad, researchers are conceptualizing friendship as a role rather than friendship as a relationship. Aggregation allows researchers to ask how being a good friend or generally having good friends affects a person. Dyadic analyses allow researchers to ask how a person is influenced by a particular friendship. There are at least two major methodological consequences for however friendship is operationalized.

First, no two friendships are going to be the same, because no two people are the same. A different relationship partner, even if the type of relationship is the same, changes the relationship context (Back et al., 2011; Reis, Collins, & Bersheid, 2000). Relationships do not have physical terrain like the natural environment, but they do have their own histories with emotional hills and valleys. Every relationship has its own set of norms and expectations for behavior. For example, one friend might love hugs, but another friend might hate them, and so each friendship would have different rules for physical affection. One important aspect of the relationship context is relationship quality. Is the relationship good or bad? The same behavior in a high quality relationship could have a completely different effect in a low quality

relationship. If someone wants to confront a roommate with whom they have a good relationship about leaving her dirty dishes in the sink, the outcome of that interaction will probably be more positive than if the roommate relationship is contentious. Aggregating across friends washes out these nuances of individual relationships; dyadic analyses preserves them.

Second, aggregation shifts the focus of the analyses onto one person, the target, resulting in an ego-centric approach. The personality and relationship quality effects are all centered on one person's personality and relationship experiences (Wrzus & Neyer, 2016). Relationships are a context created by both people, and with aggregation important parts of the context are being left out: the other friend's personality and point of view. Examining friendship dyadically rather than through aggregation reveals the impact that both friends have on each other. Rather than just learning how an individual's own neuroticism influences changes in their own ratings of relationship quality, dyadic data makes it possible to also learn how a friend's neuroticism influences one's ratings of relationship quality. The way friendship is conceptualized and operationalized in the personality-relationship transaction, either through aggregation or dyadically, could yield a different pattern of outcomes.

1.5 Present Study

In the current study, I examine personality and relationship development across two years in a sample of college students. College serves as an ideal experience to examine personality-relationship transactions. Going to college is a major life transition and becoming a student means gaining new experiences and responsibilities, meeting new people, and preparing for the workforce. Students must learn to manage their responsibilities and the things they want to do, without an adult looking over their shoulder to make sure they get it right. They have the opportunity to pursue existing interests in more depth and to discover things they did not know they liked. They get the chance to interact with and befriend new people, who may be just like

their old friends or something else entirely. Students have to adjust and adapt to their environment, and in doing so can experience changes to themselves and their relationships. Therefore, there should be some change in personality and relationship quality during college.

This study is unique in that it has self-reported personality and relationship quality from the target participants and their relationship partners, whereas as previous studies took an ego-centric approach and only had self-report from target participants. In this study there are self-reports of personality for both members of the romantic partner and friend dyads, as well as target-and informant-ratings of relationship quality for aggregated friendships, romantic relationships, and dyadic friendships. Having target- and informant-ratings of personality and relationship quality allows me to replicate and extend previous research on the personality-relationship transaction. For example, previous studies using the ego-centric approach could only does address the question of whether one person's self-reported extraversion influenced their own self-reported relationship quality. With informant-reports I am able to also examine whether one friend's extraversion lead both friends to experience better relationship quality down the line, or only the extraverted friend? Does one romantic partner becoming kinder lead the other to feel like their relationship has improved? These are the types of questions, heretofore unaddressed in the literature, that can be answered by having dyadic data in addition to ego-centric data.

Friendships and romantic relationships hold similar importance in young adulthood, relative to other life stages. Therefore, in this study, I examine the personality-relationship transaction in both friendship and romantic relationships. I dissect the similarities and differences in the co-development of personality and relationship quality in each type of relationship. Given the different norms and expectations for friendships and romantic relationships, I hypothesize

that the associations between personality and relationship quality found across the relationship types will not be the same.

In addition to comparing friendships with romantic relationships, I also compare the whether the way friendships are measured shows different patterns within the personality-relationship transaction. I assess friendships using both aggregation and friend dyads. The use of friend dyads is particularly novel, as aggregation has been the preferred method. Using dyads instead of aggregation shifts the focus the focus away from friendship as a role and onto a particular relationship. With a dyad, the personality-relationship transaction now deal with how personality development is associated with the development of a particular friendship rather than being a good friend in general. I hypothesize that the associations between personality and relationship quality will be more similar when comparing the two ways of measuring friendship to each other than when comparing either to romantic relationships. However, despite the similarities, I still expect there to be differences in how changes personality and friendship quality are occurring when friendship is measured using aggregation compared to when it is measured using a dyad.

To organize my examination of the associations between personality and relationship quality, I use the framework of the personality-relationship transaction. The personality-relationship transaction presents four main questions about the co-development of personality and relationship quality in friendships and romantic relationships. Question 1: How is initial personality associated with initial relationship quality? Question 2: How does initial personality predict changes in relationship quality? Question 3: How does initial relationship quality predict changes in personality? Question 4: How are changes in personality associated with changes in relationship quality?

Previous research has taken a cross-lagged approach to the personality-relationship transaction, whereas I am using multivariate growth curve models. In those models, change is operationalized as a residual score between two time-points, accounting for initial levels of the trait. Those models answer the question of whether relationships lead to increases or decreases in some personality trait from one time point to the next. In the current study, rather than predicting changes to personality between any two time points, I am predicting how the trajectory of personality change is associated with relationship quality. The growth curves smooth out the time point to time point differences by estimating each individual's best fitting trajectory of personality change across all time points. In other words, for Questions 2 and 3 rather than predicting increases or decreases in a trait, I am predicting whether initial relationship quality causes participants to deviate from normative changes in personality. Assessing change using growth curves makes it possible to test the idea of relationships regulating personality change (Lange et al., 2006). If relationships have a regulatory effect on personality development, they should stymie change, not encourage it. Thus, relationships quality should make the slope of personality closer to zero.

Based on previous research, I expect initial extraversion, agreeableness, neuroticism, and conscientiousness to be most closely associated with relationship quality (Question 1). I hypothesize that initial personality will be more closely associated with changes in relationship quality than initial relationship quality is with changes to personality. Relationship quality should be more malleable than personality, and I expect initial personality to influence relationship quality change (Question 2). While I do expect to find changes in personality, I do not expect for those changes to be influenced very strongly by initial relationship quality. Additionally, I anticipate students will use their relationships to maintain consistency in their personality rather

than spark changes (Question 3). Finally, I hypothesize that trait changes towards maturity – increasing in extraversion, agreeableness, conscientiousness, and openness, and declining in neuroticism – will be associated with improvement in friendship quality (Question 4).

Section 2: Method

2.1 Procedure

The data comes from Personality and Interpersonal Roles Study, or PAIRS. PAIRS was a two-year longitudinal study that used multiple methods, including the life narrative interviews, the electronically activated recorder (EAR), experience sampling methods, and quarterly questionnaires, to assess personality and relationship change during college. For this paper, I focus on data from the questionnaires relating to the personality and relationship quality. Participants filled out seven questionnaires. They completed the first questionnaire during the first in-lab session, and then received a new questionnaire every four months for the next two years. During the first in-lab session, participants also nominated up to 10 different types of informants, including a romantic partner, a "best friend in St. Louis", five additional friends, an ex-romantic partner, and family members. Of import to this paper are the informants designated as the participant's friends and romantic partner. In order to conduct the growth analyses, I only use data from participants who completed at least two assessments. There were no significant differences in the personality or relationship quality of participants who completed at least two assessments and those who did not.

2.2 Participants

At Time 1, there were 417 target participants. The sample was fairly representative of Washington University undergraduate students. 55% of the participants were white, 24% were Asian or Asian-American, and 10% were Black or African-American. About half of the participants were first-year students, and the average age was 19.44. 34 participants completed

all of the assessments, 324 participants completed at least two assessments. 338 friends, not including the "best friends in St. Louis", completed at least two assessments. 70 romantic partners completed one assessment, 55 romantic partners completed at least two assessments, and 8 romantic partners completed all seven assessments. 47 romantic partner dyads completed at least two assessments. 213 of the "best friends in St. Louis", referred to from here on as dyadic friends, nominated responded at Time 1. 15 dyadic friends completed all of the assessments, and 151 dyadic friends completed at least two assessments. There were 117 dyadic friend pairs that completed at least two assessments. 60 participants had romantic partners and dyadic friends respond at least one time point, and 33 participants had romantic partners and dyadic friends who completed at least two assessments.

2.3 Measures

2.3.1 Personality

Personality was assessed at all seven time points using the 44-item Big Five Inventory (BFI). The questionnaires consist of the statement stem "I am…" followed by a descriptive marker of one of the Big Five traits. Participants responded on a scale from 1 to 15, "disagree strongly" to "agree strongly", to indicate how well each characteristic applied to them. Target participants, their romantic partners, and their dyadic friends all completed the BFI. At each time point, responses were scaled into the Big Five traits. The descriptive statistics are found in Table 1. Correlations between time points are found in Tables 2, 3, and 4.

Table 1.

Descriptive statistics of personality rated by target participants, dyadic friends, and romantic partners.

		Time 1	Time 2	Time 3	Time 4	Time 5	Time 6	Time 7
Target	N	316	283	213	225	113	143	98
	Extraversion	9.03 (2.86)	8.98 (2.65)	9.03 (2.5)	8.75 (2.74)	8.79 (2.63)	9.24 (2.53)	8.63 (2.41)
	Agreeableness	10.43 (2.21)	10.35 (2.05)	10.24 (2.14)	10.27 (2.14)	10.27 (2.21)	10.37 (2.11)	10.15 (2.15)
	Neuroticism	7.61 (2.56)	7.49 (2.46)	7.43 (2.53)	7.32 (2.57)	7.43 (2.61)	7.42 (2.54)	7.47 (2.67)
	Conscientiousness	9.77 (2.37)	9.87 (2.18)	10.1 (2.18)	9.85 (2.31)	10.21 (2.2)	10.22 (2.08)	10.09 (2.36)
	Openness	10.36 (1.97)	10.46 (1.87)	10.55 (1.77)	10.51 (1.86)	10.6 (1.86)	10.71 (1.88)	10.56 (1.94)
Romantic Partner	N	64	46	18				
	Extraversion	8.82 (2.25)	8.73 (2.41)	8.52 (1.87)				
	Agreeableness	10.09 (2.08)	10.08 (1.68)	9.92 (1.88)				
	Neuroticism	6.88 (2.45)	6.99 (1.98)	7.12 (1.95)				
	Conscientiousness	9.57 (2.00)	9.65 (1.74)	10.05 (1.30)				
	Openness	10.24 (1.58)	9.88 (1.60)	9.79 (1.88)				
Dyadic Friend	N	152	72	88	71	51	45	38
	Extraversion	8.77 (2.62)	9.04 (2.23)	9.33 (2.48)	9.11 (2.46)	8.56 (2.29)	9.21 (2.44)	8.57 (1.98)
	Agreeableness	10.67 (2.02)	10.32 (1.87)	10.31 (2.08)	10.6 (1.93)	10.11 (1.8)	10.31 (1.97)	10.70 (2.00)
	Neuroticism	7.10 (2.49)	7.47 (2.20)	7.67 (2.44)	7.19 (2.34)	7.45 (2.26)	7.42 (2.44)	7.25 (2.70)
	Conscientiousness	10.07 (2.24)	10.11 (1.98)	10.06 (2.15)	10.04 (2.12)	9.86 (2.12)	9.97 (1.92)	10.48 (1.84)
	Openness	10.51 (1.94)	10.61 (1.8)	10.67 (1.85)	10.66 (1.65)	10.55 (1.85)	10.47 (1.55)	10.28 (1.90)

Table 2.

Correlations among target participant ratings of personality.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1. E. - T1																																		
2. E. - T2	**.89**																																	
3. E. - T3	**.87**	**.90**																																
4. E. - T4	**.86**	**.87**	**.91**																															
5. E. - T5	**.83**	**.84**	**.87**	**.91**																														
6. E. - T6	**.84**	**.84**	**.87**	**.90**	**.90**																													
7. E. - T7	**.81**	**.84**	**.86**	**.88**	**.87**	**.88**																												
8. A. - T1	.17	.17	.13	.11	.07	.08	.15																											
9. A. - T2	.16	.20	.17	.15	-.01	.09	.19	**.81**																										
1. A. - T3	.16	.20	.23	.18	.10	.16	.22	**.74**	**.83**																									
11. A. - T4	.18	.19	.20	.22	.10	.16	.23	**.78**	**.83**	**.82**																								
12. A. - T5	.07	.02	.08	.08	.10	.06	.16	**.75**	**.82**	**.80**	**.85**																							
13. A. - T6	.24	.17	.25	.25	.10	.25	.28	**.72**	**.79**	**.78**	**.83**	**.90**																						
14. A. - T7	.27	.26	.19	.33	.10	.18	.36	**.68**	**.75**	**.72**	**.84**	**.86**	**.79**																					
15. N. - T1	**-.28**	**-.30**	**-.29**	**-.28**	-.26	-.19	-.32	**-.35**	**-.33**	**-.27**	**-.32**	**-.37**	**-.35**	-.26																				
16. N. - T2	**-.26**	**-.32**	**-.28**	-.25	-.25	-.18	-.25	**-.31**	**-.36**	**-.38**	**-.32**	-.33	-.31	-.24	**.83**																			
17. N. - T3	**-.27**	**-.30**	**-.37**	**-.35**	-.38	-.28	**-.44**	**-.29**	**-.31**	**-.39**	**-.39**	**-.41**	**-.40**	-.27	**.77**	**.80**																		
18. N. - T4	**-.30**	**-.31**	**-.36**	**-.35**	**-.40**	-.28	-.38	**-.30**	**-.27**	**-.34**	**-.38**	**-.40**	**-.39**	-.33	**.79**	**.82**	**.86**																	
19. N. - T5	-.27	-.29	-.37	-.33	-.32	-.22	-.52	-.32	-.29	-.37	**-.38**	**-.45**	**-.45**	-.34	**.76**	**.76**	**.80**	**.86**																
20. N. - T6	-.20	-.29	**-.37**	-.30	-.33	-.30	-.38	-.29	-.29	-.32	-.30	**-.46**	**-.37**	-.21	**.74**	**.80**	**.79**	**.83**	**.90**															
21. N. - T7	-.38	**-.41**	**-.46**	**-.40**	-.39	-.40	**-.44**	-.32	-.28	-.24	-.33	-.40	-.31	**-.39**	**.76**	**.68**	**.71**	**.83**	**.88**	**.85**														
22. C. - T1	.05	.03	.05	.08	.13	.03	.15	.21	.21	.12	.11	.20	.13	.15	-.11	-.14	-.11	-.14	-.17	-.21	-.14													
23. C. - T2	.13	.16	.16	.17	.19	.18	.20	.20	**.24**	.15	.08	.19	.17	.06	-.04	-.16	-.14	-.14	-.11	-.21	-.14	**.82**												
24. C. - T3	.11	.17	.19	.18	.21	.19	.31	.16	.20	.20	.06	.13	.14	.14	-.03	-.09	-.20	-.20	-.24	-.24	-.23	**.77**	**.87**											
25. C. - T4	.18	.18	.21	.22	.37	.16	.31	.20	.16	.17	.18	.28	.14	.21	-.11	-.15	-.17	**-.27**	-.28	-.27	-.20	**.81**	**.81**	**.87**										
26. C. - T5	.24	.16	.25	.26	.30	.12	.32	.26	.20	.12	.18	.34	.29	.21	.03	-.03	-.08	-.21	-.25	-.29	-.23	**.79**	**.81**	**.87**	**.86**									
27. C. - T6	.16	.23	.29	.15	.13	.19	.19	.20	.24	.15	.16	.36	.22	.02	.00	-.13	-.19	-.19	-.20	-.27	-.30	**.74**	**.82**	**.80**	**.79**	**.85**								
28. C. - T7	.35	.36	.42	.39	.40	.21	.32	.17	.24	.21	.08	.26	.14	.18	-.19	-.19	-.34	-.35	-.21	-.33	-.31	**.77**	**.77**	**.81**	**.86**	**.88**	**.86**							
29. O. - T1	.10	.12	.08	.10	.22	.09	.10	.12	.09	.00	.06	.09	.05	.02	-.14	-.13	.00	-.10	-.16	-.06	-.06	-.05	-.01	-.05	-.02	.23	.03	-.01						
30. O. - T2	.11	.18	.13	.10	.13	.04	.07	.08	.17	.08	.10	.04	.06	.01	-.10	-.16	-.04	-.05	-.14	-.06	-.15	-.09	.02	.03	-.02	.18	.05	.07	**.76**					
31. O. - T3	.14	.19	.20	.12	.21	.21	.04	.04	.08	.12	.10	.00	.12	-.08	-.01	-.04	-.03	-.02	-.09	.02	-.05	-.01	.04	.08	.05	.10	.18	-.03	**.66**	**.78**				
32. O. - T4	.06	.09	.06	.13	.25	.15	.10	.07	.01	.01	.11	-.03	.05	.01	.01	.01	.03	-.05	-.06	.06	.00	.06	.04	.06	.11	.20	.10	.02	**.73**	**.73**	**.78**			
33. O. - T5	.17	.08	.06	.19	.25	.16	.07	.07	.07	.13	.14	.08	.09	-.03	-.10	-.16	-.11	-.17	-.13	-.06	-.17	.18	.16	.15	.18	.21	.09	.08	**.68**	**.78**	**.83**	**.89**		
34. O. - T6	.11	.10	.10	.15	.20	.17	.25	-.04	-.02	.02	.01	-.04	.04	.08	.13	.07	.07	.07	.05	.00	-.16	.05	.10	.15	.11	.08	.11	.11	**.68**	**.77**	**.75**	**.86**	**.89**	
35. O. - T7	.11	.11	.05	.14	.24	.10	.15	-.05	-.05	-.07	.02	-.08	.04	.05	-.01	.09	.08	-.04	-.08	-.02	-.09	.01	.00	.00	.06	.10	.07	.00	**.77**	**.77**	**.83**	**.90**	**.90**	**.91**

Note: Correlations of $p < .05$ are represented in bold.

Table 3.

Correlations among romantic partner ratings of personality.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Extraversion - Time 1														
2. Extraversion - Time 2	**.82**													
3. Extraversion - Time 3	**.77**	**.92**												
4. Agreeableness - Time 1	-.02	.04	.09											
5. Agreeableness - Time 2	-.06	.06	.05	**.83**										
6. Agreeableness - Time 3	.11	.15	.13	.65	**.85**									
7. Neuroticism - Time 1	-.16	.09	.24	-.13	-.04	.25								
8. Neuroticism - Time 2	-.08	.39	-.13	-.12	.17	.25	**.81**							
9. Neuroticism - Time 3	-.03	.10	.07	.11	.39	.50	.70	**.88**						
10. Conscientiousness - Time 1	.06	.20	-.13	.20	.20	.29	-.06	-.07	-.16					
11. Conscientiousness - Time 2	.31	-.06	.11	.12	-.22	-.02	-.02	-.14	-.11	**.83**				
12. Conscientiousness - Time 3	.13	.00	.03	.42	.11	-.07	-.06	-.11	-.12	**.77**	**.93**			
13. Openness - Time 1	.09	.-06	-.32	.00	.20	.18	-.16	-.17	-.30	-.15	-.09	.02		
14. Openness - Time 2	.01	.05	-.21	.20	.29	.36	.01	.01	.05	-.11	-.18	-.22	**.87**	
15. Openness - Time 3	.04	.12	.05	.07	.39	.47	.30	.03	.03	.06	-.12	-.09	**.79**	**.90**

Note: Correlations of $p < .05$ are represented in bold.

Table 4

Correlations among dyadic friend ratings of personality.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.
1. E-T1																																		
2. E-T2	**.88**																																	
3. E-T3	**.91**	**.90**																																
4. E-T4	**.84**	**.91**	**.88**																															
5. E-T5	**.82**	**.81**	**.88**	**.89**																														
6. E-T6	**.86**	**.72**	**.78**	**.78**	**.84**																													
7. E-T7	**.79**	**.83**	**.82**	**.87**	**.83**	**.76**																												
8. A-T1	**.32**	.28	.24	.02	.35	.35	.38																											
9. A-T2	.23	.30	.24	.43	.28	.37	.40	**.84**																										
10. A-T3	.15	.22	.18	.28	.25	.22	.40	**.77**	**.85**																									
11. A-T4	.04	.27	.15	.23	.21	.21	.40	**.67**	**.87**	**.86**																								
12. A-T5	.03	.17	.09	.21	.19	.08	.42	**.73**	**.82**	**.90**	**.87**																							
13. A-T6	.31	.20	.18	.24	.22	.33	.47	**.68**	**.78**	**.79**	**.64**	**.78**																						
14. A-T7	.30	.26	.30	.35	.25	.29	.51	**.73**	**.82**	**.86**	**.76**	**.86**	**.83**																					
15. C-T1	.03	.12	-.05	.03	-.02	.06	.08	.16	.08	-.07	.12	-.13	-.09	.00																				
16. C-T2	.11	.14	.15	.16	-.03	.16	-.01	.13	.20	.07	.15	.02	-.03	.10	**.79**																			
17. C-T3	.03	.22	.14	.11	.01	-.01	.19	.04	.10	.04	.20	.07	.03	.15	**.83**	**.88**																		
18. C-T4	.06	.25	.28	.09	.18	.13	.07	.24	.21	.17	.28	.08	.07	.08	**.83**	**.85**	**.90**																	
19. C-T5	.12	.21	.20	.19	.10	.13	.12	-.10	-.12	-.15	.00	-.06	-.14	.06	**.75**	**.78**	**.86**	**.86**																
20. C-T6	-.08	.03	-.11	.01	-.05	.00	-.05	-.29	-.30	-.43	-.29	-.34	-.21	-.17	**.77**	**.82**	**.84**	**.78**	**.90**															
21. C-T7	.11	.11	.23	-.06	-.07	.09	.02	.29	.00	-.09	-.01	-.16	-.10	.14	**.75**	**.74**	**.80**	**.74**	**.79**	**.77**														
22. N-T1	-.30	-.32	-.28	-.35	-.43	-.29	-.35	**-.45**	-.34	-.26	-.21	-.31	-.21	-.15	-.23	-.37	-.35	-.18	-.21	.06	-.36													
23. N-T2	-.31	-.36	-.36	-.48	-.34	-.23	-.43	-.34	-.38	-.34	-.32	-.44	-.29	-.29	-.33	**-.45**	-.45	-.29	-.24	.06	-.21	**.84**												
24. N-T3	-.21	-.41	-.25	-.26	-.40	-.24	-.20	-.26	-.31	-.23	-.22	-.37	-.14	-.11	-.27	**-.53**	**-.43**	-.39	-.45	-.22	-.50	**.80**	**.88**											
25. N-T4	-.41	**-.61**	-.36	-.41	-.40	-.38	-.26	-.13	-.42	-.14	-.27	-.26	-.15	-.11	-.28	-.36	-.39	-.36	-.51	-.14	-.51	**.80**	**.82**	**.88**										
26. N-T5	-.37	-.57	-.37	-.38	-.38	-.30	-.34	-.24	-.38	-.13	-.33	-.21	-.17	-.18	-.23	-.22	-.33	-.42	-.37	-.14	-.36	**.74**	**.77**	**.80**	**.92**									
27. N-T6	-.50	-.44	-.40	-.41	-.45	-.36	-.38	-.26	-.14	.04	-.05	-.05	-.09	-.08	-.08	-.34	-.28	-.36	-.37	-.28	-.52	**.75**	.60	**.77**	**.80**	**.75**								
28. N-T7	-.30	-.34	-.21	-.14	-.16	-.36	-.26	-.39	-.26	-.07	-.16	-.16	-.24	-.22	-.28	-.29	-.39	-.50	-.55	-.27	-.58	**.78**	**.76**	**.81**	**.82**	**.76**	**.84**							
29. O-T1	.23	.20	.08	-.01	-.12	.01	-.04	.25	.14	.05	.10	-.03	.12	.09	.05	.02	-.04	-.10	-.03	-.16	-.07	-.03	-.12	.05	-.06	-.10	-.13	-.27						
30. O-T2	.28	.22	.13	.26	.29	.20	.11	.39	.37	.39	.40	.48	.49	.31	.05	-.02	-.03	-.03	-.06	-.49	-.23	-.11	-.18	-.04	-.28	-.31	-.02	-.26	**.79**					
31. O-T3	.18	.15	.10	.20	-.01	-.01	.03	.11	.32	.25	.22	.17	.33	.40	-.02	-.01	-.02	-.15	-.13	-.36	-.22	-.04	-.28	-.03	-.13	-.18	-.03	-.19	**.81**	**.89**				
32. O-T4	.11	.21	.15	.18	.11	.02	.21	.04	.26	.18	.21	.19	.26	.32	-.07	-.07	-.15	-.08	-.11	-.37	-.34	.06	-.17	.05	-.04	-.14	.11	-.05	**.66**	**.83**	**.86**			
33. O-T5	.05	.30	.02	.12	.10	.12	.43	-.07	.20	.08	.15	.09	.23	.38	.10	.08	.12	-.06	.04	-.05	-.27	.15	-.26	-.02	.00	-.17	-.02	-.10	**.80**	**.80**	**.81**	**.87**		
34. O-T6	-.01	.11	-.07	-.01	.14	.11	.29	.16	.22	.26	.31	.24	.30	.30	.19	.01	.02	-.01	.04	-.02	-.20	.07	-.22	-.03	-.02	-.19	.01	-.19	**.61**	**.74**	**.74**	**.77**	**.84**	
35. O-T7	-.16	.08	-.12	.02	.04	-.11	.11	.35	.33	.40	.41	.47	.27	.34	.17	.04	.06	-.01	-.17	-.26	-.05	-.05	-.44	-.10	-.05	-.12	.06	-.15	**.71**	**.79**	**.89**	**.76**	**.86**	**.89**

Note: Correlations of $p < .05$ are represented in bold.

2.3.2 Relationship Quality

At each time point, target participants rated their relationship quality with their dyadic friends and their romantic partners. All informants rated their relationship quality with the participant at each time point. Target participants rated the five other friends at time points 1, 5, and 7. At time 5, target participants only used a single item to rate their friendships: How would you rate the quality of your relationship with [insert friend's name]? Relationship quality was assessed using seven questions: How close are you and [insert friend/romantic partner's name]?; How well do you know [insert friend/romantic partner's name]?; How well does [insert

friend/romantic partner's name] know you?; How important is your relationship with [insert friend/romantic partner's name]?; How would you rate the quality of your relationship with [insert friend/romantic partner's name]?; How much do you like [insert friend/romantic partner's name]?; How satisfied are you with your relationship with [insert friend/romantic partner's name]?. Participants and informants responded on a scale of 1 (e.g. "not at all") to 7 (e.g. "extremely close") to indicate their agreement with each question. The Chronbach's alpha for relationship quality ranged from .84 to .94. Descriptive data are reported in Table 5. Correlations among the ratings of relationship quality are in Tables 6, 7, and 8.

Table 5.

Descriptive statistics of relationship quality rated by target participants, friends, and romantic partners.

	Aggregated Friends				Friend Dyad				Romantic Partner Dyad			
	Target		Friends		Target		Friend		Target		Romantic Partner	
	N	M(SD)	N	M(SD)	N	M(SD)	N	M(SD)	N	M(SD)	N	M(SD)
Time 1	317	5.63 (0.63)	251	5.75 (0.78)	317	5.75 (0.85)	152	5.83 (0.86)	155	6.16 (0.76)	64	5.89 (0.78)
Time 2			159	5.71 (0.89)	280	5.57 (1.17)	72	5.82 (0.93)	68	6.23 (0.81)	46	5.74 (1.06)
Time 3			144	5.54 (0.98)	212	5.42 (1.24)	88	5.65 (1.00)	24	6.38 (0.59)	18	6.29 (0.77)
Time 4			95	5.69 (1.06)	191	5.15 (1.35)	71	5.62 (0.97)				
Time 5	109	4.95 (0.94)	81	5.45 (1.20)	112	5.25 (1.38)	51	5.55 (1.11)				
Time 6			24	5.55 (1.10)	140	5.09 (1.45)	45	5.69 (0.98)				
Time 7	76	4.59 (0.79)	77	5.66 (1.44)	80	4.67 (1.62)	38	5.77 (0.98)				

Table 6.

The correlations between aggregated target-ratings and aggregated friend-ratings of relationship quality

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Target – Time 1									
2. Target – Time 5	**.39**								
3. Target – Time 7	**.56**	**.62**							
4. Friends – Time 1	**.33**	.06	.22						
5. Friends – Time 2	**.40**	.29	.35	**.63**					
6. Friends – Time 3	.24	.27	.16	**.53**	**.70**				
7. Friends – Time 4	**.38**	**.49**	.43	**.46**	**.65**	**.70**			
8. Friends – Time 5	.13	.31	.32	**.38**	**.46**	**.59**	**.72**		
9. Friends – Time 6	.40	.76	-.85	.45	.49	.10	.49	**.88**	
10. Friends – Time 7	.25	.08	.58	**.36**	**.55**	**.61**	**.82**	**.74**	.70

Note: Correlations of $p < .05$ are represented in bold.

Table 7.

Correlations among target- and romantic partner-rated relationship quality.

	1.	2.	3.	4.	5.
1. Target Relationship Quality- Time 1					
2. Target Relationship Quality- Time 2	**.50**				
3. Target Relationship Quality- Time 3	.51	**.79**			
4. Romantic Partner Relationship Quality- Time 1	.21	**.53**	.36		
5. Romantic Partner Relationship Quality- Time 2	.32	**.59**	.36	**.69**	
6. Romantic Partner Relationship Quality- Time 3	**.79**	**.71**	.71	.50	**.79**

Note: Correlations of $p < .05$ are represented in bold.

Table 8

Correlations among target- and dyadic friend-rated relationship quality.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Target - Time 1													
2. Target - Time 2	**.55**												
3. Target - Time 3	**.48**	**.79**											
4. Target - Time 4	**.45**	**.57**	**.62**										
5. Target - Time 5	.29	**.44**	**.60**	**.65**									
6. Target - Time 6	**.36**	**.52**	**.59**	**.68**	**.81**								
7. Target - Time 7	.34	**.49**	**.55**	**.77**	**.87**	**.91**							
8. Friend - Time 1	.23	**.35**	**.38**	.31	.42	.33	.20						
9. Friend - Time 2	.17	.18	.33	.34	.18	.13	.17	**.72**					
10. Friend - Time 3	.15	.23	**.45**	.37	.38	.40	.41	**.58**	**.65**				
11. Friend - Time 4	-.09	-.01	.38	**.52**	.49	.57	.47	**.51**	.48	**.66**			
12. Friend - Time 5	.11	.04	.17	.47	.28	.59	.31	**.54**	.50	**.62**	**.85**		
13. Friend - Time 6	.17	.03	.29	.50	.56	**.73**	.53	**.47**	.38	.28	**.58**	**.71**	
14. Friend - Time 7	.23	.01	-.19	.21	.45	.45	.74	.53	.49	.56	**.76**	**.76**	.54

Note: Correlations of $p < .05$ are represented in bold.

2.4 Data Analysis

2.4.1 Model 1: Multivariate Growth Curve Model of Target Personality, Target-Rated Aggregated Friendship Quality and Friend-Rated Aggregated Friendship Quality.

To address the four questions of the personality-relationship transaction with aggregated friendships, I use a multivariate growth model that incorporates three growth processes: target-rated personality, target-rated friendship quality, and friend-rated friendship quality (Figure 1). Before fitting the multivariate growth model, I fit univariate growth models for each of the growth processes that form the multivariate model. Target-rated personality uses assessments from up to seven time points. The factor loadings for all seven time points are set to "1" to load onto the latent variable that represents the intercept of target-rated personality. The factor loadings for time points 2, 3, 4, 5, 6, and 7 are set to "1," "2," "3," "4," "5," and "6," respectively, to load onto a second variable for the slope of target rated personality. The latent variables for the intercept and the slope covaried. Some of the residuals of the indicators were allowed to covary.

Target-rated friendship quality was comprised of an aggregate of up to five friends, and growth was modeled across three assessments. Friend-rated friendship quality ratings were assessed similar to target-rated friendship quality. Up to seven friends rated their relationship quality, but these assessments were done at seven different assessments. The aggregated friend-rated friendship quality latent growth curve will utilize an average of those ratings across seven assessments. By aggregating the target-ratings of friendship quality and aggregating the friend-ratings of friendship quality, this model is testing the association between personality development and one's development as a friend, rather than the association between personality development and the development of one particular relationship.

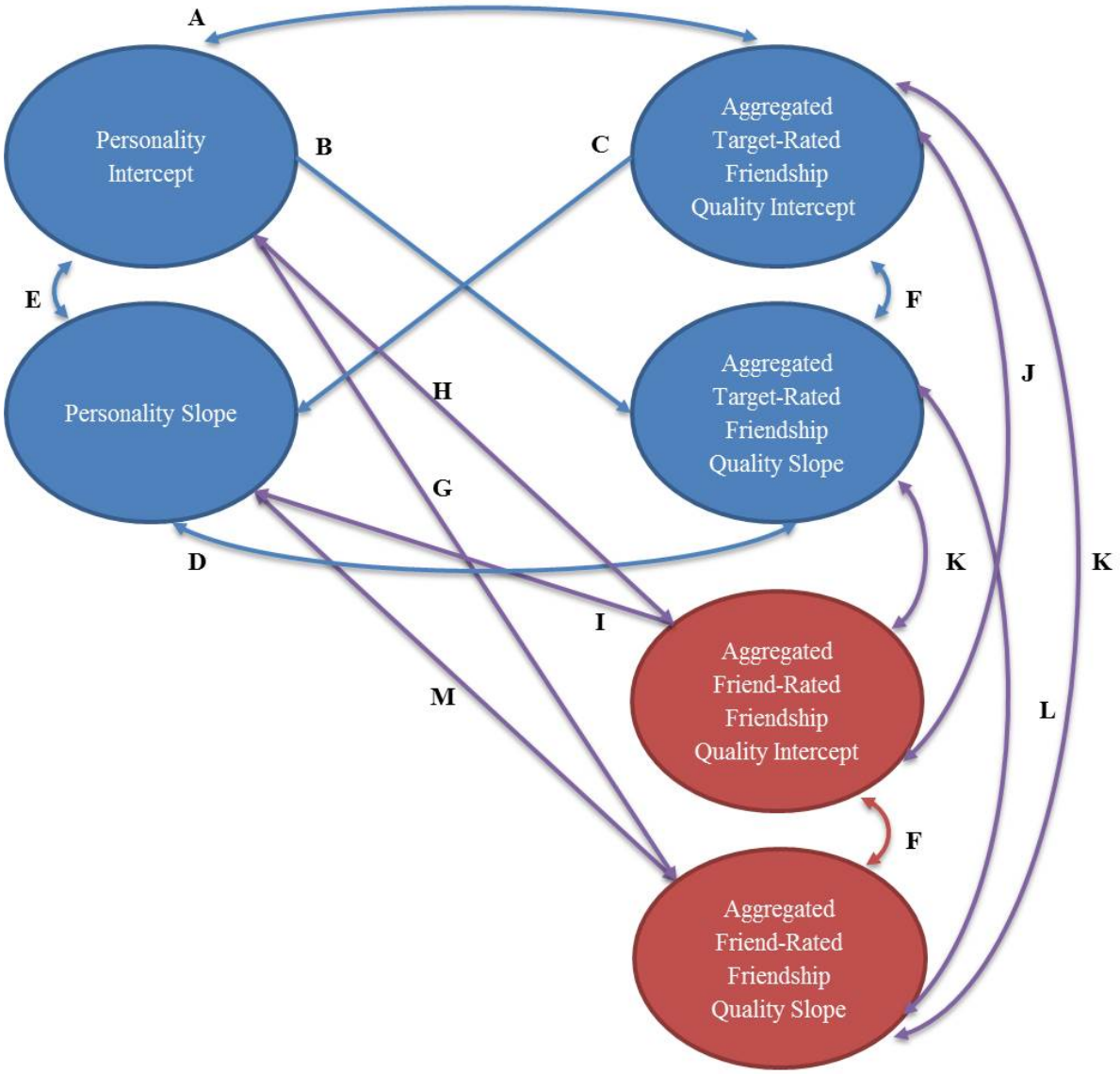

Figure 1. The multivariate growth curve model of personality and aggregated friendship quality. Lines labeled with the same letter are set to be equivalent.

A number of associations are simultaneously tested in this model. Paths A, B, C, and D test the personality-relationship transaction using the aggregated target-rated relationship quality. Path A examines the concurrent association between personality and relationship quality. Path B tests the effect of initial personality on changes in relationship quality. Path C tests the effect of initial relationship quality on changes in personality. Path D correlates the changes in personality

with the changes in relationship quality. Path E is the correlation between the personality intercept and the personality slope. Path F is the within-person correlation between the relationship quality intercept and the relationship quality slope

Paths G, H, I, and M test the personality-relationship transaction using the aggregated friend-rated relationship quality. Path H examines the concurrent association between personality and relationship quality. Path G tests the effect of initial personality on changes in relationship quality. Path I tests the effect of initial relationship quality on changes in personality. Path M correlates the changes in personality with the changes in relationship quality.

Paths J, K, and L look at the correlations between the latent growth curves for aggregated target- and aggregated friend-rated relationship quality. Path J is the correlation between the intercepts of relationship quality. Path K is the correlation between the intercepts and slopes of relationship quality. Path L is the correlation between the slopes of relationship quality.

I hypothesize that the intercept of target personality will be associated with the intercepts of both the aggregate of target-rated personality and the aggregate of friend-rated personality (Q1; Paths A and H). Specifically, I expect that, as was found in previous research, agreeableness and conscientiousness will have positive associations with relationship quality and neuroticism will have negative associations with relationship quality. I expect that extraversion, as shown in some previous research (Berry et al., 2000; Festa et al., 2012), will be positively associated with only self-reported friendship quality, not with partner-reported friendship quality. I expect that the intercept of personality will also be associated with changes in aggregated target-rated friendship and changes in aggregated friend –rated friendship quality (Q2; Paths B and G). I do not anticipate that the changes in personality will be associated with the intercepts of relationship quality (Q3; Paths C and I). I expect to find an association between the changes in

personality and changes in aggregated friendship quality for both the target and friends (Q4; Paths D and M).

2.4.2 Model 2: Dyadic Multivariate Growth Curve Model of Personality and Relationship Quality between Romantic Partners

To address my questions about how personality and relationship quality change over time within a dyad, I use a second multivariate growth model, which combines two bivariate growth curve models in a way that accounts for the statistical interdependence of dyads. While there have been models in which personality at a single time point predicts longitudinal changes in a single dyadic variable, it is quite novel to have a model examining the associations between longitudinal changes in two dyadic variables, as I am doing here (Nestler et al., 2015).

I put the model together in two steps. First, I use SEM to fit a univariate latent growth curve model for each person's self-reported personality traits, just as I did in Model 1. The univariate growth curves will provide the value for each person's traits at the start of the study as well as how each person's traits have changed throughout the study. I correlate the slope and intercept . Next, I specify the same growth curve with relationship quality to get each person's relationship quality at the start of the study and how that relationship changed over time.

Once the univariate growth curve models were fit, I combined them into a structural model that is essentially an Actor-Partner Interdependence Model (APIM, see Kenny, Kashy, & Cooke, 2006) made of bivariate growth curve models (Figure 2). To ease the interpretation of the figure, I have drawn the intrapersonal paths in blue for partner 1 and red for partner 2. The interpersonal pathways are drawn in purple.

Due to the low number of participants with romantic partners and the low response rates by romantic partners there was a great deal of missing data. Therefore, I simplified and restructured the romantic partner data. First, I recoded the romantic partner's first response as

response 1 regardless of whether that response occurred during the wave 1, or at one of the later waves (the study continued to recruit romantic partners after the initial wave). Subsequent waves were recoded as responses 2, 3, 4, 5, 6, and 7 to reflect the shift. So, if a romantic partner entered the study at wave 3, and respond at waves 4, 5, and 6, their data would be recoded so that wave 3 was now response 1, and waves 4, 5, and 6 were now responses 2, 3, and 4. Once the data was recoded, I simplified further by averaging responses 2, 3, and 4 to create time 2, and averaging responses 5, 6, and 7 to create time point 3. I applied this simplifying and restructuring procedure to romantic partner ratings of personality and target and romantic partner ratings of relationship quality. Target ratings of personality used all seven waves of data. I used full information maximum likelihood (FIML) to handle the missing data.

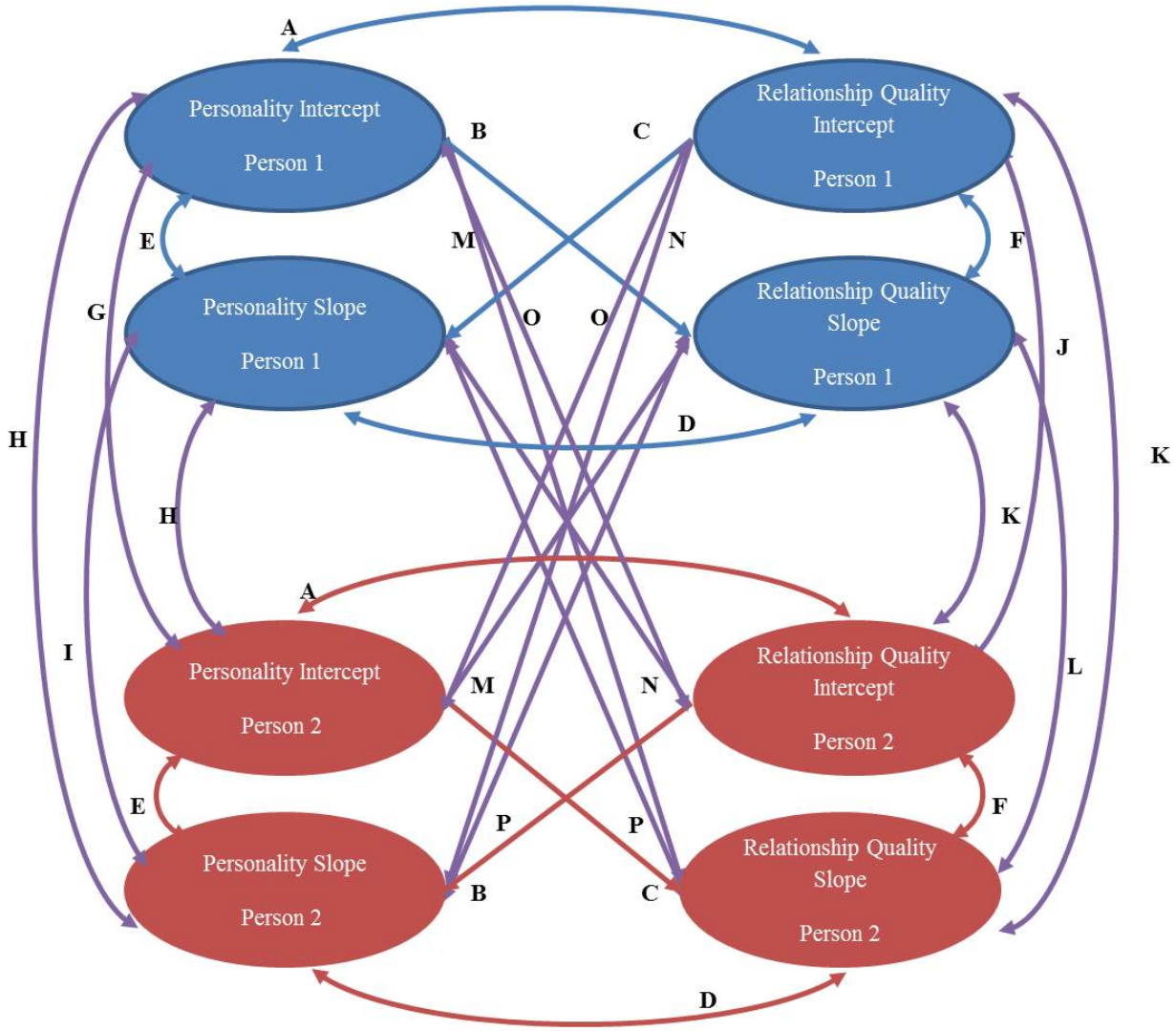

Figure 2. The multivariate growth curve model of personality and friendship quality. Lines labeled with the same letter are set to be equivalent. The blue lines represent intrapersonal associations for Friend 1. The red lines represent intrapersonal associations for Friend 2. The purple lines represent interpersonal associations between Friend 1 and Friend 2.

Paths A, B, C, and D test the personality-relationship transaction using self-reported personality and self-reported relationship quality. Path A examines the concurrent association between personality and relationship quality. Path B tests the effect of initial personality on changes in relationship quality. Path C tests the effect of initial relationship quality on changes in personality. Path D correlates the changes in personality with the changes in relationship quality.

Paths H, I, K, L, M, N, O and P test the effects romantic partners have on each other. Path H correlates the initial personality of one partner with the changes in the other's personality. Path

I correlates the changes in personality one partner experiences with the changes the other experiences. Paths K and L test the same things, but with relationship quality. Path M tests whether the initial levels of one partner's personality predict changes in the other partner's relationship quality. Path N tests whether the initial level of one partner's relationship quality predicts changes in the other's personality. Path O correlates one partner's initial levels of personality with the other's initial levels of relationship quality. Path P correlates one partner's changes in personality with the other's changes in relationship quality. In order to account for dyadic interdependence, Path G correlates the partner's intercepts for personality, and Path J correlates the partners' intercepts for relationship quality.

Another way to conceptualize the personality to relationship quality associations in the model (Paths B, C, M N, O and P) is to think of them as actor and partner effects, according to the APIM. Paths B and C, the intrapersonal effects, are actor effects because they examine how one person's personality and perception of relationship quality acts on their own changes in personality and relationship quality. Paths M, N, O and P, the interpersonal effects, are partner effects because they display how someone's personality and perception of relationship quality affects changes in their romantic partner's personality and friendship quality.

There are eight same-sex couples in the sample, so I treat the romantic partner dyads as indistinguishable dyads. I set Paths A, B, C, D, M, and N, to be equivalent to one another because they are testing the same things from the perspective of either romantic partner. Additionally, I set the intercepts of personality to be equal for each romantic partner when extraversion, agreeableness, conscientiousness, and openness were included in the model because the univariate estimates of these parameters were very similar. I also set the relationship

quality intercept to be equivalent for each romantic partner when all five traits were included in the model.

I expect to find significant correlations between the intercepts of personality and relationship quality (Q1; Paths A and O). Based on previous research, I hypothesize that extraversion, agreeableness, and conscientiousness will be positively associated with relationship quality, whereas I expect neuroticism to be negatively associated with relationship quality. I also expect the intercepts of personality to predict changes in both self- and other-reported relationship quality (Q2; Paths B and M). I do not anticipate any associations between initial relationship quality and personality change (Q3; Paths C and N). I expect changes in personality to be associated with changes in relationship quality for both members of the dyad, thus the slopes of personality and relationship quality should correlate (Q4; Paths D and P).

2.4.3 Model 3: Dyadic Multivariate Growth Curve Model of Personality and Relationship Quality between Friends

I fit the same dyadic structural model with friend dyads that was used in Model 2 for romantic partners (i.e. Figure 2). Univariate growth processes for target-reported personality, target-reported relationship quality, friend-reported personality, and friend-rated relationship quality were fit before being combined into the multivariate model. The univariate models for romantic partners differed from the univariate models for friends; there was less missing data for friends than for romantic partners so I did not need to restructure the data before completing the analyses. All seven waves of responses were used as is. I used FIML to handle the missing data. Because these are friend dyads, I am treat them as indistinguishable; there is no theoretical reason why one friend should be statistically different from the other. Therefore, I set Paths A, B, C, D, M, and N, to be equivalent to one another because they are testing the same thing, just from the perspective of either Friend 1 or Friend 2.

Similar to the romantic partner dyads, initial personality should affect both friends' initial relationship quality, therefore initial personality should affect both dyad members' initial relationship quality. I hypothesize that there will be significant correlations between the intercepts of personality and relationship quality (Q1; Paths A and O). I expect the initial associations between personality and relationship quality to be similar to what was found in previous research. Agreeableness and conscientiousness will have positive associations with relationship quality and neuroticism will have negative associations with relationship quality. I expect that extraversion, as shown in some previous research (Berry et al., 2000; Festa et al., 2012), will be positively associated with only self-reported friendship quality, not with partner-reported friendship quality. I also hypothesize that the intercepts of personality will predict changes in both self- and other-reported relationship quality (Q2; Paths B and M). I anticipate little, if any, association between initial relationship quality and personality change (Q3; Paths C and N). I expect changes in personality to be associated with changes in relationship quality for both members of the dyad, thus the slopes of personality and relationship quality should correlate (Q4; Paths D and P).

Section 3: Results

3.1 Model 1: Multivariate Growth Curve Model of Target Personality Predicting Aggregated Target-Rated Friendship Quality and Aggregated Friend-Rated Friendship Quality

The intercepts and slopes of the univariate models for target-rated personality, aggregated target-rated friendship quality, and aggregated friend-rated friendship quality are found in Tables 9 and 10.

Table 9.

Univariate growth curves for target, dyadic friend, and romantic partner personality.

		Extraversion	Agreeableness	Neuroticism	Conscientiousness	Openness to Experience
Target	χ^2	43.10	23.38	21.10	28.45	23.31
	df	21	22	21	21	21
	CFI	0.99	1.00	1.00	1.00	1.00
	RMSEA	0.06	0.01	0.01	0.03	0.02
		[0.03, 0.08]	[0.00, 0.05]	[0.00, 0.05]	[0.00, 0.06]	[0.00, 0.05]
	Intercept	9.02	10.38	7.58	9.79	10.38
		[8.73, 9.32]	[10.16, 10.61]	[7.31, 7.84]	[9.53, 10.02]	[10.18, 10.58]
	Slope	-0.02	-0.02	-0.06	0.04	0.06
		[-0.06, 0.02]	[-0.06, 0.02]	[-0.10, -0.02]	[0.01, 0.08]	[0.03, 0.09]
	Correlation	-.42*	-.28*	-.20*	-.31*	-0.09
Romantic Partner	χ^2	0.20	0.02	0.20	0.19	3.13
	df	1	1	1	1	1
	p-value	0.65	0.89	0.66	0.67	0.08
	CFI	1.00	1.00	1.00	1.00	0.98
	RMSEA	0.00	0.00	0.00	0.00	0.18
		[0.00, 0.25]	[0.00, 0.16]	[0.00, 0.25]	[0.00, 0.25]	[0.00, 0.43]
	Intercept	8.83	10.09	6.82	9.56	10.26
		[8.29, 9.38]	[9.59, 10.59]	[6.28, 7.37]	[9.08, 10.04]	[9.87, 10.65]
	Slope	-0.23	-0.03	0.06	-0.04	0.08
		[-0.45, 0.00]	[-0.29, 0.21]	[-0.21, 0.33]	[-0.27, 0.18]	[-0.29, 0.16]
	Correlation	-.18	-.43	.07	-.52*	-.27
Dyadic Friend	χ^2	31.28	26.55	26.84	28.29	32.51
	df	23	20	21	23	23
	p-value	0.12	0.15	0.18	0.21	0.09
	CFI	0.99	0.99	0.99	0.99	0.98
	RMSEA	0.05	0.04	0.04	0.04	0.05
		[0.00, 0.08]	[0.00, 0.08]	[0.00, 0.08]	[0.00, 0.08]	[0.0, 0.08]
	Intercept	8.96	10.57	7.31	9.90	10.55
		[8.57, 9.35]	[10.27, 10.87]	[6.95, 7.66]	[9.58, 10.22]	[10.28, 10.83]
	Slope	-0.02	-0.04	0.02	0.01	-0.01
		[-0.07, 0.04]	[-0.10, 0.02]	[-0.05, 0.09]	[-0.04, 0.07]	[-0.06, 0.04]
	Correlation	-.57*	-.34	-.03	-.25	-.23

Notes: * $p < .05$

Table 10.

Univariate growth curves for target- and informant-rated relationship quality.

		Aggregated Friends	Romantic Partner	Dyadic Friend
Target	χ^2	4.84	0.03	34.37
	df	1	1	22
	p-value	0.03	0.87	0.05
	CFI	0.94	1.00	0.98
	RMSEA	0.11 [0.03, 0.22]	0.00 [0.00, 0.11]	0.04 [0.01, 0.07]
	Intercept	5.63 [5.56, 5.70]	6.16 [6.04, 6.23]	5.74 [5.64, 5.83]
	Slope	-0.49 [-0.56, -0.42]	0.05 [-0.05, 0.15]	-0.15 [-0.19, -0.12]
	Correlation	.17	-.10	-.03
Informant	χ^2	46.47	0.43	34.25
	df	21	1	22
	p-value	0.00	0.51	0.05
	CFI	0.92	1.00	0.95
	RMSEA	0.07 [0.04, 0.09]	0.00 [0.00, 0.29]	0.06 [0.01, 0.09]
	Intercept	5.75 [5.66, 5.85]	5.81 [5.68, 5.94]	5.90 [5.71, 6.09]
	Slope	-0.08 [-0.12, -0.04]	-0.07 [-0.10, -0.03]	-0.13 [-0.32, 0.06]
	Correlation	-.10	.16	-.15

Notes: * $p < .05$

Overall, these models had decent fit before they were combined into the multivariate model (e.g., CFIs between than 0.92 and 1.00, RMSEAs between 0.01 and 0.11). Once the univariate models were fit, I combined them into the multivariate models. I test and report all of the associations within this model, but my focus for this paper is on the paths that test the personality-relationship transaction, as specified above. The model fits and the values for all of the parameters within this model are located in Table 11.

Table 11.

Parameters from Model 1, the multivariate growth model with aggregated friends.

	Extraversion	Agreeableness	Neuroticism	Conscientious.	Openness
Model Fit					
χ^2	205.00	206.63	161.37	222.90	208.22
df	371	123	121	122	122
p-value	0.00	0.00	0.01	0.00	0.00
CFI	0.97	0.96	0.98	0.95	0.95
RMSEA	0.05 [0.03, 0.06]	0.05 [0.04, 0.06]	0.03 [0.02, 0.05]	0.05 [0.04, 0.06]	0.05 [0.04, 0.06]
	Est. 95% Confidence Interval	Est 95% Confidence Interval	Est 95% Confidence Interval	Est 95% Confidence Interval	Est 95% Confidence Interval
Intercept					
Target Personality (iTP)	9.02 [8.73, 9.32]	10.38 [10.16, 10.61]	7.58 [7.31,7.85]	9.79 [9.54, 10.03]	10.38 [10.18, 10.58]
Target Relationship Quality (iTRQ)	5.63 [5.56, 5.70]	5.65 [5.56, 5.69]	5.63 [5.56, 5.70]	5.63 [5.56, 5.70]	5.63 [5.56, 5.70]
Friend Relationship Quality (iFRQ)	5.73 [5.63, 5.82]	5.73 [5.63, 5.82]	5.73 [5.63, 5.82]	5.73 [5.63, 5.82]	5.73 [5.64, 5.83]
Slope					
Target Personality (sTP)	0.20 [-0.34, 0.74]	-0.69 [-1.76, 0.39]	0.86 [-0.07, 1.79]	-0.48 [-1.24, 0.28]	0.19 [-0.40, 0.77]
Target Relationship Quality (sTRQ)	-0.29 [-0.51, 0.06]	-0.12 [-0.49, 0.25]	-0.51 [-0.74, -0.28]	-0.35 [-0.69, -0.01]	-0.37 [-0.84, 0.11]
Friend Relationship Quality (sFRQ)	-0.09 [-0.24, 0.06]	-0.05 [-0.19, 0.29]	-0.08 [-0.22, 0.06]	-0.01 [-0.21, 0.18]	0.06 [-0.22, 0.34]
	b 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval

Actor Effects					
iTP to sTRQ Path B	-0.02 [-0.05, 0.00]	-0.04 [-0.07, 0.00]	-0.00 [-0.01, 0.01]	-0.01 [-0.05, 0.02]	-0.01 [-0.06, 0.04]
iTRQ to sTP Path C	-0.06 [-0.19, 0.07]	0.15 [-0.14, 0.44]	-0.01 [-0.08, 0.07]	0.14 [-0.06, 0.33]	-0.11 [-0.25, 0.04]
Partner Effects					
iTP to sFRQ Path G	0.00 [-0.01, 0.02]	-0.03 [-0.15, 0.10]	0.00 [-0.01, 0.01]	-0.01 [-0.03, 0.01]	-0.01 [-0.04, 0.01]
iFRQ to sTP Path I	0.02 [-0.06, 0.10]	-0.01 [-0.03, 0.01]	-0.03 [-0.11, 0.05]	-0.05 [-0.14, 0.05]	0.08 [0.01, 0.16]
Correlations					
	r	*r*	*r*	*r*	*r*
iTP-iTRQ Path A	.40*	.41*	-.11	.21*	.18*
iTP-iFRQ Path H	.14*	.16*	-.04	.12	-.02
sTP-sTRQ Path D	.18	-.01	-.07	-.16	.02
sTP-sFRQ Path M	-.05	.02	-.02	-.19	-.10
iTP-sTP Path E	-.38*	-.39*	-.23*	-.38*	-.02
iTRQ-sTRQ Path F	.12	.42	.03	.02	.00
iFRQ-sFRQ Path F	-.12	-.10	.05	-.10	-.16
iTRQ-sFRQ Path K	-.00	.07	.18	.06	.02
iFRQ-sTRQ Path K	-.02	-.03	.10	-.04	-.05
iTRQ-iFRQ Path J	.50*	.58*	.44*	.50*	.48*
sTRQ – sFRQ Path L	.23	.23	.90*	.19	.22

Notes: * $p < .05$.

3.1.1 Q1: How Is Initial Personality Associated with Initial Relationship Quality?

To test Question 1, I correlated the intercepts of target personality and the intercepts of both the aggregate of target-rated friendship quality (Path A) and the aggregate of friend-rated friendship quality (Path H). Self-reported personality appears to matter most for self-reported

friendship quality, while having little impact on peer-reported friendship quality. Individuals who reported being more extraverted, agreeable, conscientious, and open to experiences also reported better overall friendship quality. Friends of people high in extraversion and high in agreeableness also indicated that they experienced better quality friendships. These results fit well with my hypothesis that personality would be associated with friendship quality, however, there were a few surprises. I expected neuroticism to be negatively associated with friendship quality. The correlations for neuroticism were negative, but they were not significant. I expected that extraversion would only be significantly associated with self-reported relationship quality, but it was also significantly associated with friend-reports. I thought that the other traits would have similar sized effects on self- and friend-reports for the other Big Five traits. Instead, the personality correlations with friend-reported relationships quality were all much smaller for friend-reports than for self-repots for all but extraversion and agreeableness.

3.1.2 Mean-Level and Individual Differences in Personality and Relationship Quality Change

Questions 2, 3, and 4 all relate to changes in personality and friendship quality as measured by the slopes of target-rated personality and aggregated target- and friend-rated friendship quality. Before examining how initial levels of personality and relationship quality are associated with change in Questions 2 and 3, it is necessary to determine what the mean-level changes are and whether there are individual differences in change. There are significant mean level declines in the univariate models for self-reported aggregate friendship quality, b = -0.49, 95% CI [-0.56, -0.42], and friend-reported aggregate friendship quality, b = -0.08, 95% CI [-0.12, -0.04]. Friendships were rated less positively over the course of the study. The only slope that remained significant in the multivariate model was target-rated aggregate friendship quality when neuroticism was included in the multivariate model, b = -0.51, 95% CI [-0.74, -0.28]. After

accounting for target-reported neuroticism at the start of the study, as well as the initial relationship quality, target participants reported worsening relationship quality with their friends over time. There were no other significant mean-level changes in target- or friend-reported aggregated friendship quality in the remaining models, however, they maintained the negative slope found in the univariate models. There were not significant mean-level changes for personality in the multivariate model. However, the direction of the slopes of each trait in the multivariate model differed from the direction in the univariate models. Extraversion, agreeableness, and neuroticism decreased, and conscientiousness and openness increased in the univariate models. In the multivariate model, after accounting for initial relationship quality, extraversion, neuroticism, and openness increased, and agreeableness and conscientiousness decreased.

As shown in Table 12, the variances of the slopes are significant for all five traits, indicating that there are individual differences in trait change during college. The variances of the slopes for both target- and friend-rated aggregate friendship quality were also significant, indicating that there are individual differences in friendship quality change such that some aggregate friendships increase and others decrease.

Table 12.

Estimated means and variances for the slopes of target-rated personality and target- and friend-rated aggregated friendship quality.

	Extraversion		Agreeableness		Neuroticism		Conscientiousness		Openness	
	Slope	s^2	Slope	s^2	Slope	s^2	Slope	s^2	Slope	s^2
Personality - Target	0.20 [-0.34, 0.74]	0.05*	-0.69 [-1.76, 0.39]	0.03*	0.86 [-0.07, 1.79]	0.06*	-0.48 [-1.24, 0.28]	0.04*	0.19 [-0.40, 0.77]	0.03*
Friendship Quality - Target	-0.29 [-0.51, 0.06]	0.09*	-0.12 [-0.49, 0.25]	0.06	-0.51 [-0.74, -0.28]	0.09	-0.35 [-0.69, -0.01]	0.10	-0.37 [-0.84, 0.11]	0.10
Friendship Quality- Friends	-0.09 [-0.24, 0.06]	0.04*	-0.05 [-0.19, 0.29]	0.04*	-0.08 [-0.22, 0.06]	0.04*	-0.01 [-0.21, 0.18]	0.05*	0.06 [-0.22, 0.34]	0.05*

Notes: * $p < .05$

3.1.3 Q2: How Does Initial Personality Predict Changes in Relationship Quality?

To address the Question 2, I test whether the intercepts of personality predicts the slopes of aggregated target-rated friendship (Path B) and slopes of aggregated friend-rated friendship quality (Path G). Initial target-rated personality had no effect on either target-rated or friend-rated changes in friendship quality. I hypothesized that initial personality would be influence the way relationship quality changed, but contrary to my hypothesis, target participants' self-reported personality did not affect the trajectory of friendship quality change for them or their friends.

3.1.4 Q3: How Does Initial Relationship Quality Predict Changes in Personality?

Next, to address the Question 3, I test whether the intercepts of aggregated target-rated friendship quality (Path C) and aggregated friend-rated friendship quality (Path I) predict the slopes of personality. Contrary to my hypothesis once again, initial levels of friendship quality impacted the trajectory of personality change for one of the five traits. Participants whose friends initially reported high friendship quality experienced steeper increases in open to experience than individuals whose friends reported worse friendship quality, $b = 0.08$, 95% CI [0.01, 0.16]. If target's friends rated their relationships as good, the targets became more open, more quickly.

3.1.5 Q4: How Are Changes in Personality Associated with Changes in Relationship Quality?

To address Question 4, I correlated the personality slopes with the slopes of aggregated target-rated (Path D) and friend-rated (Path M) friendship quality. Changes in target personality did not significantly correlate with changes in target-rated friendship quality or changes in friend-rated friendship quality. This suggests that the trajectory of personality and the trajectory of friendship quality are independent of each other. After counting for initial levels of personality

and friendship quality, changes in one domain are occurring independently of changes in the other.

3.2 Model 2: Dyadic multivariate growth curve model of personality and relationship quality between romantic partners

The intercepts and slopes of the univariate models for target's and romantic partner's self-rated personality and relationship quality are found in Tables 9 and 10. Once the univariate models were fit (e.g., CFIs between 0.98 and 1.00, RMSEAs between 0.00 and 0.18), I combined them into the multivariate models. I test and report all of the associations within this model, but my focus for this paper will be on the paths that test the personality-relationship transaction. The model fits and the values for all of the parameters within the multivariate models are located in Table 13.

Table 13.

Parameters from Model 2, the multivariate growth model with romantic partner dyads.

	Extraversion	Agreeableness	Neuroticism	Conscientious.	Openness
Model Fit					
χ^2	251.45	230.36	263.29	202.61	226.67
df	106	105	103	104	103
p-value	0.00	0.00	0.00	0.00	0.00
CFI	0.93	0.92	0.91	0.94	0.92
RMSEA	0.07 [0.06, 0.08]	0.06 [0.05, 0.07]	0.07 [0.06, 0.08]	0.06 [0.04, 0.07]	0.06 [0.05, 0.07]
	Est. 95% Confidence Interval	Est. 95% Confidence Interval	Est. 95% Confidence Interval	Est. 95% Confidence Interval	Est. 95% Confidence Interval
Intercept					
Target Personality (iTP)	8.94 [8.68, 9.19]	10.31 [10.11, 10.51]	7.57 [7.30, 7.84]	9.74 [9.53, 9.95]	10.35 [10.17, 10.52]

Target Relationship Quality (iTRQ)	6.09 [5.98, 6.20]	6.10 [5.99, 6.21]	6.09 [5.98, 6.21]	6.08 [5.97, 6.19]	6.09 [5.98, 6.19]
Romantic Partner Personality (iRP)	8.94 [8.68, 9.19]	10.31 [10.11, 10.51]	6.83 [6.26, 7.40]	9.74 [9.53, 9.95]	10.35 [10.17, 10.52]
Romantic Partner Relationship Quality (iRRQ)	6.09 [5.98, 6.20]	6.10 [5.99, 6.21]	6.09 [5.98, 6.21]	6.08 [5.97, 6.19]	6.09 [5.98, 6.19]
Slope					
Target Personality (sTP)	-0.07 [-0.82, 0.69]	0.01 [-0.74, 0.76]	0.24 [-0.65, 1.14]	-0.07 [-0.80, 0.65]	0.35 [-0.28, 0.99]
Target Relationship Quality (sTRQ)	0.77 [0.25, 1.29]	0.54 [-0.40, 1.48]	0.30 [-0.26, 0.87]	0.09 [-0.63, 0.80]	-0.73 [-1.80, 0.35]
Romantic Partner Personality (sTRQ)	-0.29 [-1.08, 0.50]	-0.05 [-0.84, 0.73]	0.29 [-0.64, 1.23]	-0.28 [-1.05, 0.48]	0.20 [-0.45, 0.87]
Romantic Partner Relationship Quality (sRRQ)	0.52 [-0.50, 1.10]	0.27 [-0.70, 1.22]	0.02 [-0.56, 0.60]	-0.16 [-0.90, 0.58]	-0.96 [-2.05, 0.13]
Regressions					
	b 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval
Actor Effects					
iTP to sTRQ Path B	-0.02 [-0.06, 0.02]	-0.04 [-0.10, 0.01]	-0.02 [-0.07, 0.03]	-0.00 [-0.05, 0.05]	0.06 [-0.02, 0.14]
iRP to sRRQ Path B	-0.02 [-0.06, 0.02]	-0.04 [-0.10, 0.01]	-0.02 [-0.07, 0.03]	-0.00 [-0.05, 0.05]	0.06 [-0.02, 0.14]
iTRQ to sTP Path C	-0.03 [-0.15, 0.09]	-0.02 [-0.15, 0.12]	0.02 [-0.16, 0.19]	-0.02 [-0.13, 0.09]	-0.12 [-0.21, -0.02]
iRRQ to sRP Path C	-0.03 [-0.15, 0.09]	-0.02 [-0.15, 0.12]	0.02 [-0.16, 0.19]	-0.02 [-0.13, 0.09]	-0.12 [-0.21, -0.02]

Partner Effects					
iTP to sTRQ Path M	-0.07 [-0.11, -0.02]	-0.00 [-0.07, 0.06]	-0.01 [-0.08, 0.06]	-0.00 [-0.05, 0.05]	0.02 [-0.06, 0.10]
iRP to sRRQ Path M	-0.07 [-0.11, -0.02]	-0.00 [-0.07, 0.06]	-0.01 [-0.08, 0.06]	-0.00 [-0.05, 0.05]	0.02 [-0.06, 0.10]
iTRQ to sRP Path N	0.04 [-0.09, 0.16]	0.01 [-0.11, 0.14]	-0.07 [-0.22, 0.09]	0.04 [-0.07, 0.16]	0.07 [-0.02, 0.17]
iFRQ to sTP Path N	0.04 [-0.09, 0.16]	0.01 [-0.11, 0.14]	-0.07 [-0.22, 0.09]	0.04 [-0.07, 0.16]	0.07 [-0.02, 0.17]
Correlations					
	r	*r*	*r*	*r*	*r*
iTP-iTRQ Path A	-.01	.19	-.11	.12	-.10
iRP-iRRQ Path A	-.01	.14	-.09	.12	-.08
iTP-iRRQ Path O	-.09	.11	-.05	.09	-.22*
iRP-iTRQ Path O	-.14	.18	-.08	.14	-.31*
sTP-sTRQ Path D	-.05	.14	-.15	.15	-.41
sRP-sRRQ Path D	-.01	.05	-.06	.06	-.07
sTP-sRRQ Path P	-.02	-.10	-.17	-.29	.45
sRP-sTRQ Path P	-.01	-.07	-11	-.25	.15
iTP-sTP Path E	-.40*	-.27*	-.28*	-.34*	-.07
iRP-sRP Path E	-.12*	-.15*	-.17*	-.25*	-.02
iTP-sRP Path H	.07	-.01	-.00	-.01	.01
iRP-sTP Path H	.31	-.03	.-01	-.02	.05
iTRQ-sTRQ Path F	-.20	-.10	.06	-.25	.20
iRRQ-sRRQ Path F	-.09	-.05	.04	-.13	-.11
iTRQ-sRRQ Path K	.19	.48	.36	.23	.21
iRRQ-sTRQ Path K	.25	.46	.31	.25	.23

iTP -iRP Path G	-.16	-.19	-.14	-.21	-.10
iTRQ-iRRQ Path J	.23	.28	.35	.22	.18
sTP-sRP Path I	-.09	-.84	.74*	-.04	-.61
sTRQ-sRRQ Path L	-.26	-.25	-.61	-.14	-.24

Notes: * $p < .05$

3.2.1 Q1: How Is Initial Personality Associated with Initial Relationship Quality?

For Question 1, I correlated the intercepts of personality and relationship quality (Paths A and O). Partners of people high in openness to experience report having worse relationship quality. With the exception of partner-rated openness to experience, the correlations between personality and relationship quality are small (i.e. *r*s between -.14 and .19). Overall, the relationship between initial personality and initial relationship quality appear to be weaker for romantic partners than for friends. Additionally, some of the correlations are in the opposite direction for romantic partners and for friends. Openness and extraversion had positive associations with friendship quality, but both have negative associations with romantic relationship quality. This suggests that these traits have different effects on different types of relationships.

3.2.2 Mean-Level and Individual Differences in Personality and Relationship Quality Change

In the univariate models the slopes of target- and romantic partner-rated relationship quality did not significantly differ from zero. This was true as well in Model 2, as reported in Table 14. The univariate models for romantic partner personality showed no significant mean-level changes. In Model 2, romantic partner extraversion significantly increased, but the rest of the means of the slopes for personality and relationship quality did not significantly differ from zero. Fewer slopes had significant variances than in Model 1. The variance of the slopes for

partner-reported agreeableness, neuroticism, and conscientiousness were not significant, nor were the slopes for target-reported relationship quality when extraversion, agreeableness, or neuroticism was included in the model. However, there were individual differences in change in all parameters but these six.

Table 14.

Estimated mean and variance of the slopes for self-reported personality and relationship quality in romantic partner dyads in Model 2.

	Extraversion		Agreeableness		Neuroticism		Conscientiousness		Openness	
	Slope	s^2	Slope	s^2	Slope	s^2	Slope	s^2	Slope	s^2
Personality - Target	-0.07 [-0.82, 0.69]	0.04*	0.01 [-0.74, 0.76]	0.04*	0.24 [-0.65, 1.14]	0.06*	-0.07 [-0.80, 0.65]	0.04*	0.35 [-0.28, 0.99]	0.02*
Relationship Quality - Target	0.77 [0.25, 1.29]	0.11	0.54 [-0.40, 1.48]	0.14	0.30 [-0.26, 0.87]	0.22	0.09 [-0.63, 0.80]	0.15*	-0.73 [-1.80, 0.35]	0.16*
Personality – Romantic Partner	-0.29 [-1.08, 0.50]	0.67*	-0.05 [-0.84, 0.73]	0.15	0.29 [-0.64, 1.23]	0.22	-0.28 [-1.05, 0.48]	0.13	0.20 [-0.45, 0.87]	0.41*
Relationship Quality - Romantic Partner	0.52 [-0.50, 1.10]	0.31*	0.27 [-0.70, 1.22]	0.28*	0.02 [-0.56, 0.60]	0.32*	-0.16 [-0.90, 0.58]	0.31*	-0.96 [-2.05, 0.13]	0.32*

Notes: * $p < .05$

3.2.3 Q2: How Does Initial Personality Predict Changes in Relationship Quality?

To address Question 2, I regressed the slopes of relationship quality onto the intercepts of personality (Paths B and M). The intercepts of personality had no significant effect on the slopes of relationship quality. Contrary to my hypothesis, initial personality had a minimal effect on romantic relationship quality, replicating what was seen in Model 1. Unlike Model 1, however, there was one significant effect of personality on changes in relationship quality. Partner-reported extraversion had a negative effect on the slope in self-reported relationship quality, b = -0.07, 95% CI [-0.11, -0.02]. The mean slopes of romantic relationship quality were positive, and so, if a person was high in extraversion their romantic partner reported slower increases in relationship quality.

The signs of the parameters differed for friends and romantic partners in several instances. In Model 1, there were small, negative associations between initial personality and self-reported relationship quality for all five traits. This was largely true for romantic partners as well, except for the effect of self-reported openness, which had a small positive association with the slope of relationship quality. In Model 1, self-reported extraversion and neuroticism had very slight positive associations with the slopes of partner-reported relationship quality, and agreeableness, conscientiousness, and openness had negative associations with the slopes of self-reported relationship quality. In Model 2, with romantic relationships, extraversion, agreeableness, neuroticism, and conscientiousness had negative associations with the slopes of partner-rated relationship quality. Openness had a positive association with changes in partner-rated relationship quality. These differences are fairly minimal, but the patterns of associations among initial personality and relationship quality change in romantic relationships appear to be distinct from the patterns for friends.

3.2.4 Q3: How Does Initial Relationship Quality Predict Changes in Personality?

To answer Question 3, I regressed the slopes of personality onto the intercepts of relationship quality (Paths C and N). The effects of initial relationship quality on changes in personality were minimal. The only significant effect was the effect for self-rated openness, b = -0.12, 95% CI [-0.21, -0.02]. Self-reported romantic relationship quality dampened increases in openness to experience. Individuals who reported having better quality relationships increased in openness at a slower rate than those who reported lower quality relationships. The dampening effect self-reported relationship quality has on self-reported openness was also seen in Model 1 with aggregated friendship quality, though it was not significant. Also in both romantic

relationships and aggregated friendships, partner-reported relationship quality had a positive effect on changes in openness.

I compared the signs of the parameters for the remaining traits across the Model 1 and Model 2 to determine if there are similar patterns for how relationship quality and predicted trait change. The patterns of change for each trait differ across relationship types. Self-reported romantic relationship quality had a negative effect on change in all five traits in Model 2. In Model 1, self-reported relationship quality had a negative effect on the slopes of extraversion, neuroticism, and openness, but a positive effect on the slopes of agreeableness and conscientiousness. Partner-reported romantic relationship quality had a positive effect on the slopes extraversion, agreeableness, conscientiousness, and openness to experience, but had a negative effect on the slope of neuroticism in Model 2. In Model 1, friend-reported aggregated friendship quality was positively associated with extraversion and openness, and negatively associated with agreeableness, neuroticism and conscientiousness. Altogether, though the differences were small, they suggest that the pattern of the associations between initial relationship quality and personality change exhibited in romantic partner dyads is not equivalent to the pattern found for friends.

3.2.5 Q4: How Are Changes in Personality Associated with Changes in Relationship Quality?

To answer Question 4, I correlated the slopes of personality with the slopes of relationship quality (Paths D and P). The associations between personality change and relationship quality change were not significant, which was the case for Model 1 as well. The patterns for the signs of the correlations across Models 1 and 2 were not the same. In Model 2 changes in self-reported relationship quality were negatively associated with changes in self-reported extraversion, neuroticism, and openness, and positively associated with changes in self-

reported agreeableness and conscientiousness in romantic relationships. In Model 1, changes in self-reported friendship quality were positively associated with changes in extraversion and openness, and negatively associated with changes in agreeableness, neuroticism, and conscientiousness. In Model 2, partner-reported changes in relationship quality were negatively associated with changes in extraversion, agreeableness, neuroticism, and conscientiousness, but positively associated with changes in openness. In Model 1, changes in aggregated friend-rated relationship quality were negatively associated with changes in extraversion, neuroticism, conscientiousness, and openness, and positively associated with changes in agreeableness. Overall, there was no overarching pattern of associations between changes in relationship quality and changes in personality for friends and romantic partners.

3.3 Model 3: Dyadic multivariate growth curve model of personality and relationship quality between friends

The intercepts and slopes of the univariate models for target's and friend's self-rated personality and friendship quality are found in Tables 9 and 10. Overall, these models had decent fit before they were combined into the multivariate model (e.g., CFIs between than 0.92 and 1.00, RMSEAs between 0.01 and 0.06). Once the univariate models were fit, I combined them into the multivariate models. I test and report all of the associations within this model, but my focus for this paper will be on the paths that test the personality-relationship transaction. The model fits and the values for all of the associations within the multivariate models are located in Table 15.

Table 15.

Parameters from Model 3, the multivariate growth model with friend dyads.

	Extraversion	Agreeableness	Neuroticism	Conscientious.	Openness
Model Fit					
χ^2	1138.52	1000.51	1060.55	1067.80	1019.18

df	371	371	366	370	369
p-value	0.00	0.00	0.00	0.00	0.00
CFI	0.81	0.81	0.80	0.81	0.81
RMSEA	0.08 [0.08, 0.09]	0.07 [0.07, 0.08]	0.08 [0.07, 0.08]	0.08 [0.07, 0.08]	0.07 [0.07, 0.08]
	Est. 95% Confidence Interval	Est 95% Confidence Interval	Est 95% Confidence Interval	Est 95% Confidence Interval	Est 95% Confidence Interval
Intercept					
Target Personality (iTP)	9.02 [8.73, 9.32]	10.38 [10.15, 10.61]	7.57 [7.31,7.84]	9.79 [9.55, 10.03]	10.38 [10.18, 10.58]
Target Relationship Quality (iTRQ)	5.77 [5.64, 5.83]	5.74 [5.64, 5.83]	5.74 [5.65, 5.83]	5.73 [5.64, 5.83]	5.73 [5.64, 5.83]
Friend Personality (iFP)	8.95 [8.56, 9.35]	10.54 10.24, 10.84]	7.30 [6.93, 7.67]	9.81 [9.55, 10.21]	10.53 [10.26, 10.81]
Friend Relationship Quality (iFRQ)	5.77 [5.64, 5.90]	5.76 [5.63, 5.89]	5.76 [5.63, 5.89]	5.76 [5.63, 5.89]	5.76 [5.64, 5.89]
Slope					
Target Personality (sTP)	0.10 [-0.26, 0.46]	-0.35 [-0.72, 0.01]	0.15 [-0.27, 0.56]	-0.00 [-0.36, 0.35]	0.26 [-0.06, 0.58]
Target Relationship Quality (sTRQ)	-0.08 [-0.23, 0.07]	-0.25 [-0.50, 0.01]	-0.14 [-0.28, -0.00]	0.02 [-0.18, 0.23]	-0.45 [-0.72, -0.18]
Friend Personality (sTRQ)	0.10 [-0.27, 0.47]	-0.39 [-0.77, -0.01]	0.23 [-0.20, 0.66]	-0.03 [-0.40, 0.34]	0.19 [-0.14, 0.52]
Friend Relationship Quality (sFRQ)	-0.02 [-0.16, 0.13]	-0.18 [-0.43, 0.07]	-0.07 [-0.21, 0.06]	0.09 [-0.11, 0.30]	-0.38 [-0.65, -0.11]
Regressions					
	b 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval	*b* 95% Confidence Interval
Actor Effects					

iTP to sTRQ	-0.01	0.01	-0.00	-0.01	0.01
Path B	[-0.02, 0.00]	[-0.01, 0.02]	[-0.01, 0.01]	[-0.02, 0.01}	[-0.01, 0.02]
iFP to sFRQ	-0.01	0.01	-0.00	-0.01	0.01
Path B	[-0.02, 0.00]	[-0.01, 0.02]	[-0.01, 0.01]	[-0.02, 0.01}	[-0.01, 0.02]
iTRQ to sTP	-0.01	0.01	-0.01	0.03	0.06
Path C	[-0.08, 0.05]	[-0.05, 0.07]	[-0.08, 0.07]	[-0.04, 0.09}	[0.00, 0.12]
iFRQ to sFP	-0.01	0.01	-0.1	0.03	0.06
Path C	[-0.08, 0.05]	[-0.05, 0.07]	[-0.08, 0.07]	[-0.04, 0.09}	[0.00, 0.12]
Partner Effects					
iTP to sFRQ	-0.00	0.01	0.00	-0.01	0.02
Path M	[-0.01, 0.01]	[-0.01, 0.02]	[-0.01, 0.01]	[-0.02, 0.00}	[0.00, 0.04]
iFP-sFRQ	-0.00	0.01	0.00	-0.01	0.02
Path M	[-0.01, 0.01]	[-0.01, 0.02]	[-0.01, 0.01]	[-0.02, 0.00]	[0.00, 0.04]
iTRQ to sFP	-0.01	0.04	-0.03	-0.02	-0.09
Path N	[-0.08, 0.06]	[-0.03, 0.11]	[-0.11, 0.05]	[-0.09,0.06]	[-0,16, -0.03]
iFRQ to sTP	-0.01	0.04	-0.03	-0.02	-0.09
Path N	[-0.08, 0.06]	[-0.03, 0.11]	[-0.11, 0.05]	[-0.09,0.06]	[-0,16, -0.03]
Correlations					
	r	*r*	*r*	*r*	*r*
iTP-iTRQ Path A	.31*	.22*	-.11	.13*	.14*
iFP-iFRQ Path A	.29*	.22*	-.10	.12*	.14*
iTP-iFRQ Path O	.07	.07	-.04	.07	.02
iFP-iTRQ Path O	.08	.08	-.05	.07	.03
sTP-sTRQ Path D	.13	.07	-.07	.00	-.08
sFP-sFRQ Path D	.28	.15	-.17	.00	-.18
sTP-sFRQ Path P	.17	.21	-.02	-.09	.02
sFP-sTRQ Path P	.12	.13	-.02	-.06	.01
iTP-sTP Path E	-.42*	-.27*	-.23*	-.28*	-.12
iFP-sFP Path E	-.52*	-.33*	-.33*	-.37*	-.15
iTP-sFP Path H	-.02	-.14	.10	.04	.04
iFP-sTP Path H	-.02	-.14	.07	.03	.04
iTRQ-sTRQ Path F	.04	.01	.03	.03	.01

iFRQ-sFRQ Path F	.06	.01	.05	.04	.02
iTRQ-sFRQ Path K	.16	.14	.18	.16	.15
iFRQ-sTRQ Path K	.08	.07	.10	.08	.08
iTP-iFP Path G	.12	.03	.25*	.11	.11
iTRQ-iFRQ Path J	.44	.44*	.44*	.44*	.42*
sTP-sFP Path I	-.02	.48	-.33	-.23	-.10
sTRQ-sFRQ Path L	.93*	.89*	.90*	.92*	.89*

Notes: * $p < .05$

3.3.1 Q1: How Is Initial Personality Associated with Initial Relationship Quality?

To address Question 1, I correlated the intercepts of personality and relationship quality (Paths A and O). Self-reported personality is more closely related to self-rated friendship quality than friend-rated friendship quality. As in Model 1 with aggregated friendship quality, within friend dyads individuals who rated themselves as more extraverted, agreeable, conscientious, or open to experience also reported experiences better initial friendship quality than individuals who were lower on those traits. There were no significant associations between self-reported personality and friend-reports of relationship quality; self-reports of personality were only significantly associated with self-reports of relationship quality.

In comparison to the other two models, Model 3 was more similar to Model 1. No matter how friendship was measured, the correlations between personality and relationship quality were stronger for friends than romantic partners. No matter how friendship was measured, initial extraversion and openness to experience were positively correlated with initial friendship quality as opposed to negatively correlated with romantic relationship quality. With regards to Question

1, friendships are similar to each other, whether operationalized in aggregation or as a dyad, but are distinct from romantic relationships.

3.3.2 Mean-Level and Individual Differences in Personality and Relationship Quality Change

Replicating what was seen for aggregated friends in Model 1, the univariate models of target- and friend-rated friendship quality had negative slopes within friend dyads as shown in Table 16. Both members of the friend dyad reported worsening friendships over the course of the study. Within the multivariate model, the mean level declines in target- and friend-rated friendship quality remained significant when neuroticism was in the model, b = -0.14, 95%CI [-0.28, -0.00] and when openness was in the model, b = -0.45, 95%CI [-0.72, -0.18]. The mean-level declines in friend-rated friendship quality remained significant when openness was in the model as well, b = -0.38, 95%CI [-0.65, -0.11]. Target participants significantly decreased in friendship quality after accounting for initial levels of relationship quality and neuroticism. After accounting for initial levels of relationship quality and openness, both members of the friend dyad experienced worsening relationship quality throughout the study. The only significant mean-level change in personality was found for friend's self-reported agreeableness, which declined across the study. However, as with aggregated friendships in Model 1, accounting for initial relationship quality and the other dyad member's initial personality changed the direction of trait change. In the same pattern as Model 1 extraversion, neuroticism, and openness increased for both dyad members, while conscientiousness and agreeableness decreased.

Table 16.

Estimated mean and variance of the slopes for self-reported personality and relationship quality in friend dyads in Model 3.

	Extraversion		Agreeableness		Neuroticism		Conscientiousness		Openness	
	Slope	s^2	Slope	s^2	Slope	s^2	Slope	s^2	Slope	s^2
Personality - Target	0.10 [-0.26, 0.46]	0.04*	-0.35 [-0.72, 0.01]	0.03*	0.15 [-0.27, 0.56]	0.06*	-0.00 [-0.36, 0.35]	0.04*	0.26 [-0.06, 0.58]	0.03*
Relationship Quality - Target	-0.08 [-0.23, 0.07]	0.05*	-0.25 [-0.50, 0.01]	0.05*	-0.14 [-0.28, -0.00]	0.05*	0.02 [-0.18, 0.23]	0.05*	-0.45 [-0.72, -0.18]	0.05
Personality - Friend	0.10 [-0.27, 0.47]	0.03*	-0.39 [-0.77, -0.01]	0.02*	0.23 [-0.20, 0.66]	0.03	-0.03 [-0.40, 0.34]	0.02	0.19 [-0.14, 0.52]	0.02*
Relationship Quality - Friend	-0.02 [-0.16, 0.13]	0.02*	-0.18 [-0.43, 0.07]	0.01*	-0.07 [-0.21, 0.06]	0.02*	0.09 [-0.11, 0.30]	0.02*	-0.38 [-0.65, -0.11]	0.01*

Notes: * $p < .05$

For most traits, the variances of the slope for the traits and relationship quality were significant. The slopes of target's personality ratings had significant variance in all models, indicating individual differences in change for all Big Five traits. The slopes of friend's extraversion, friend's agreeableness, and friend's openness had significant variance, indicating individual differences in change for those traits, but not neuroticism and conscientiousness. There were individual differences in change for relationship quality with one exception; the variance of target-rated relationship quality in the openness model was not significant.

3.3.3 Q2: How Does Initial Personality Predict Changes in Relationship Quality?

To answer Question 2, I regressed the slopes of relationship quality onto the intercepts of personality (Paths B and M). Overall, the effects of personality on relationship quality change were very small. The partner effect for openness to experience was the only exception, $b = 0.06$, 95% CI [0.00, 0.12]. Individuals who reported higher openness to experience at the start of the study experienced steeper increases in relationship quality. There were no other effects of personality on relationship quality. The predominately null effects replicate what was seen for

Model 1 and Model 2, suggesting that, overall, personality has a minimal effect on the way relationships develop.

In Model 3, initial extraversion, neuroticism, and conscientiousness had a negative association with the slope of self-reported and partner-reported friendship quality, while agreeableness and openness have positive effects on self-reported and partner-reported friendship quality. This does not follow exactly the overall patterns of signs found in either Model 1 or Model 2, but there were a few similarities for the trait associations. The associations between extraversion and openness and relationship quality were in the same direction for romantic partners in Model 2. The associations between neuroticism and relationship quality were similar to what was seen with aggregated friendship quality in Model 1. The negative associations between conscientiousness and changes in relationship quality were found in all three models.

3.3.4 Q3: How Does Initial Relationship Quality Predict Changes in Personality?

To answer Question 3, the slopes of personality were regressed onto the intercepts of relationship quality (Paths C and N). Overall, the effects of relationship quality on personality change were very small. However, openness was again the exception. Individuals who reported high initial friendship quality experienced steeper increases in openness to experience, $b = 0.02$, 95% [0.00, 0.04]. Self-reported friendship quality predicted faster increases in openness. When individuals reported higher initial friendship quality, their friends experienced dampened increases in openness to experience, $b = -0.09$, 95% CI [-0.16, -0.03]. Friends of people who report high quality friendships show slower increases in openness than friends of people who report poor quality friendships. This is the opposite of what was found for aggregated friendships and romantic relationships, wherein self-reported relationship quality had a negative association with changes in openness and friend-reported relationship quality had a positive association with

changes in openness. This discrepancy is hard to interpret; it might point to something unique about friend dyads, or it could be a statistical anomaly.

Beyond openness, there is further discrepancy across the models in the signs of the parameters. The associations between self-reported friendship quality and the slopes of extraversion and neuroticism were negative, whereas the associations between self-reported friendship quality and the slopes of agreeableness and conscientiousness were positive. The associations between partner-reported friendship quality and the slopes of extraversion, neuroticism, and conscientiousness were negative, but the association with the slope of agreeableness was positive. Conscientiousness showed the same pattern (positive self-reported effect, negative partner-reported effect) in both friend models. Initial relationship quality was negatively associated with the slope of neuroticisms in all three models. Overall, the associations between initial relationship quality and changes in personality were fairly inconsistent across the three models.

3.3.5 Q4: How Are Changes in Personality Associated with Changes in Relationship Quality?

To answer the fourth and final question of the of the personality-relationship transaction, I correlate the slopes of personality with the slopes of relationship quality (Paths D and P). There were no significant associations between changes in personality and changes in friendship quality. They appear to develop independently of each other, beyond the cross-lag intercept - slope associations discussed above. This replicates what was found in Models 1 and 2.

The associations between changes in personality and changes in self-reported friendship quality were positive for extraversion, agreeableness, and conscientiousness, but negative for neuroticism and openness. The associations between changes in personality and changes in friend-reported friendship quality were positive for extraversion, agreeableness, and openness,

and negative for neuroticism and conscientiousness. When comparing the signs of the correlations in all three models, changes in neuroticism were negatively associated with changes in self- and partner-reported relationship quality all three models. The pattern of signs for the other four traits were unique to dyadic friendships, however the differences across the three models were fairly minimal.

Section 4: Discussion

In this study, I examined the way personality and relationship quality develop together in three relationships: friendships measured with aggregation across multiple friends, romantic relationships, and friendships measured with dyads. I used self- and informant-reports of personality and relationship quality, extending the analyses beyond the self-report only, egocentric approach favored in previous research. I utilized multivariate latent growth models in a novel way to address the personality-relationship transaction in these three relationships. I focused on addressing the four main questions of the personality-relationship transaction. First, I tested how initial personality and relationship quality are associated in each context. Second, I examined how initial personality influences changes in relationship quality. Third, I examined how initial relationship quality influences changes in personality. Finally, I tested how changes in personality and changes in relationship quality are associated with each other. A descriptive summary of the results is found in Table 17.

Table 17.

Descriptive summary of the results for all three models organized by the four questions of the personality-relationship transaction.

	Extraversion	Agreeableness	Neuroticism	Conscientiousness	Openness
Q1: How is initial personality associated with initial relationship quality?					
Aggregated Friends	Positive correlations among self- and friend-reported extraversion and self-reported relationship quality.	Positive correlations among self- and friend-reported agreeableness and self-reported relationship quality.	No significant correlations.	Positive correlations among self- reported conscientiousness and relationship quality.	Positive correlations among self- reported openness and relationship quality.
Romantic Partner	No significant correlations.	No significant correlations.	No significant correlations.	No significant correlations.	Negative correlation between self-reported openness and partner-reported relationship quality.
Dyadic Friends	Positive correlations among self- reported extraversion and relationship quality.	Positive correlations among self- reported agreeableness and relationship quality.	No significant correlations.	Positive correlations among self- reported conscientiousness and relationship quality.	Positive correlations among self- reported openness and relationship quality
Q2: How does initial personality predict changes in relationship quality?					
Aggregated Friends	No significant associations.	No significant associations.	No significant associations.	No significant associations.	No significant associations.
Romantic Partner	Partner-reported extraversion slows increases in relationship quality.	No significant associations.	No significant associations.	No significant associations.	No significant associations.
Dyadic Friends	No significant associations.	No significant associations.	No significant associations.	No significant associations.	Friend-reported openness slows declines in self-reported friendship quality.
Q3: How does initial relationship quality predict changes in personality?					
Aggregated Friends	No significant associations.	No significant associations.	No significant associations.	No significant associations.	Friend-reported relationship quality accelerates self-reported increases in openness.
Romantic Partner	No significant associations.	No significant associations.	No significant associations.	No significant associations.	Self-reported relationship quality slows increases in openness
Dyadic Friends	No significant associations.	No significant associations.	No significant associations.	No significant associations.	Self-reported relationship quality accelerates increases in openness. Friend-reported relationship quality slows increases in self-reported openness.
Q4: How are changes in personality associated with changes in relationship quality?					
Aggregated Friends	No significant correlations.	No significant correlations.	No significant correlations.	No significant correlations.	No significant correlations.
Romantic Partner	No significant correlations.	No significant correlations.	No significant correlations.	No significant correlations.	No significant correlations.
Dyadic Friends	No significant correlations.	No significant correlations.	No significant correlations.	No significant correlations.	No significant correlations.

I found associations between initial levels of personality and relationships quality in all three models, though the associations varied in strength and in valence by relationship type. The strongest correlations were found between self-reports of personality and self-reports of relationship quality, whereas the correlations between self-reports of personality and other-reports of relationship were smaller and non-significant. I had expected personality to affect relationship quality change more so than relationship quality would affect personality, but I found just the opposite. There was very little evidence of personality predicting relationship quality change in any of the models. Relationship quality, however, predicted personality change in all three models through the trait openness. The correlated changes in personality and

relationships quality were largely insignificant, and showed no clear pattern of associations across the three models.

4.1 Correlations between initial levels of personality and relationship quality

The correlations among the initial levels of personality and relationship quality replicate what is found in previous research. When friendships are assessed with aggregation and with dyads, individuals who rate themselves as more extraverted, agreeable, conscientious, or open to experiences also rate their friendships as being better quality, which fit with what is seen in previous research (Berry et al., 2000; Demir & Weitekamp, 2006; Festa et al., 2012; Jensen-Campbell & Malcolm, 2007; Mund & Neyer, 2014; Wilson et al., 2015). Partners of people high in openness report lower quality romantic relationships than partners of people lower in openness, which has also been shown in previous research (Dyrenforth et al., 2010). Neuroticism was not significantly associated with relationship quality in any context, however, there was a consistent negative association in all three models.

The differences between the initial associations between personality and relationships quality for friends and romantic partners is the first case in which I see obvious differences in the way personality and relationship quality are associated in different types of relationships. I expected agreeableness and conscientiousness to be as important for romantic partners as they were for friends, given previous research (e.g. Malouff et al., 2010), but this was not the case. Indeed, overall the associations between self-reported personality and relationship quality were stronger in friendships than they were in romantic relationships. This is really interesting because if the associations between traits and relationship quality vary by relationship types, it suggests that there is not one pattern of Big Five personality traits that makes someone "good" at relationships. The weaker associations between personality and romantic relationship quality

might also signal that other types of individual differences play a larger role in romantic relationships than the Big Five traits do. For example, someone's values or strategies for emotion regulation might matter more for romantic relationship quality than how conscientious they are.

Along with the differences in the correlations' magnitude in friendships compared to romantic relationships, there were also differences in the directions of some of the correlations. In both friend models, extraversion and openness to experience are positively correlated with friendship quality. In the romantic partner model, extraversion and openness to experience are negatively correlated with relationship quality. The direction of these associations all fit with previous literature (Berry et al., 2000; Dyrenforth et al., 2010; Festa et al., 2012), but it is worth further considering why this is the case. The differences in exclusivity norms for friends and romantic partners might make these traits have opposite effects. It is easy to picture how being more active and excitement seeking, or having more varied interests and being willing to try new things could be beneficial to friendships. Both high extraversion and openness to experience open up a larger variety of activities to engage in with friends, whereas low extraversion and openness might limit the types of activities friends do to things that are less exciting and more routine. These same traits could take a toll on romantic relationships. A highly extraverted person's sociability and desire to meet and interact with new people could be perceived by their partner as flirtatious, which could be threatening. Partners of highly open people who like novelty might worry that their partners will get bored of them.

There are consistent negative associations between neuroticism and relationship quality in all three models, but none of these associations were significant. It was surprising that neuroticism was not significantly correlated with relationship quality in any of the models, as neuroticism's negative association with relationship quality is typically one of the strongest

associations between personality and relationship quality (Malouff et al., 2010). One reason for this might be the way relationship quality was measured. Previous studies have included questions specifically about the negative aspects of relationship quality, such as insecurity, that correlated strongly with neuroticism (Neyer & Asendorpf, 2001; Mund & Neyer, 2014). The current study did not assess of the negative aspects of relationships quality, only the presence or absence of positive aspects, like closeness. Perhaps if a measure of negative aspects of relationship quality had been included, the correlations between neuroticism and relationship quality would have been stronger.

4.2 Personality predicting changes in relationship quality

Despite my hypothesis to the contrary, personality had very little effect on relationship quality change. There were only two instances where personality predicted changes in relationship quality. First, partner-rated extraversion predicted slower increases in romantic relationship quality. This finding furthers the idea that initial extraversion's small negative correlation with initial relationship quality began to suggest in the previous section: extraversion can be harmful in romantic relationships. Second, in friend dyads, friends of more open people experienced less steep declines in friendship quality. Initial openness was positively associated with initial dyadic friendship quality, and it staves off declines in friendship quality. Again, as suggested in the previous section, high openness might help keep dyadic friendships interesting. The majority of the effects of personality on relationship quality were null, which is somewhat in line with previous research. Though some previous research has found evidence that agreeableness, neuroticism, and conscientiousness have all influenced how relationship quality changes (Lansford et al., 2014; Mund & Neyer, 2014; Neyer & Asendorpf, 2001; Solomon & Jackson, 2014), these effects are inconsistent and not always obtained (Hill et al., 2012; Neyer & Lehnart, 2007; Sturaro et al., 2008).

There are methodological differences between this study and previous research that could account for why I found so few associations between initial personality and relationship quality change. Many of the studies cited had larger samples (e.g. Solomon & Jackson, 2014), so they had greater power to determine if these small effects were significant. They were also assessed over longer periods of time (e.g. 8 years in Mund & Neyer, 2014). There was some variance in relationship quality change in this study, but the individual differences in change are likely more pronounced in longer studies where there is more time for change to occur. This might be especially important when considering why personality did not predict any change in aggregated friendships. Aggregated relationship quality might be less sensitive to influence from personality than dyadic relationship quality is. In order for initial personality to have an impact on changes in aggregated friendship quality, it has to influences a person's relationships with multiple friends in the same way. For example, all of their friends have to be bothered by the person being disagreeable. If only one person is bothered and the rest of their friends are indifferent, or maybe even pleased, and the impact of low agreeableness on friendship quality is tempered. With more time, it is possible that someone's disagreeableness might wreak more widespread havoc on their relationships, and an effect would be found. Finally, as discussed in the previously, relationship quality was operationalized somewhat differently in this study than in previous studies; here it was a composite measure of seven questions. Some of the studies that have found evidence for personality predicting relationship quality change have done so using the more fine-grained of relationship quality. Rather than looking at relationship quality in general, they focused on particular aspects of relationship quality like insecurity and closeness (e.g. Mund & Neyer, 2014). Perhaps if I had assessed specific aspects of relationship quality, I would have seen more evidence of personality impacting relationship quality change.

4.3 Relationship quality predicting changes in personality

I did not anticipate that relationship quality would affect personality change. Indeed, for four of the Big Five traits, relationship quality did not have a significant influence on changes in personality. This is consistent with previous research. An empirical review noted that previous research has found sparse evidence of relationship quality influencing personality change (Wrzus & Neyer, 2016). Though in some cases relationships have led to personality change, it is not a common result (Hill et al, 2012; Mund & Neyer, 2014; Neyer & Asendorpf, 2001; Neyer & Lehnart, 2007; Sturaro et al., 2008). However, for all three relationship types, changes in openness to experience were influenced by relationship quality.

Here is another instance where methodological differences between this study and previous tests of the personality-relationship transaction affect the interpretation of the results. I used growth curves rather than the residuals scores used in previous research. The growth curves allowed me to examine the trajectory of change across the two years, rather than the change from time point to time point. In this study the results for relationship quality predicting changes in openness in all three models do not show whether someone is becoming more or less open from one time point to the next; they show at what rate their openness is changing relative to the average participant. The results of this study suggest that relationship quality might play some regulatory role in openness development (Lange et al., 2006). People who reported having better romantic relationships experienced less change in openness than people with poorer quality relationships.

Another way to consider the dampening of openness change is to think about the role openness and relationships play in college life. College is a place for exploring, trying new things, and meeting new people. It's possible that people who have a good group of friends and a good relationship with their romantic partner are content to carry on as usual, rather than trying

to find new experiences. The routine of relationships could hamper increases in openness. Alternatively, people who have worse quality relationships could be doing more exploring in order to find better connections with people. Relationship quality could affect changes in openness by influencing the types of situations people find themselves, whether those are routines with friends or romantic partners, or novel situations with acquaintances.

Not only did relationship quality slow down the changes in openness, in other cases, it sped up changes. This might be an example of socialization effects, wherein relationships help bring about normative changes (Wrzus & Neyer, 2016). Aggregated friend-rated relationship quality and self-reported dyadic friendship quality predicted faster increases in openness. Relationship quality could be thought of as an indicator of good psychological adjustment. Students who have better relationships might be better adjusted, and better adjusted people should mature as expected, rather than deviating from the trends. There were mean-level increases in openness to experience, and so people who were good friends, and, therefore, likely well-adjusted, became more open more quickly.

The major point here is that interpersonal relationships are influencing openness to experience during college. Previous research has found that changes in openness are influenced by things like cognitive training experiences (Jackson, Hill, Payne, Roberts, & Stine-Morrow, 2012) and engagement in cultural activities (Schwaba, Luhmann, Denissen, Chung, & Bleidhorn, 2017), but no one has examined the interpersonal processes that might lead to changes in openness. The results of this study suggest that some mechanism to change openness exists within relationships that is worth further exploration.

4.4 Correlations between changes in personality and relationship quality

Previous research has found sporadic associations between personality change and relationship quality change in friendships (Asendorpf & van Aken, 2003; Mund & Neyer, 2014; Neyer & Lehnart, 2007; Sturaro et al., 2008). I, however, found no significant associations. In all three models, changes in personality were unrelated to changes in relationship quality. Contrary to my hypothesis, becoming more mature –more extraverted, agreeable, and conscientious, and less neurotic – was not correlated with improving relationship quality.

The apparent independence, after accounting for initial associations, in the development of personality and relationship quality brings up an interesting question about what the mechanisms of correlated changes might be. How much in change one domain is necessary to be noticeable in another domain? For example, increases in neuroticism have been associated with increases in insecurity and declines in overall relationship satisfaction (Lehnart & Neyer, 2006) How much more neurotic would someone have to become in order to also experience decreases in relationship quality? Alternatively, how much would someone's relationship quality have to improve for them to also begin to become less neurotic? If there is a true association between changes in personality and changes in relationship quality, perhaps it would have been found had the study had a longer duration, similar to those of the studies where correlated changes were found (Asendorpf & van Aken, 2003; Mund & Neyer, 2014; Neyer & Lehnart, 2007; Sturaro et al., 2008). That way, the changes in personality and relationship quality that participants experienced would have been larger and more noticeable.

4.5 "Comparing" the models

I could not test for measurement invariance across the models, however, when looking the signs and magnitudes of the parameters in all three models, it appears that there is no clear,

overarching pattern for how personality develops with relationship quality in different relationship contexts. In all four questions there were divergences across friendships and romantic relationships particularly when it came to the traits extraversion and openness to experience, as discussed earlier. Friendships measured with aggregation and measured dyadically seemed more similar to each other, than they were to romantic relationships. This was especially apparent in Question 1 when both types of friendship exhibited near identical pattern of results for the correlations between initial personality and relationship quality. However, when it comes to changes in personality and relationship quality, friendship measured with aggregation has associations that are unlike those seen when friendship is measured with dyads.

Conceptually, aggregates and dyads are two very different things, so it makes sense that there would be some differences in their associations with personality (Wrzus & Neyer, 2016). The aggregated model is ego-centric. It glosses over the nuances of individual relationships, but provides better information about how well a person plays the role of a good friend. The dyad keeps the messiness of individual relationships and emphasizes both friends' perspectives. I think it is worthwhile to continue to explore friendship dyads as a relationship context for understanding interpersonal processes because there are some questions that can only be answered dyadically. However, if a researcher is looking for stronger – and perhaps more accurate – effects of friendships, continuing to use aggregation works just fine.

4.6 Limitations

This study's biggest advantage, longitudinal data from target participants and multiple informants of different types, comes with one important caveat: response rates. While the study began with over 400 people, only 319 completed at least two assessments. Even fewer participants completed more than three assessments. As for informant responses, about half of the participants had a friend respond to the survey at least once with the fully dyadic data. Fewer

than 100 participants nominated romantic partners, and fewer still of those romantic partners responded to the surveys. The amount of missing data has several implications for understanding the results presented above.

First, these models were underpowered. This is a particular problem for the romantic partner models. There was so much missing data for the romantic partners that the data had to be restructured to get the model to run. Even with the restructured data, the model fit for the romantic partner models was not ideal. Because the romantic partner models were underpowered and had such trouble converging, I was unable to run the dyadic models as multigroup models, and test for model invariance between friend dyads and romantic partner dyads.

It is important to keep power in mind considering just how many tests were conducted. Type 1 and Type 2 error are both concerns within this study. So many associations were tested that some of the significant results are bound to be false positives. The effects of the personality-relationship transaction are small; some true effects are bound to be missed due to lack of power. While many of the findings make sense theoretically and in the context of previous research, it would be important to replicate these findings before placing too much stock in the results.

A second concern about response rates is that who responded to the questionnaires might have been influenced by the constructs we are trying to measure. Relationship quality, for example, could influence whether an informant ever responded in the first place. Many of the participants began the study as first semester freshmen. When asked to nominate a "local best friend" to complete the fully dyadic questionnaires, participants were forced to select people who they didn't actually know very well, and these early friendships might not have lasted past the semester, or the year. It is unlikely that when there was little relationship between the participants and the "friends" that the informants would begin or continue to complete the

surveys. This is especially true for general informants who received little monetary incentive to participate. On the other hand, informants very close to the participants might be especially likely to participate in the study. The romantic partner of one participant commented that he continued to fill out the surveys "out of respect for [their] girlfriend." The reasons behind attrition and informant response rates could cause the range of data could be truncated and biased towards individuals with certain trait levels and higher quality relationships. Restricted variance may be part of the reason why there were so few instances of personality affecting relationship change.

4.7 Future Directions and Conclusion

There was a little evidence that initial personality and initial relationship quality influenced how each other changed, a result which brings into question the assumptions I have about how co-development might occur. To better understand when personality and relationship quality do in fact influence each other, it will be important to consider the processes through which relationships might get "under the skin" and affect a person. It will be equally important to continue to build on the work examining the processes and mechanisms through which personality influences relationships. The PERSOC model (Back et al., 2011) presents a theoretical model for how each member of a dyad's personality and views of a relationships influence the situations the dyads are in, and how, in turn, people's responses to their situations influence both their personality and views of the relationship. This model provides a helpful starting point for thinking about the processes that drive the personality-relationship transaction. However, the PERSOC model has several moving pieces, and it would be incredibly difficult to fully implement a comprehensive test of it.

Instead, future research would do well to spend time unpacking the situations experienced by dyads. At a basic level, what are friends doing together? Do their chosen

activities reflect some aspect of the dyad's personality. Some research suggests it might (Nelson, Thorne, and Shapiro, 2011). How do the activities friends complete together influence their understanding of themselves, their friends, and their relationships? For example, accompanying a friend to a concert and enjoying it might help someone realize that she and her friend are more open then she previously thought. Their shared enjoyment of the experience might also bring them closer. Conversely, if she did not enjoy the show and her friend did, she might think she is less open than her friend and that they are less similar than se previously thought. This could decrease closeness between the friends. The activities dyads do together could have consequences for both personality and relationship quality, but that is only one step. There are numerous other dyadic processes that could influence and be influenced by personality and relationship quality, including, but not limited, to conflict resolution, emotion regulation, and decision making.

To conclude, there are three main points to be drawn from this study that should be taken into careful consideration in future research. First, how I operationalized change surely played a role in the results. The initial correlations between personality and relationship quality reflect what is seen in previous work, but the association among changes in personality and relationship quality had some surprises. Future research should continue to utilize the multivariate growth curves, perhaps in comparison to more traditional residuals, to better understand the associations between personality and relationship quality when change is operationalized this way. Second, this study suggests that there are differences across relationship types, especially with regards to initial associations between personality and relationship quality. Future research should continue to make comparisons of different relationships types in order to better delineate what is unique to certain types of relationships and what is more universal. Finally, this study highlights the need

to know more about the processes driving the associations between personality and relationship quality.

References

Asendorpf, J. B., & Van Aken, M. A. (2003). Personality–relationship transaction in adolescence: Core versus surface personality characteristics. *Journal of Personality*, *71*(4), 629-666. doi: 10.1111/1467-6494.7104005

Back, M. D., Baumert, A., Denissen, J. A., Hartung, F., Penke, L., Schmukle, S. C., & ... Wrzus, C. (2011). PERSOC: A unified framework for understanding the dynamic interplay of personality and social relationships. *European Journal of Personality*, *25*(2), 90-107. doi:10.1002/per.811

Berry, D. S., Willingham, J. K., & Thayer, C. A. (2000). Affect and Personality as Predictors of Conflict and Closeness in Young Adults' Friendships. *Journal of Research in Personality*, *34*(1), 84–107. doi:10.1006/jrpe.1999.2271

Festa, C. C., McNamara Barry, C., Sherman, M. F., & Grover, R. L. (2012). Quality of college students' same-sex friendships as a function of personality and interpersonal competence. *Psychological Reports*, *110*(1), 283-296. doi:10.2466/04.09.10.21.PR0.110.1.283-296

Bleidorn, W., Klimstra, T. A., Denissen, J. J., Rentfrow, P. J., Potter, J., & Gosling, S. D. (2013). Personality Maturation Around the World A Cross-Cultural Examination of Social-Investment Theory. *Psychological Science*, *24*, 2530-2540. doi: 10.1177/0956797613498396

D'Vera Cohn, J. S. P., Wang, W., & Livingston, G. (2011). Barely half of US adults are married–A record low. *Pew Research Social & Demographic Trends*.

Davis, K. E., & Todd, M. J. (1982). Friendship and love relationships. *Advances in Descriptive Psychology*, 279-122.

Davis, K. E., & Todd, M. J. (1985). Assessing friendship: Prototypes, paradigm cases and relationship description. In S. Duck, D. Perlman, S. Duck, D. Perlman (Eds.), *Understanding personal relationships: An interdisciplinary approach* (pp. 17-38). Thousand Oaks, CA, US: Sage Publications, Inc.

de Leon, C. M. (2005). Why do friendships matter for survival?. *Journal of Epidemiology and Community Health*, *59*(7), 538-539. doi:10.1136/jech.2004.031542

Demir, M., & Weitekamp, L. a. (2007). I am so happy 'cause today I found my friend: Friendship and personality as predictors of happiness. *Journal of Happiness Studies*, *8*(2), 181–211. doi:10.1007/s10902-006-9012-7

Donnellan, M. B., Conger, R. D., & Burzette, R. G. (2007). Personality development from late adolescence to young adulthood: Differential stability, normative maturity, and evidence for the maturity-stability hypothesis. *Journal of Personality*, *75*(2), 237-264. doi: 10.1111/j.1467-6494.2007.00438.x

Durbin, E., Hicks, B. M., Blonigen, D. M., Johnson, W., Iacono, W. G., & McGue, M. (2016). Personality trait change across late childhood to young adulthood: Evidence for non-linearity and sex difference in change. *European Journal of Personality, 30*, 31- 44. doi: 10.1002/per.2013

Heller, D., Watson, D., & Ilies, R. (2004). The Role of Person Versus Situation in Life Satisfaction: A Critical Examination. *Psychological Bulletin*, *130*(4), 574-600. doi:10.1037/0033-2909.130.4.574

Hill, P. L., Turiano, N. A., Mroczek, D. K., & Roberts, B. W. (2012). Examining concurrent and longitudinal relations between personality traits and social well-being in adulthood.

Social Psychological and Personality Science, *3*(6), 698-705. doi: 10.1177/1948550611433888

Jackson, J. J., Hill, P. L., Payne, B. R., Roberts, B. W., & Stine-Morrow, E. A. L. (2012). Can an old dog learn (and want to experience) new tricks? Cognitive training increases openness to experience in older adults. *Psychology and Aging*, *27*(2), 286–292. http://doi.org/10.1037/a0025918

Jackson, J. J., Thoemmes, F., Jonkmann, K., Lüdtke, O., & Trautwein, U. (2012). Military training and personality trait development does the military make the man, or does the man make the military?. *Psychological Science*, *23*(3), 270-277. doi: 10.1177/0956797611423545

Jensen-Campbell, L. A. & Malcolm, K. T. (2007). The importance of conscientiousness in adolescent interpersonal relationships. *Personality and Social Psychology BUlletin, 33*(3), 368 - 383.

Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. Guilford Press.

Lang, F. R., Reschke, F. S., & Neyer, F. J. (2006). Social relationships, transitions, and personality development across the life span. In D. K. Mroczek & T. D. Little (Eds.), *Handbook of personality development* (445-466). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Lang, F. R., Staudinger, U. M., & Carstensen, L. L. (1998). Perspectives on socioemotional selectivity in late life: How personality and social context do (and do not) make a difference. *The Journals Of Gerontology: Series B: Psychological Sciences And Social Sciences*, *53B*(1), 21-30. doi:10.1093/geronb/53B.1.P21

Lansford, J. E., Yu, T., Pettit, G. S., Bates, J. E., & Dodge, K. A. (2014). Pathways of peer relationships from childhood to young adulthood. *Journal of Applied Developmental Psychology*, *35*(2), 111-117. doi:10.1016/j.appdev.2013.12.002

Lin, Y. H. W , & Rusbult, C. E. (1995). Commitment to dating relation- ships and cross-sex friendships in America and China: The impact of centrality of relationship, normative support, and investment model variables. *Journal of Social and Personal Relationships, 12,* 7-26. doi: 10.1177/0265407595121002

Lodi-Smith, J., & Roberts, B. W. (2007). Social investment and personality: A meta-analysis of the relationship of personality traits to investment in work, family, religion, and volunteerism. *Personality and Social Psychology Review*, *11*(1), 68-86. doi: 10.1177/1088868306294590

Lüdtke, O., Roberts, B. W., Trautwein, U., & Nagy, G. (2011). A random walk down university avenue: life paths, life events, and personality trait change at the transition to university life. *Journal of Personality and Social Psychology*, *101*(3), 620 – 637. doi:10.1037/a0023743

Mund, M., & Neyer, F. J. (2014). Treating personality-relationship transactions with respect: Narrow facets, advanced models, and extended time frames. *Journal of Personality and Social Psychology*, *107*(2), 352–68. doi:10.1037/a0036719

Nelson, P. A., Thorne, A., & Shapiro, L. A. (2011). I'm outgoing and she's reserved: The reciprocal dynamis of personality in close friendships in young adulthood. *Journal of Personality, 79,* 1113 – 1148. doi:10.1111/j.1467-6494.2011.00719.x

Nestler, S., Grimm, K. J., & Schönbrodt, F. D. (2015). The social consequences and mechanisms of personality: How to analyse longitudinal data from individual, dyadic, round-robin and network designs. *European Journal of Personality*, *29*(2), 272-295.

Neyer, F. J. & Asendorpf, J. B. (2001). Personality - relationship transactions in young adulthood. *Journal of Personality and Social Psychology Research. 81*(6). 1190 - 1204.

Neyer, F. J., & Lehnart, J. (2007). Relationships matter in personality development: Evidence from an 8-year longitudinal study across young adulthood. *Journal of Personality*, *75*(3), 535-568. doi: 10.1111/j.1467-6494.2007.00448.x

Park, H., & Antonioni, D. (2007). Personality, reciprocity, and strength of conflict resolution strategy. *Journal of Research in Personality*, *41*(1), 110-125. doi:10.1016/j.jrp.2006.03.003

Reis, H. T., Collins, W. A., & Berscheid, E. (2000). The relationship context of human behavior and development. *Psychological Bulletin*, *126*(6), 844. doi:10.1037/0033-2909.126.6.844

Reitz, A. K., Zimmermann, J., Hutteman, R., Specht, J., & Neyer, F. J. (2014). How peers make a difference: The role of peer groups and peer relationships in personality development. *European Journal of Personality*, *28*(3), 279-288. doi: 10.1002/per.1965

Roberts, B. W., Caspi, A., & Moffitt, T. E. (2001). The kids are alright: growth and stability in personality development from adolescence to adulthood. *Journal of Personality and Social Psychology*, *81*(4), 670 - 683. doi:10.1037/0022-3514.81.4.670

Roberts, B. W., & Jackson, J. J. (2008). Sociogenomic personality psychology. *Journal of Personality*, *76*(6), 1523-1544. doi: 10.1111/j.1467-6494.2008.00530.x

Roberts, B. W., & Mroczek, D. (2008). Personality trait change in adulthood. *Current Directions in Psychological Science*, *17*(1), 31-35. doi: 10.1111/j.1467-8721.2008.00543.x

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychological Bulletin*, *132*(1), 1 - 25. doi: 10.1037/0033-2909.132.1.1

Roberts, B. W., Wood, D., & Caspi, A. (2008). The development of personality traits in adulthood. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed.; 375-398). New York: Guilford Press.

Robins, R. W., Fraley, R. C., Roberts, B. W., & Trzesniewski, K. H. (2001). A longitudinal study of personality change in young adulthood. *Journal of Personality*, *69*(4), 617-640. doi: 10.1111/1467-6494.694157

Schwaba, T., Luhmann, M., Denissen, J. J. A., Chung, J. M., & Bleidorn, W. (2017). Openness to Experience and Culture-Openness Transactions Across the Lifespan. *Journal of Personality and Social Psychology.*

Selfhout, M., Burk, W., Branje, S., Denissen, J., van Aken, M., & Meeus, W. (2010). Emerging late adolescent friendship networks and big five personality traits: a social network approach. *Journal of Personality*, *78*(2), 509–538. doi:10.1111/j.1467-6494.2010.00625.x

Sherman, A. M., Lansford, J. E., & Volling, B. L. (2006). Sibling relationships and best friendships in young adulthood: Warmth, conflict, and well-being. *Personal Relationships*, *13*(2), 151–165. doi:10.1111/j.1475-6811.2006.00110.x

Specht, J., Egloff, B., & Schmukle, S. C. (2011). Stability and change of personality across the life course: the impact of age and major life events on mean-level and rank-order stability of the Big Five. *Journal of Personality and Social Psychology*, *101*(4), 862 - 882. doi:10.1037/a0024950

Stein, J. A., Newcomb, M. D., & Bentler, P. M. (1986). Stability and change in personality: A longitudinal study from early adolescence to young adulthood. *Journal of Research in Personality*, *20*(3), 276-291. doi:10.1016/0092-6566(86)90135-2

Sturaro, C., Denissen, J. J., van Aken, M. A., & Asendorpf, J. B. (2008). Person-environment transactions during emerging adulthood: the interplay between personality characteristics and social relationships. *European Psychologist*, *13*(1), 1-11. doi: 10.1027/1016-9040.13.1.1

Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, *119*(3), 488-531. doi:10.1037/0033-2909.119.3.488

van Scheppingen, M. A., Jackson, J. J., Specht, J., Hutteman, R., Denissen, J. J., & Bleidorn, W. (2016). Personality trait development during the transition to parenthood: a test of social investment theory. *Social Psychological and Personality Science*. doi: 10.1177/1948550616630032

Wagner, J., Lüdtke, O., Roberts, B. W., & Trautwein, U. (2014). Who belongs to me? Social relationship and personality characteristics in the transition to young adulthood. *European Journal of Personality*, *28*(6), 586-603. doi: 10.1002/per.1974

Wilson, R. E., Harris, K., & Vazire, S. (2015). Personality and friendship satisfaction in daily life: Do everyday social interactions account for individual differences in friendship satisfaction?. *European Journal of Personality*, *29*(2), 173-186. doi: 10.1002/per.1996

Wzrus, C., Zimmermann, J., Mund, M., & Neyer, F. J. (2016). Friendships in young and middle adulthood: Normative patterns and personality differences. In M. Hojjat & A. Moyer (Eds.) *Psychology of friendship*. Oxford University Press

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *52*(1), 30-41. doi:10.1207/s15327752jpa5201_2