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Stability and Change in Women's Personality

Across the Life Course

Carly D. L. LeBaron

A dissertation submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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ABSTRACT

Stability and Change in Women's Personality Across the Life Course

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The current study sought to examine change and stability of personality in a sample of women over the course of 35 years. Existing research is mixed regarding whether or not personality changes over time or whether it remains stable. Using a sample of 187 women tracked over four time points (approximately 10 years between each time point), change and stability in openness to experience, extraversion, and neuroticism was tested using a stacked multilevel growth curve analysis. Four life course events (transition to parenthood, change in marital status, wife entering or leaving the workforce, and husband retiring) were added as predictors to attempt to explain any variance in personality change.

When examining group means of the three personality dimensions studied, only openness to experience showed significant change over time, first decreasing and then increasing in subsequent years. Neither neuroticism nor extraversion showed significant group change over time. However, the results revealed significant within-person change, or individual variation in personality change, in all three personality dimensions over time. In examining the predictor variables, wives entering or leaving the workforce was a significant predictor of change in extraversion and the transition to parenthood had a significant effect on neuroticism scores at Time 1. Clinical implications suggest working with individuals, couples, and families using acceptance and change techniques. Limitations and directions for future research encourage researchers to study larger, more heterogeneous samples using long-term longitudinal methodology and to focus more attention on individual change over time using mixture modelling.

Keywords: personality, women, change, stability, life course transitions

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Introduction

The development of human personality has been a subject of interest to researchers for many years, as personality has been linked with issues that are important in overall human development, such as social success (Erdle & Rushton, 2011), anti-social behavior (Le Corff, & Toupin, 2010), academic achievement (Ferrando et al., 2011), mate selection (Humbad, Donnellan, Iacono, McGue, & Burt, 2010), and the development of psychopathology (Gilbert & Daffern, 2011; Lilienfeld, 2011; Wilt, Oehlberg, & Revelle, 2011). On an individual basis, personality has the power to influence affective, cognitive, and behavioral processes (Bizer, Krosnick, Holbrook, Wheeler, Rucker, & Petty, 2004), which has a substantial impact on the way an individual interacts with the world around him/her. In addition to the considerable impact that personality has on individual well-being, personality can significantly influence how an individual interacts in social, romantic, and familial relationships (Asendorpf & Wilpers, 1998). For example, individuals who are high in personality traits such as extraversion, agreeableness, and conscientiousness tend to have more friends, have less conflict with their friends, and report having an easier time falling in love (Asendorpf & Wilpers, 1998). Additionally, personality may either help or hinder an individual's progress during important life transitions (Parker, Ludtke, Trautwein, & Roberts, 2012).

An important line of research over the past several decades has been stability and change in personality over the life course. Some research has suggested that personality is relatively stable throughout adulthood (Allemand, Gomez, & Jackson, 2010; Ardel, 2000; Costa, Herbst, Ferguson, 2010; McCrae, & Siegler, 2000; Jones, Livson, & Peskin, 2006; McCrae & Costa, 1982; Roberts & DelVecchio 2000), while other research has suggested change in personality over time (Andre et al., 2010; Field & Millsap, 1991; Jylha et al., 2012; Lucas & Donnellan,

2011; Schaie & Willis, 1991). Although the research in this area has been extensive, it is still not known definitively whether adult personality does or does not change over time. Furthermore, it is still unknown what factors, if any, promote change in personality over time.

One general theory of change, the life course perspective, suggests that there are certain life events and transitions that occur throughout the life course that create opportunities for changes in overall psychological health, including personality (Allemand, Gomez, & Jackson, 2010). This supposition makes personality in adulthood a rich area of study regarding stability and change because individuals experience more life course transitions during this period than in any other time of life (Woods et al., 1998). For this reason, and many others, personality across adulthood needs to be a continual subject of research.

With regards to personality research, it has been clearly established that there are a variety of gender differences, especially in terms of trait stability. Women tend to be more prone to personality change across the life course while men tend to be more stable (Ardelt, 2006; Rantanen, Metsapelto, Feldt, Pulkkinen, & Kokko, 2007; Schmitt, Realo, Voracek, & Allik, 2008). Adult development, in general, is a heavily gendered process; late transition (e.g., extended singlehood) or failure to successfully complete certain transitions (e.g., infertility) may have a greater impact on women than men (Loftus & Andriot, 2012). Additionally, women may go through different life course transitions than men, may go through certain life course transitions at different times, or may simply respond differently to shared life course transitions (McFadden, & Rawson Swan, 2012; Teachman, 2010). Therefore, examining long-term change in women's personality across the life course offers a rich, widely untapped area of study.

Historically, there has been substantial research on change and stability in personality across adulthood; however, most of it has been cross-sectional (Allemand, Zimprich, & Hertzog,

2007; Donnellan & Lucas, 2008; Halama & Lacna, 2011; Jackson et al., 2009; McCrae et al., 1999, 2000; Soto, John, Gosling, & Potter, 2011; Srivastava, John, Gosling, & Potter, 2003; Terracciano, McCrae, & Costa, 2006; van Solinge & Henkens, 2007). A major drawback of using cross-sectional data to examine change and stability is the risk of cohort effects. Cohort and period effects occur when two different groups are compared, or considered similar, without regard to the potential historical and social differences between them (Alwin & Campbell, 2001; Ryder, 1965). For example, a cross-sectional study on personality change over the life course may compare personality scores of a younger cohort (born 1985-1990) to an older cohort (born 1945-1950) without taking into account the different historical contexts and social attitudes that may have influenced different trajectories of personality development. Additionally, the use of cross-sectional data prevents the examination of a group of individuals over time and across different life course transitions (O'Reilly, 2012). Researchers are increasingly making the necessary transition to studying this phenomenon using longitudinal methods.

Longitudinal research is better suited when the purpose is to examine change over time (O'Reilly, 2012). Longitudinal methods allow researchers to follow the same group of people over time, which eliminates the impact of cohort and period effects. Additionally, these methods allow researchers to take into account social, environmental, and life course changes that may have an impact on the dimension of change they are studying over time. Most studies on personality over time have used short-term longitudinal data (e.g. less than ten years), which impairs the ability to have a holistic, long-term view of stability and change in adulthood. For example, Hicks, Durbin, Blonigne, Iacono, and McGue (2012) examined personality change over a seven year period, which captured the transition from adolescence to emerging adulthood, but

did not cover other important life course stages and events that occur throughout the remainder of adulthood.

In order to better understand whether life course transitions have a significant effect on personality in adulthood, we need longer-term longitudinal studies. Longer-term longitudinal studies will support the examination of multiple life course stages, transitions, and changes that may otherwise be lost in shorter-term studies. Additionally, longer-term studies allow for a more holistic view of personality change or stability across time. Bazana and Stelmack (2004) conducted a meta-analysis of 81 longitudinal studies on personality stability and change across the life course and discovered that shorter-term studies tended towards finding stability in personality, but the longer the period of study, the less stable personality appeared. This suggests that shorter-term longitudinal studies may capture too small of a time period to determine whether personality does, indeed, change across the life course. The current study was completed to add a longer-term longitudinal perspective to the development of women's personality across a period of approximately 35 years, taking into account specific important life course transitions that may occur during adulthood.

Literature Review

Historical Perspectives of Personality Development

There are a wide variety of views that theorists and researchers have regarding how personality develops and changes over the life course. Psychoanalysts, behaviorists, humanists, and developmentalists all have differing ideas on what exactly human personality is and how it develops over time. Considering multiple perspectives of the development of personality offers the opportunity to further understand and analyze the conflicting results that often arise during the study of personality stability/change.

Freud. Sigmund Freud believed that adult personality was dictated by unconscious motives that exist outside of a person's awareness (Hoyer & Roodin, 2003). The development of personality, according to Freud (1964), was dictated by the unconscious forces produced in the internal struggle between the id, the ego, and the superego. The id, the valueless animalistic part of one's personality that seeks for pleasure, is constantly at odds with the superego, the moralistically driven side of the self. The ego, the part of the self that is most directly connected with the external world, is the portion that must be constantly seeking to create a balance between the primitive and irrational forces of the id and the hyper-value laden superego. Personality, therefore, is the result of how the ego manages to balance the demands of the id, superego, and the external world. Over a short period of time during childhood, the changing demands of those three driving forces form an individual's personality.

Skinner. B. F. Skinner emphasized the influence that learning from personal and observed experiences and the process of reinforcement have on the development of personality. His argument, therefore, would differ from Freud in that he believed personality was more of a compilation of what a person does (how they behave) rather than a collection of unconscious processes (Skinner, 1990). From a behavioral perspective, personality forms as a function of the reinforcement system set up in the environment of the individual. Instead of categorizing personality as an internal collection of traits, it is seen as how a person consistently behaves over a period of time.

Jung. Carl Jung conceptualized personality development as a process of individuation, in which a person learns to become an individual separate from those around him/her (Jung, 1939). Similar to some of the ideas championed by Freud and other psychoanalysts, Jung emphasized the existence of unconscious processes that were accessible through symbolic

interpretation. He also suggested an inherent battle between conscious and unconscious forces that were influential in the process of individuation and personality development. Jung saw the ultimate goal of personality development as a full integration of the self (Jung & Storr, 1983).

Loevinger. Jane Loevinger (1976) suggested a theory of personality development focused on the attainment of one's true self (or ego), where there is little discrepancy between who we really are and how we act. What is often referred to as the theory of ego development states that individuals become increasingly aware of themselves and their relationships and become more differentiated. Loevinger emphasized the idea that everyone does not necessarily go through every stage and no one stage is better than any other. In adulthood, a person is either more driven by external or internal controls (conformity vs. autonomy) and operates according to certain cognitive and interpersonal styles (impulsiveness vs. conscientiousness) (Redmore & Loevinger, 1979). Personality is often shaped by which stages an individual goes through and what ultimate stage each individual personally wishes to attain.

Erikson. Erik Erikson proposed an eight-stage theory of general psychological development akin to the beliefs of Freud. Unlike Freud, however, Erikson emphasized the importance of context, specifically, how the social system may impact development (Hoyer & Roodin, 2003). This was the first theory to examine the ways in which psychosocial development and personality change throughout adulthood (Erikson, 1963). The basis of Erikson's (1963) model of personality development proposed that a predisposed genetic plan unfolds as we age. During that unfolding process, the different social and cultural contexts in which each individual exists modifies the outcome of the plan and facilitates the emergence of certain results. The eight stages (trust vs. mistrust, autonomy vs. shame and doubt, initiative vs. guilt, industry vs. inferiority, identity vs. identity confusion, intimacy vs. isolation, generativity

vs. stagnation, integrity vs. despair) each suggest the social realm in which the conflict occurs, how an individual would define themselves during each conflict, and the results of the conflict depending on whether the individual resolves the conflict in a positive or negative way. For example, during the generativity vs. stagnation stage, each individual faces the decision concerning parenthood; some deliberately choose it, some accidentally choose it, others purposely decide against it, and others choose parenthood but are unable to conceive children. The results of that decision have an enormous impact on self-perceptions, life roles, and the trajectory of further personality development (Slater, 2003). According to Erikson, an individual must move through each of these stages in a linear fashion and cannot proceed to the next stage until the previous stage has been resolved (see Erikson, 1963 for further information).

Dimensions of Personality and the Five-Factor Model

Beyond these global theories of personality, social scientists have long been attempting to categorize and conceptualize personality according to a specific taxonomy. The most widely accepted conceptualization of personality is one of a multidimensional compilation of traits with related traits being grouped together under a common category or dimension (Zuckerman, Kuhlman, & Camac, 1988). After years of studying established common personality traits, collecting self-report data from study participants, and factor-analyzing the traits, Paul Costa and Robert McCrae (1978), two of the most renowned researchers in the domain of adult personality, developed one of the most widely accepted models of personality, known as the NEO inventory. The NEO inventory provides three distinct dimensions: 1) neuroticism, 2) extraversion, and 3) openness to experience. Costa and McCrae (1985b) subsequently expanded the NEO inventory to include two additional, yet secondary, dimensions: agreeableness and conscientiousness. This expanded model is known as the five-factor model of personality. These five dimensions are

considered “superfactors” (Zuckerman, Kuhlman, & Camac, 1988) that together incorporate all the different traits of adult personality.

When describing an individual’s personality according to each dimension, scores are considered on a continuum from high to low. Neuroticism varies from secure and confident (low neuroticism) to overly-sensitive and nervous (high neuroticism). Extraversion varies from solitary and reserved (low extraversion) to outgoing and energetic (high extraversion). Openness to experiences varies from consistent and cautious (low openness to experience) to inventive and curious (high openness to experience). Agreeableness varies from cold and unkind (low agreeableness) to friendly and compassionate (high agreeableness). Conscientiousness varies from easygoing and careless (low conscientiousness) to efficient and organized (high conscientiousness) (Atkinson, Atkinson, Smith, Bem, & Nolen-Hoeksema, 2000).

Each dimension of the five-factor model can be divided into lower level, more specific traits (Zuckerman, Kuhlman, & Camac, 1988). Neuroticism measures how depressed, hostile, anxious, vulnerable, impulsive, and self-conscious a person is. Extraversion consists of a person’s gregariousness, positive emotions, attachment, excitement-seeking, and assertiveness. Openness to experience encapsulates how open a person is to feelings, ideas, behaviors, values, and aesthetics. Agreeableness typically includes being friendly, flexible, trusting, forgiving, courteous, good-natured, tolerant, and cooperative. Conscientiousness is categorized as dependability, responsibility, thoroughness, organization, planning, hard-working, persevering, and achievement-oriented (Barrick & Mount, 1991).

Many different inventories have been created based on the dimensions of personality including the Big Five Inventory (BFI), the Revised NEO Personality Inventory (NEO-PI-R), the Minnesota Multiphasic Personality Inventory (MMPI), and the California Psychological

Inventory (CPI), among others (Edwards & Abbott, 1973). The BFI and NEO-PI-R are both based on the five factor model of personality (Costa, Terracciano, & McCrae, 2001). The MMPI is used to assess personality structure, but more commonly used to identify psychopathology than to measure normative adult personality (Gregory, 2007). The CPI was created lightly based on the MMPI but was created to examine normative personality based in descriptions of ordinary behaviors rather than pathological ones (Aiken, 2004). Research has found a good deal of similarity across constructs between these frequently utilized measures (Adams & John, 1997; McCrae, Costa, & Piedmont, 1993; Soto & John, 2009).

Personality and Gender

Gender differences in personality traits have been well-researched throughout the years (Burton et al., 2010). The predominant gender differences that have been discovered are that women tend to score higher than men in agreeableness, neuroticism, and warmth (Burton et al., 2010; Costa, Terracciano, & McCrae, 2001) across a variety of different cultures (Schmitt, Realo, Voracek, & Allik, 2008). These gender differences can usually be detected early in childhood and remain relatively stable throughout the life course (Schmitt, Realo, Voracek, & Allik, 2008). Since personality has links to many aspects of human experience and development, it is vital to understand how gender differences affect both the development of personality and the trajectory of personality across the life course.

There are a variety of explanations regarding how and why personality characteristics tend to be different between genders. One of the main theories regarding gender differences in personality is social role modeling. This theory suggests that most gender differences can be accounted for by gender role socialization, which models appropriate ways for men and women to think, feel, and behave according to a given culture (Schmitt, Realo, Voracek, & Allik, 2008).

It is thus expected that cultures that are more traditional will model more extreme differences between men and women and cultures that are more egalitarian will have less extreme gender differences in personality traits.

From an evolutionary perspective, gender differences in personality arise from innate dispositional differences between men and women. Due to different adaptive demands across time, men and women developed specific gender differences in personality traits that increased their chances of survival and successful sexual selection. Women were thought to be more cautious and nurturing in order to increase the chance of their survival and the survival of their offspring, while men were selected to be more prone to take risks and be socially dominant to ensure successful mating and perpetuation of their genetic line (Schmitt, Realo, Voracek, & Allik, 2008).

Helgeson (1994) suggested that differences in personality between genders may be accounted for by the interaction between a person's existence as an individual (agency) and a person's social, group, and cultural relationships (communion). In other words, a unique combination of nature and nurture affects the development of certain personality characteristics. For example, if women are primed by evolution to be nurturing and, therefore, choose to be nurturing *and* they exist in a culture where female nurturance is encouraged, they are more likely to develop that specific characteristic.

Theories of Personality Change

In addition to theories of personality development, there is a set of theories that attempt to explain how and why personality might change throughout the life course. In order to examine the possibility of personality change over the life course, a basic understanding of these theories of change is necessary. Three different, but ultimately related, theories are most salient for the

current discussion: evolutionary theory, life history theory, and life course theory. Each of these theories links both an evolutionary perspective and an environmental perspective in order to create a more holistic view of personality change.

Evolutionary theory. The key to understanding personality change from an evolutionary perspective is to examine the idea of adaptability (Mealey, 2010). It is not simply enough to presume that a person develops a random collection of characteristics from their mother and father, but that the characteristics that they develop are evolutionarily advantageous. One may question if a certain set of personality characteristics is adaptive, then why doesn't everyone have the same set of characteristics? The answer is that each set of personality characteristics has specific advantages and disadvantages, or trade-offs. For example, extraversion and risk-taking may increase the possibility of finding a mate; it also increases the risk of premature death or accident. In terms of trade-offs, personality characteristics are at least partially heritable, but the emergence of specific characteristics is due to environmental factors. It is the adaptive psychological mechanisms inherent in human beings and other animals that drive this trait selection process (Simpson, Griskevicius, & Kim, 2011). Therefore, personality change across the life course could be triggered by changes in environmental factors, if the change in environment deems a previously reinforced characteristic less adaptive in a new environment (Mealey, 2010).

Life history theory. Life history theorists have adopted the idea that specific personality characteristics develop from life experiences that occur at different points in social development (Simpson, Griskevicius, & Kim, 2011). Due to the limited availability of time and resources, a person must decide (beyond their own conscious awareness) how to divide up those resources during each different phase of life (Kaplan, Lancaster, & Robson, 2003). These unconscious

decisions are motivated by environmental cues. So, certain environments will motivate an individual to make one unconscious decision, while another environment will motivate an individual to make a completely different decision regarding personality development. Life history theory suggests that there are three specific environmental factors that may influence the development of personality at a given time; these are parental investment, mortality levels, and frequencies of other personalities (Simpson, Griskevicius, & Kim, 2011). Most relevant to the current study are the ideas of parental investment and the frequencies of other personalities. At different stages of the life course, parental investment as an environmental factor may have more or less pull on the development of personality characteristics (adolescence vs. adulthood vs. late adulthood), and the frequency of other personalities in their environment may activate dormant characteristics and make them more emergent (personality characteristics in relation to others' characteristics may make them more or less adaptive).

Life course theory. As roles, rules, and expectations evolve throughout adulthood, and as individuals face a variety of life course transitions and psychological turning points, the life course perspective suggests that these changes may alter the way people view themselves, their relationships, and the world in general. Since life course transitions may provide a new lens through which adults see themselves, life course transitions may alter behaviors, beliefs, and, perhaps, personality itself (Allemand et al., 2010). During early adulthood, some researchers have found that people tend to increase in socially desirable personality traits, such as agreeableness and conscientiousness, while neuroticism tends to decrease, although there are mixed results pertaining to changes in openness to experience and extraversion (Field & Millsap 1991). During later adulthood, openness to experience may decrease, but there are mixed results again in terms of the other four personality domains (Allemand, Gomez, & Jackson, 2010).

One observation made by life course researchers is the potential for life course events to influence individuals differently depending on the historical context and the normative or non-normative timing of the event (Hultsch & Plemons, 1979). For example, *historical context* gives perspective on how losing a job during an economic depression may have a different impact on an individual than job loss during an economic boom. An example of *normative or non-normative timing* would be the difference between losing a spouse at age 28 or experiencing the same loss at age 78. These mediating factors may impact whether or not a person experiences change or stability in personality across life course transitions. Additionally, there are certain external and internal factors that may also mediate the effects that life course events have on an individual (e.g., intelligence, mental health, income, social support) (Hultsch & Plemons, 1979). Researchers have found that when it comes to life course transitions, some small effects for personality change have been discovered for transitions, such as job change and marital status (Costa, Herbst, McCrae, & Siegler, 2000). It is also suggested that life course events may elicit changes in personality because it changes the amount of investment an individual places in self-defining social roles (Löckenhoff, Terracciano, & Costa, 2009). However, further research is necessary is required to determine if other life course transitions produce similar changes in personality, and what factors may mediate these changes.

Change or Stability in Adult Personality: Previous Research

There is a robust research literature that has examined stability and change on personality over the life course. Earlier research in this area tended to be cross-sectional, but researchers are now shifting to a more longitudinal approach in the contemporary research. The unifying theme throughout both the cross-sectional and the longitudinal studies is mixed results regarding whether personality changes or is stable across the life course. Very little research focused just

on women's personality across the adult life course, thus research including analyses on both genders was included in the review of literature; any reported gender differences are highlighted.

Cross-sectional research. Many studies have utilized cross-sectional designs to examine adult personality change and stability (Allemand, Zimprich, & Hertzog, 2007; Donnellan & Lucas, 2008; Halama & Lacna, 2011; Jackson et al., 2009; McCrae et al., 1999, 2000; Soto, John, Gosling, & Potter, 2011; Srivastava, John, Gosling, & Potter, 2003; Terracciano, McCrae, & Costa, 2006; van Solinge & Henkens, 2007). In one study that utilized retrospective reports of personality change, Halama and Lacna (2011) examined perceived personality changes in 60 Slovakian respondents who reported a religious conversion. Each participant filled out a survey regarding their perceptions of their personality before conversion and another survey regarding their personality after their conversion. Participants reported a perceived decrease in neuroticism and increases in agreeableness, conscientiousness, and extraversion. The researchers also compared results from surveys completed by a close friend of the participant who knew the participant both before and after conversion. The results from the friends of the participants were consistent with the results from the participants themselves; specifically, friends of participants also reported seeing personality change after conversion.

In a broad study of personality traits across different ages, Soto, John, Gosling, and Potter (2011) examined the Big Five personality profiles of 1,267,218 English-speaking participants from ages 10-65. Using the Big Five Inventory that was administered via the internet, the researchers examined age differences in personality traits across 6 different age cohorts (late childhood, adolescence, emerging adulthood, early adulthood, early middle age, and late middle age). Regarding the adult portion of the sample, the results indicated that participants in the oldest cohort (late middle age) were more conscientious and agreeable than their younger

counterparts. Neuroticism declined and extraversion remained relatively stable across the adult cohorts for both men and women. In examining gender differences, women tended to score higher in conscientiousness and agreeableness as well as having higher trends of change in those traits across time. Men, however, scored higher in openness to experience than women did.

Terracciano, McCrae, and Costa (2006) utilized a cross-sectional approach by comparing rank-order stability results for men and women from three different age groups of the Baltimore longitudinal study of aging (BLSA) study (30-50, 50-65, and 65+ years old). The results indicated that rank-order stability of personality traits was generally the same across the three age groups. However, when examining adults that were between 30 and 50 years old from their sample, they found relatively lower rank-order stability for that age group than for adults 50 years and older. When comparing personality change between genders, the trajectories remained relatively the same, indicating little to no difference between men and women. In addition to a small effect size, the researchers reported that the results of the study were not strong enough to provide sufficient evidence that stability increased with age. In short, the cross-sectional analysis did not provide enough data in order to determine the stability of personality across the life course.

One limitation to cross-sectional research to study change over time is the necessity of using retrospective reports from participants, which can be more unreliable and biased than examining a phenomenon at individual time points (Anestis et al., 2010). Another limitation of cross-sectional research is comparing data from different age groups to determine if personality changes over time because results may be biased due to possible cohort effects (Alwin & Campbell, 2001; Ryder, 1965). The most effective method of studying change over time, therefore, is to use longitudinal methods of data collection and interpretation (O'Reilly, 2012).

Longitudinal research. Similar to the cross-sectional research, the findings of longitudinal studies on change and stability of personality over the life course have been mixed. According to a life course perspective, adulthood presents distinct developmental transitions, such as becoming a parent, launching children, and losing a spouse, that may set the stage for personality change (Williams & Umberson, 2004). Unfortunately, there is very little research detailing how specific life course transitions affect personality over the life course, with the exception of change in job status or marital status (Costa, Herbst, McCrae, & Siegler, 2000). In order to develop a more thorough understanding of the varying results in previous longitudinal research concerning this specific stage of the life course, it is important to examine studies that argue for either stability or change in adult personality in both short-term and long-term longitudinal studies. The following paragraphs detail longitudinal research that supports both perspectives, including the only study found that examined the impact life course transitions (called psychological turning points in the identified study) on personality.

Stability: Short-term studies. A number of longitudinal studies have reported findings that personality is stable over a relatively short period of time (Allemand, Gomez, & Jackson, 2010; Ardel, 2000; Ferguson, 2010; McCrae, 1993; McCrae & Costa, 1982; Möttus, Johnson, & Deary, 2012; Roberts & DelVecchio, 2000). For example, Allemand, Gomez, and Jackson (2010) examined the self-reported Big Five personality traits, as well as self-identified psychological turning points, of 407 men and 485 women across a 10-year period. The researchers found high rank-order stability and no mean-level changes in Big Five personality traits over the 10-year period. This suggests that, despite the psychological turning points that occur during midlife, personality remained relatively stable. Gender differences were not examined as a part of the analysis.

McCrae (1993) conducted a study with regards to stability in personality during adulthood. Using the Baltimore Longitudinal Study of Aging (BSLA), he examined 292 men and women using the NEO-PI to measure personality across a six year period. His results indicated that adults with no psychopathology tended to have high levels of personality stability over this time period. He also reported that there were no significant individual differences in the temporal consistency of personality traits in adulthood. McCrae further suggested that reports of personality change over the healthy adult life course were most likely a function of statistical error and that researchers interested in examining personality change were better served by examining populations with psychopathology or trauma that may be more likely to elicit personality changes.

Ferguson (2010) conducted a meta-analysis of 47 different longitudinal and cross-sectional studies that examined both healthy and pathological personality stability. The results indicated that McCrae and Costa's (1982) suggestion that personality becomes relatively stable around age 30 and then remains stable afterwards was correct. Additionally, the meta-analysis suggested that any gender differences that were found were relatively small and when significant trends were discovered, women's personality tended to be more stable than men's personality. The studies under examination in this meta-analysis generally support the notion that personality is mostly stable during adulthood. Additionally, the results indicated that any differences in stability of personality over the life course are so small that they may be due to statistical artifacts rather than actual differences or changes.

Stability: Long-term studies. Kupper, Boomsma, de Geus, Denollet, and Willemsen (2011) employed a twin study method to examine personality change or stability over a period of about 10 years. They examined the personality profiles of 3,133 adults using a survey method

and focused on both genetic components of personality change and environmental factors that may influence personality change. They found that personality types remained stable over time and that genetic factors were most influential in terms of stability. They reported that different environmental factors did influence personality types on certain occasions, but that the genetic factors were more powerful than the environmental factors in maintaining personality stability.

Costa and McCrae (Costa & McCrae, 1977, 1980, 1985, 1986; McCrae et al., 1999) have completed numerous extensive studies on personality over the life course. Much of Costa and McCrae's research is based on one of the most extensive ongoing longitudinal studies today, the Baltimore Longitudinal Study of Aging (BLSA). This study has followed a large sample of Caucasian men, ranging in ages 20-80, over the life course since the 1950's; studies ranging from nine years (Costa & McCrae, 1977) to forty two years (Terracciano, McCrae, & Costa, 2006). Costa and McCrae's personality research stemming from these data have indicated that the three main domains of personality (openness to experience, extraversion, and neuroticism) are relatively stable over the life course. In a more recent BLSA study, Costa, Herbst, McCrae, and Siegler (2000) examined the effect that life events may have on men's personality. They discovered that life events had little effect on personality change in men, although they did discover that significant events, like a change in marital status (marriage, separation, divorce, or widowhood) and changes in jobs or careers, had a slight impact on personality change. If the evidence suggests personality stability through life course events for men, the question then becomes whether it will hold true for women as well.

Based on the McCrae and Costa (1982) stability theory of personality, Ardel (2006) examined 106 men and women from the Berkeley Guidance Study based on their individual personality profiles over a 40 year period. The results indicated that personality remained

relatively stable for the 25 males that were examined in the study. However, for the 81 females that were included in the study, the results indicated a lack of personality stability. The researcher attempted to examine several possible moderating variables that may have accounted for this change in women's personality, but was unable to explain the variation. These interesting results call for a long-term longitudinal examination of women's personality over the life course, including possible mediating and moderating variables such as life course events.

Change: Short-term studies. There are numerous short-term longitudinal studies that have been conducted that have found evidence of change over the life course (Allemand, Gomez, & Jackson, 2010; Lucas & Donnellan, 2011; Jylha et al., 2012; Wortman, Lucas, & Donnellan, 2012). In the Allemand, Gomez, and Jackson (2010) study previously described, the researchers discovered some individual differences. In this midlife sample, 9% of the participants showed an increase in agreeableness and 11% showed a decrease in agreeableness, which suggests that a lack in high rank-order and mean-level change may mask smaller individual differences when it comes to personality change. This finding highlights the importance of considering both group level changes and individual trajectories when examining change over time. This finding also provides evidence that some life cycle phases may promote stability while others promote change.

Along those lines, Lucas and Donnellan (2011) examined a diverse group of age ranges (youngest being 17-20 and oldest being 81-84) from a nationally representative sample of German households in 2005 and four years later in 2009 (total of 14,110 people). The results indicated that there was greater stability in personality for the age groups that were transitioning from adolescence into adulthood. They also found that there seems to be a time in older age where stability peaks and then declines, which creates an inverted-U-shape pattern. This gives

further evidence that personality may be more malleable in certain life stage phases than in others and that there may be no permanent set point for when, or if, personality is set in stone.

In another study (Jylha et al., 2012), researchers examined 237 individuals suffering from major depression at four time points over a 5-year period to determine if their use of pharmacological medications was associated with personality change. Although the results indicated no significant relationship between medication usage and personality change, the researchers discovered that extraversion and neuroticism changed significantly over time for some participants. The researchers found a significant relationship between depression symptomology and personality change over the 5-year period. These results suggest the possibility that environmental factors, like mental illness, may influence change in personality across the life course.

Change: Long-term studies. An argument for change in personality across the adult life course is that the changing social environment allows for the emergence of characteristics that may have previously been discouraged by the cultural roles, rules, and expectations. Andre et al. (2010) studied personality differences and similarities in two different cohorts of women to see if and how concomitant social changes affected personality changes in each group. Researchers randomly selected 318 38 year old and 593 50 year old women in 1968-1969 (T1) and 2004-2005 (T2), creating two groups that were raised under very different social conditions for women. Using the Eysenck Personality Inventory, the researchers discovered that the women from T1 (1968) to T2 (2005) experienced an increase in dominance, exhibition, and extraversion. The researchers suggested that the change in personality traits between the two cohorts of women was due to a shift in the environmental or cultural appropriateness of women being more dominant and extroverted. Additionally, they found differences in the changes over time

between the two cohorts that they linked to those same cultural influences. This adds continued support for both the notions that personality is influenced by environmental and genetic factors and that personality can change over the life course.

Another comprehensive longitudinal study that has shown evidence for some level of personality change over the life course is the Seattle Longitudinal Study (SLS). Schaie and Willis (1991) examined 3,442 participants, ranging in age from 22 to 84 years old, that had participated in the SLS at five different time points (1956, 1963, 1970, 1977, and 1984). By examining their scores on personality inventories across the 28 year period, the researchers found evidence that personality characteristics in the men and women from the SLS were relatively stable until they reached their late 60's. After that age point, participants showed small changes in personality on a negative trajectory, meaning that participants became less open to experience, less extraverted, or less neurotic after a certain time point. The researchers also discovered that each successive generation in the study became more open and more flexible to changes, suggesting a cohort difference that has undoubtedly impacted cross-sectional research on personality change and stability over time.

A third study supporting the possibility of some personality change across the life course is the Berkeley Older Generation Study (BOGS). Spanning a period of approximately 55 years, 420 men and women were examined in terms of personality, as well as a number of other dimensions. Field and Millsap (1991) examined data from the 1969 and 1983 waves of the BOGS from two of the age cohorts. The younger cohort had an average age of 65 in 1969 (average age of 79 in 1983) while the older cohort had an average age of 75 in 1969 (average age of 89 in 1983). The researchers used an open-ended interview format to collect information about personality over the life course. The results indicated that agreeableness and neuroticism

remained relatively stable over the 14 year period, but extraversion and openness to experience had moderate declines. Additionally, they found differences in whether these personality traits changed according to which cohort the participant belonged to. For example, as the younger cohort transitioned from “young-old” (65 years old) to “old-old,” there was an increase in agreeableness, while the older cohort who transitioned from “old-old” to “oldest-old” showed stability in agreeableness. These results indicate possible cohort differences, but they also indicate that different age or life course transitions may have a different effect on personality at different times.

Group differences vs. individual variation. One of the most common issues that arise in personality research is the difference between group averages and variation in individual scores. Most research focuses attention on how the overall group of participants in the study scored on personality measurements as a whole, while perhaps overlooking individual variations. However, examining individual trajectories is vital to understanding inter-individual variation that could potentially be masked by the averaging of the group mean. Using growth curve analysis to examine individual variation will allow researchers to better understand the trajectory of personality over time; why some individuals are capable of, or susceptible to, personality change over the life course, while others remain stable.

Contemporary research regarding personality change and stability over time has typically used the strategy of comparing overall means at each wave of data collection. However, more recent longitudinal studies have examined individual variation over time, typically using growth curve analysis (Bleidorn, Kandler, Riemann, Angleitner, & Spinath, 2009; Branje, Van Lieshout, & Gerris, 2007; Lenzenweger, Johnson, & Willett, 2004; Mroczek & Spiro, 2007; Vaidya, Gray, Haig, Mroczek, & Watson, 2008). For example, Bleidorn et al. (2009) examined 344 German

twin pairs across a 10-year period using a German version of the NEO PI-R. Personality change and stability was examined using latent growth curve analysis. The researchers discovered statistically significant changes in personality in all personality dimensions except extraversion. The results also showed that different groups of individuals showed different trajectories of personality development, therefore highlighting both group-level and individual-level differences. For example, older groups and groups of people with “more mature” personalities (higher scores in Conscientiousness) tended to change *less* than other groups. The biometric analysis showed that the change and stability that manifested in the results was due to both genetic and environmental factors.

Another example of growth curve analysis in the examination of personality change and stability over the life course stems from the research of Vaidya et al. (2008). The researchers examined Big Five personality trait change in 299 participants across three different time points throughout emerging adulthood (spanning approximately 6 years). The results indicated overall mean-level change in each of the Big Five personality dimensions (slight decreases in openness to experience, conscientiousness, agreeableness, and neuroticism but a slight increase in extraversion) but with significant variability in individual trajectories. The current study sought to extend the period of examination of the studies previously discussed to 35 years to accommodate more time for significant life events to occur.

Gender and Change in Personality over the Life Course

When examining the results of the research previously discussed, there are several themes that emerge in relation to gender differences in personality change over the life course. First, some researchers suggest gender differences in personality emerge relatively early and remain salient throughout the life course; specifically that women’s personality tends to be less

stable than men's throughout adulthood (Ardelt, 2006; Rantanen, Metsapelto, Feldt, Pulkkinen, & Kokko, 2007; Schmitt, Realo, Voracek, & Allik, 2008). In sharp contrast to this supposition, the meta-analysis conducted by Ferguson (2010) suggested that women's personality tended to be *more* stable than men's over the life course.

The second theme that emerged is that changes in women's personalities may be at least partially explained by the changing social and cultural roles across the life course (Andre et al., 2010). Due to the inherent genetic/biological and environmental differences in social roles between men and women, personality may change at different times throughout the life course, at different rates, or to different extents (Schmitt, Realo, Voracek, & Allik, 2008). Since women tend to be socialized to be more relationally oriented, life course transitions that involve significant relational shifts may have a greater impact on personality change for women than those same life course transitions for men (Helgeson, 1994).

In addition to shifting social roles and expectations over the life course, the final theme attempts to explain why women's personalities may be more prone to change across the life course. Andre et al. (2010) highlighted the importance of shifting cultural expectations and demands on women throughout history. While one decade may have put extreme social pressure on women to restrict certain parts of their personalities, subsequent decades may reduce that social pressure, allowing other dimensions of women's personalities to become more emergent. Where women were once more reinforced for high agreeableness and low extraversion, shifting cultural norms (the women's liberation movement, more women choosing to be in the workplace, etc.) may provide higher levels of social acceptability of women lower in agreeableness and higher in extraversion than cohorts of previous generations. Taking into account the three themes of gender differences in personality change and stability highlighted

here, it is necessary to commit to further examination of how women's personality trajectories are uniquely influenced.

Summary and Hypothesis

There is significant evidence for both stability and change in adult personality over the life course. Additionally, previous research has also established that both genetic and environmental factors impact personality development differently for men than for women. Most researchers have agreed that a combination of genetic predisposition and environmental influence drive the development of personality, therefore, significant changes in environment over the life course may continue to promote change in personality long after researchers initially believed that personality became stable.

A common limitation cited in previous longitudinal studies has been that data was only collected for two waves (Lucas & Donnellan, 2011). A major contribution this study will be the use of growth curve analysis over four waves of data to more accurately assess the trajectory of personality over the life course. In addition, the fact that the four waves of data spanned a total of 35 years, where other longitudinal studies have been limited to 6-10 years, will allow an analysis of the trajectory of personality over the majority of the adult life course instead of capturing a small window of adult development.

After examining the existing longitudinal research, the current study sought to answer three main questions: 1) How stable or changeable is women's personality across a 35 year period?, 2) Are some personality characteristics more prone to stability or change than others?, and 3) Which life course events, if any, have a significant impact on the stability or change in women's personality across the adult life course? From these main research questions and results from previous research, three hypotheses were developed: 1) Women's personality will

change over the life course, 2) Life course events and transitions will impact changes in personality over time, and 3) Certain life course events may have more of an impact on personality across the life course than others, such as change in job status or change in marital status (Costa, Herbst, McCrae, & Siegler, 2000).

Method

Participants

The data used in the current study were taken from 4 waves of a longitudinal study of women over 35 years of the life course. The women that participated in the study were married to medical students or residents who were attending a medical school on the East Coast. In order to recruit participants, contact was established through the university's alumni office. Data was first collected from this group of women during the 1969-1970 school year (see Karney & Coombs, 2000). Of the initial 231 women approached, 175 women agreed to participate in the study at Time-1 for a 76% response rate. After the initial collection of data, the women were contacted 10 years later (Time-2, 1980) using contact information gathered from the university alumni office. Twelve additional women from the same cohort of medical student's wives were recruited to participate at Time-2, in addition to the 175 original participants. Twenty-six women from the initial assessment either refused to participate at Time-2 or could not be located, which reduced the possible total at Time-2 from 187 women (which included the additional 12 participants) to 161 women (86% retention rate). All 187 women that were contacted at Time-2, including the 26 that could not be reached or refused to participate, were contacted again 10 years later in 1990 and asked to participate in a third wave of data collection. One hundred forty-eight of them responded (79% retention rate). At Time-3, 137 women reported that they were still married to their original partner. Those 137 women were contacted a final time in 2005 or

2006, 15 years after Time-3, to participate in Time-4 data collection and 86 of them responded (63% retention rate).

Procedure

During the initial assessment (Time-1), the participants were asked to complete a qualitative interview with a member of the research team on the medical school campus. In addition to the qualitative interview, they were given a quantitative questionnaire to fill out and mail back at their earliest convenience. For the following three time points (Time-2, Time-3, and Time-4), the participants were contacted using addresses and telephone numbers supplied by the medical school alumni office. Participants were contacted via telephone and completed a qualitative interview that was tape-recorded by the research team. Participants were also mailed a quantitative questionnaire to fill out and return through the mail. If the participants did not reply in a timely manner, reminder telephone calls were placed by the research team, and the participants were encouraged to complete the questionnaire and return it as soon as was feasible. No financial compensation was offered for participation in the study and the participants' husbands were not asked to participate in the study at any time.

Sample

At the time of the initial assessment (Time-1), the average age of the participants was 25.5 years old (SD=3.1). The majority of the participants (109, 62%) were married to medical students while the remaining 32% (66 participants) were married either to medical residents or medical interns. Fifty-seven percent of the participants had been married for 3 years or less, with a range between a few months to 11 years. The majority (55%) of the participants and their spouses did not have children at Time-1 and 100% of the participants were Caucasian.

At Time-4, approximately 35 years later, the average age of the participants was 61.5 years old ($SD=3.2$), and they had been married to their husbands for an average of 39.1 years ($SD=2.9$). All participants had completed a minimum of 12 years of education themselves, with 67.1% reporting between 16-18 years of education, and 19.5% reporting 19-21 years of education. Approximately one-fourth (26.6%) of the women at Time-4 reported that their husbands were retired, while the remaining participants still had husbands working at least part-time. Additionally, 29.7% of participants reported that they were currently working, while the remaining participants were not employed. The majority of participants reported having children (82.5%) at T4.

Measures

Participants filled out a quantitative questionnaire that consisted of basic demographic information (such as age, income, education level, employment status, and number of years married), information about finances and money management, affection and sex, family of origin, couple time together, relationship agreement, health, couple conflict, happiness, communication, and husband's and wife's personality. Most questions were asked throughout all four waves of data collection. However, some questions were included in some waves and not others. Questions used to assess wife's personality were asked in all four waves of data collection.

The California Psychological Inventory. The instrument used in the questionnaire to assess personality was the 1956 version of the California Psychological Inventory (CPI). In its full form, the CPI was a 480 question assessment tool designed to measure non-clinical, healthy adult personality characteristics. The overall scale is comprised of 18 subscales: Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance, Sense of Well-being,

Responsibility, Socialization, Self-Control, Tolerance, Good Impression, Communality, Achievement via Conformance, Achievement via Independence, Intellectual Efficiency, Psychological-mindedness, Flexibility, and Femininity. Harrison Gough, the creator of the CPI, emphasized validity in the creation of the instrument, utilizing both empirical methods and internal consistency. The CPI has shown to have both criterion and convergent validity (Megargee, 1972). Reliability of all 18 subscales was tested using test-retest reliability and Cronbach's alpha and validity of the subscales has been well established (see Gough & Bradley, 1996 for more information on reliability and validity).

For the sake of brevity, only 3 of the 18 subscales of the CPI were included in the questionnaire: Sociability (alpha=.77), Sense of Well-being (alpha=.84), and Tolerance (alpha=.79); these three subscales were used during all four waves of data collection. These subscales measure similar constructs as three of the main dimensions of the five factor model of personality (Sociability→Extraversion, Sense of Well-being→Neuroticism, and Tolerance→Openness). Both the Big Five Inventory (BFI) and the CPI are based on the same concepts of personality (McCrae, Costa, & Piedmont, 1993). In fact, there are several studies that have examined the similarity in constructs between the CPI and the BFI (Adams & John, 1997; McCrae, Costa, & Piedmont, 1993; Soto & John, 2009). McCrae, Costa, and Piedmont (1993) conducted a comparison of the CPI to the five factor model and determined that each of the dimensions of the five factor model were adequately represented in the CPI, with the exception of agreeableness.

Respondents answered each question throughout the personality section of the questionnaire with "true," which was coded as 1, or "false," which was coded as 0. Scores for each subscale were then summed to get a total score for each subscale. The Sociability subscale,

which measures extraversion, had 33 items and questions include questions such as, “I enjoy social gatherings just to be with people,” “I seem to be about as capable and smart as most others around me,” and “I like to be the center of attention.” Scores range from 0-33 with high scores indicating a person who is outgoing, sociable, enterprising, and original in thought. Low scores in Sociability indicate a more awkward, quiet, submissive, and passive individual.

The Sense of Well-being subscale, which measures neuroticism, had 43 items and questions include questions such as, “Several times a week I feel as if something dreadful is about to happen (reverse scored),” “I am so touchy on some subjects that I can’t talk about them (reverse scored),” and “I have very few quarrels with members of my family.” Score range from 0-43 with high scores indicating an individual who minimizes their worries, are relatively free from self-doubt, and are ambitious and versatile. Low scores in Sense of Well-being indicate an individual who is more cautious, self-defensive, apologetic, and constricted in thoughts and actions.

The Tolerance subscale, which measures openness, had 26 items and questions included questions such as, “Usually I would prefer to work with women (reverse scored),” “People often talk about me behind my back (reverse scored),” and “I think most people would lie to get ahead (reverse scored).” Scores range from 0-26 with high scores indicating an individual who is more accepting, non-judgmental, and tolerant. Low scores in Tolerance indicate an individual who is more suspicious, narrow-minded, wary, and overly judgmental. Lower scores mean more neuroticism and higher scores mean less neuroticism.

Life course events. Significant life course events that may have occurred over the 35 year period included in the study are 1) transition to parenthood, 2) wife entering or leaving the workforce, 3) husband retiring, and 4) change in marital status (divorce, separation, widowhood).

Each life course transition was coded as 0 for not experiencing the life course transition or 1 for experiencing the given transition. For transition to parenthood, wife entering or leaving the workforce, and change in marital status, it was possible for the researchers to identify the time period when the life course transition occurred (between T1 and T2, T2 and T3, or T3 and T4). However, for husband retiring, the researchers were unable to determine the time period it occurred as the question for that transition was only asked at Time-4.

The transition to parenthood was measured by asking the respondent at each of the 4 time points, “How many children do you have?” Responses of 0 at any time point were coded to indicate the respondent had not made that particular life course transition. If respondents indicated any change from 0, they were coded as having made that transition during the corresponding time point (T1→T2, T2→T3, or T3→T4). Respondents who indicated having children at Time-1 were not coded as having made the transition to parenthood during the course of the study as that life course transition was made prior to data collection.

The participant leaving or entering the workforce was measured at all 4 time points by asking, “Are you employed?” Responses were coded in terms of change scores; if the respondent indicated a change in answer from one time point to another, they were coded as having made that life course transition. For example, if a respondent indicated that she was not employed at T1 or T2, but indicated that she was employed at T3, that respondent was coded as having made the life course transition during that time point (T2→T3). Likewise, if a respondent was employed at T1, T2, and T3, but indicated that she was not employed at T4, she would also be coded as having made that transition at the corresponding time point (T3→T4).

Husband retiring was measured only at T4 by asking, “Is your husband retired?” Women who responded that their husband was retired at T4 were coded as having experienced the life

course transition. Women who indicated that their husband was not yet retired were not coded as having experienced that life course transition during the course of data collection.

Change in marital status was measured in several ways including asking, “What is your current marital status?” at T2 and T3 and “How many years have you been married to your current husband?” at all 4 time points. Because all participants were married at T1, any indicated change in the number of years married other than an expected 10-15 year increase at each time point was coded as experiencing this life course transition. Additionally, if a respondent reported a change in marital status at T2 or T3, they were also coded as having made the transition.

Control variables included age in years, level of education measured in years attended school, and husband’s net income measured in thousands of dollars.

Analysis

Stability and change in personality over the life course was examined using multi-level growth curve modeling (mixed model) (Hox, 2010) using SPSS 20 (IBM, 2011). The data was transposed into the “stacked” format for the analyses which allowed all of the responses given by participants to be used in the analysis, whether or not the participant completed all four waves of the questionnaire (Hox, 2010). The advantage of this method is that it allows for all available data points to be included in the analysis. For example, participants who responded to all four waves of the questionnaire have four records in the stacked dataset. In comparison, participants who responded to only two waves of the questionnaire have only two records in the dataset, rather than omitting all their data as would happen in a traditional growth curve analysis when there is missing data. Therefore, the sample size reflects the number of data points rather than the number of participants. The total number of observations was 748.

Latent growth curve analysis has an intra-individual level of analysis that allows each participant in the sample to have their own distinct pattern of change over time (Bryck & Raudenbush, 1992). These individual trajectories are combined to create a growth curve (i.e., an overall trajectory of the sample). The predictor variables (transition to parenthood, wife entering or leaving the workforce, change in marital status, and husband retiring) were included in the analysis in order to examine their influence on the variance of the average level of the dependent variables (tolerance, sociability, and well-being) at Time-1 (intercept) and overall trajectory (slope) of each personality subscale (Karney, 2001). All predictors were coded in such a way as to be time-invariant predictors and were included in the final model as such. These time-invariant predictors were grand-mean centered (centered around the average of the sample) to aid in interpreting the results such that coefficients represented the effect for the average person. A separate growth curve was completed for each personality dimension.

Results

Preliminary Results

Basic analysis, including the calculation of means, standard deviations, frequencies, and correlations was completed. At Time-1, ages ranged from 20-55 years old with an average age of 25.54 years (SD=4.02). All of the participants had at least some college education and had an average income of approximately \$36,000 a year. Scores for openness ranged from 12-26, with a group mean of 21.43 (SD=2.84). Scores for extraversion ranged from 8-31 with a group mean of 22.71 (SD=4.83). Scores for neuroticism ranged from 20-43 with a mean of 37.94 (SD=3.70). Approximately 50% of the participants experienced the transition to parenthood, 58% entered or left the workforce, 39% experienced a change in marital status, and 10% experienced their

husband retiring during the course of the study. Additional preliminary results, including bivariate correlations, can be found in Tables 1, 2, and 3.

Growth Curve Results

Five different models were estimated in a stepwise fashion for each of the three personality dimensions. The initial models, with no predictors, were estimated to examine the amount of between-persons and within-persons variability across time. The second set of models estimated a random intercept with a linear effect of time. The third set of models added a random slope to the previous set of models in order to determine if there was variability in slopes across the sample. The fourth set of models added a quadratic effect for time to assess for possible curvilinear growth over time. For the fifth set of models, each of the 4 predictors was added to the model in a stepwise fashion. This final set of models included transition to parenthood, wife entering or leaving the workforce, change in marital status, and husband retiring as predictors of both the intercept and slope of the personality subscales. None of the suggested control variables (wife's age, income, and wife's education level) were significant in any of the three models, so they were excluded from the final models.

Openness. The initial model for openness revealed a range of 12 to 26 and the average score at Time-1 (intercept) was 21.36 (see Model 1, Table 4). The intraclass correlation coefficient (ICC) was .39, which indicated that approximately 61% of the variance in openness was due to intra-individual change over time, and the other 39% was due to between-person differences (see Figure 1). The second model revealed a negative effect of time that was significantly different from zero ($\beta = -.29$, $p < .01$) (see Model 2, Table 4). The random intercept was greater than zero, which suggests variability in openness scores at Time-1. For model three, the random effect for time was significant, which suggests variability in slopes across the sample

(see Model 3, Table 4). The fourth model revealed a negative linear slope ($\beta=-1.28$, $p<.001$) followed by a positive quadratic slope ($\beta=.37$, $p<.01$) (see Model 4, Table 4). Both the linear slope and the quadratic slope were significant, indicating that openness initially decreases then increases in subsequent years. For the fifth model, none of the predictors accounted for any variability in the intercept or slope (see Model 5, Table 4). These results confirm the initial hypothesis, indicating a significant change in openness scores, first decreasing then increasing across time.

Extraversion. The initial model for extraversion revealed a range of 8 to 31 and the average score at Time-1 (intercept) was 22.68 (see Model 1, Table 5). The ICC was .56, which indicated that approximately 44% of the variance in extraversion was due to intra-individual changes over time and the other 56% was due to between-person differences (see Figure 2). The second model revealed a negative effect of time that was not significantly different from zero ($\beta=-.001$, $p=.99$) (see Model 2, Table 5). The random intercept was greater than zero, which would suggest variability in extraversion scores at Time-1. For model three, the random effect for time was significant, which would suggest variability in slopes across the sample (see Model 3, Table 5). The fourth model indicated that neither the linear slope ($\beta=.54$, $p=.31$) nor the quadratic slope ($\beta=-.20$, $p=.28$) (see Model 4, Table 5) was significant. For model five, only wife entering or leaving the workforce accounted for some variation in the slope ($\beta=1.23$, $p<.05$), and none of the predictors accounted for any variability in the intercept (see Model 5, Table 5). These results do not confirm the initial hypothesis as extraversion scores did not show significant change over time.

Neuroticism. The initial model for neuroticism revealed a range of 20 to 43, and the average score at Time-1 (intercept) was 37.88 (see Model 1, Table 6). The ICC was .44, which

indicated that approximately 56% of the variance in neuroticism was due to intra-individual changes over time and the other 44% was due to between-person differences (see Figure 3). The second model revealed a positive effect of time that was not significantly different from zero ($\beta=.14$, $p=.32$) (see Model 2, Table 6). The random intercept was greater than zero, which would suggest variability in neuroticism scores at Time-1. For model 3, the random effect for time was significant, which would suggest variability in slopes across the sample (see Model 3, Table 6). The fourth model revealed that neither the linear slope ($\beta=-.02$, $p=.97$) nor the quadratic slope ($\beta=.06$, $p=.71$) (see Model 4, Table 6) was significant. For model five, only transition to parenthood accounted for some of the variability in the intercept ($\beta=-2.00$, $p<.01$) and none of the predictors accounted for any variability in the intercept (see Model 5, Table 6). These results do not confirm the initial hypothesis as neuroticism scores did not change significantly over time.

Discussion

The purpose of the current study was to examine whether three dimensions of women's personalities changed or remained stable over a 35 year period, as well as to determine if certain life course transitions had an effect on the resultant stability or change. There were three hypotheses: 1) Women's personalities would change over the life course, 2) Life course transitions would have an influence on personality change over time, and 3) Some life course transitions would be more influential than others. The results were mixed in that they both confirmed and failed to confirm the hypotheses. The first hypothesis, that women's personality would change over time, was partially confirmed as openness showed significant change over time. However, extraversion and neuroticism showed relative stability over the 35 year period (i.e., did not show significant change over time), failing to confirm the first hypothesis in its

entirety. Both the fixed effects and random effects model for openness indicated a significant negative linear change followed by a subsequent positive quadratic change, while the fixed effects models for extraversion and neuroticism failed to demonstrate significant change, suggesting significant variance in individual slopes, but no dominant slope for the sample as a whole.

The results of the current study are consistent with the mixed results that have been observed in the existing literature concerning personality change and stability over time (Allemand, Gomez, & Jackson, 2010; Ardel, 2000; Ferguson, 2010; Jylha et al., 2012; Lucas & Donnellan, 2011; Wortman, Lucas, & Donnellan, 2012). Most notably, several previous studies have found stability in some personality dimensions and change in other personality dimensions (Allemand, Gomez, & Jackson, 2010; Jylha et al., 2012). The mixed results from this study, and studies like it, lead to the questions, “Why are some personality dimensions prone to change while others are prone to stability? What, if anything, influences change or stability for each factor? How strong of an influence does environment exert on personality stability and change versus genetic or biological factors?” These are all questions that should be addressed in future research.

Stability and Change

Openness, which is the personality subscale that measured how tolerant, accepting, and non-judgmental a person is, was the only personality dimension in the current study that showed evidence of change. Openness scores initially decreased then showed a subsequent increase. This means that the average woman became less open over time, and then experienced a slight subsequent increase in openness. This result adds support to the existing evidence that openness to experience can change over the life course (Field & Millsap, 1991; Schaie & Willis, 1991).

Both Schaie and Willis (1991) and Field and Millsap (1991) examined data from long-term longitudinal studies (Seattle Longitudinal Study and Berkeley Older Generation Study respectively) and discovered that openness to experience decreased slightly over the life course. The results of the current study showed an initial decrease followed by a subsequent increase in later years. This observed increase in later years that was not reported in the previous studies may be accounted for by the additional period of time that the current study spent examining the participants compared with previous studies (35 year period in the current study compared to 28 years and 14 years, respectively). This possibility highlights the importance of employing longer term longitudinal studies to exam change and stability in personality over the life course.

One possible explanation for the changes in openness over time is an ever-changing social context. The cultural context during the first phase of data collection included the sexual liberation and women's liberation movements. During this time, attitudes were more open and accepting of alternative lifestyles and belief systems (Goldschmidt, Gergen, Quigley, & Gergen, 1974). However, there was significant opposition to these movements in subsequent decades as people returned to more conservative viewpoints (Jolly, 2012), possibly contributing to a decrease in openness scores during those time periods. Moving into the 21st century, attitudes have again become more open (Seems & Clark, 2006), possibly contributing to a subsequent increase in openness scores. Other possible explanations include experiencing life stressors, traumatic events, or the normative aging process facilitating personality change over time.

Previous studies have supported stability in extraversion and neuroticism (Kupper, Boomsma, de Geus, Denollet, & Willemsen, 2011; Terracciano, McCrae, & Costa, 2006). Researchers account for the stability of these personality characteristics as genetic predisposition. In other words, each person is born with a certain personality profile that remains stable

throughout the life course. The stability of extraversion and neuroticism may also be accounted for by one of the three theories of personality change previously discussed: evolutionary theory, life history theory, and life course theory. From an evolutionary perspective, something may have occurred, or failed to occur, in the environment that necessitated stable levels of extraversion and neuroticism (Mealey, 2010). From a life history standpoint, due to the limited availability of time and resources, women may decide—beyond their own conscious awareness—to devote more or less energy to certain things during one life phase than during another, leaving little energy to make shifts in extraversion and neuroticism (Kaplan, Lancaster, & Robson, 2003). From a life course perspective, changing roles, rules, and expectations may facilitate stability in personality (Allemand et al., 2010). More time and research should be devoted to studying this phenomenon in order to account for this change over time.

Predictors of Change

The second hypothesis, that life course transitions would influence change was generally not confirmed as only a two of 24 statistical tests (8 tests for each of the three factors) were significant. None of the four life course transitions had any significant influence on the slope of the one personality dimension (openness) that showed change, while wife entering or leaving the workforce had a significant influence on the stability of extraversion over time, and transitioning to parenthood had a significant influence on initial neuroticism scores. Thus, the third hypothesis, that certain life course transitions would be more influential than others was confirmed in that change in marital status and husband retiring had no effect on initial values or change in any of the three personality factors, while transition to parenthood and wife workforce transition were significant in some models. However, with only 2 of 24 statistical tests being

significant, it is important to recognize the possibility of Type I error, meaning the one or both of the significant results were due to chance.

Thus, the current study failed to confirm the utility of life course theory explaining stability and change in the three factors of personality that were examined; however, there are several possible explanations for this result. First, the current study did not take into account the cultural context and the normative vs. non-normative timing of life course transitions (Andre et al., 2010). As previously discussed, life course transitions are a heavily gendered, temporally-based process (Schmitt, Realo, Voracek, & Allik, 2008). Experiencing or failing to experience certain life course transitions when it is culturally normative can have a bigger impact on women than on men (e.g., a woman becoming a parent for the first time in her twenties vs. a woman becoming a parent for the first time in her mid-forties) (Hultsch & Plemons, 1979). In order to fully capture life course theory, these issues need to be addressed in future studies.

Second, the current study only examined four possible life course transitions; therefore, there may be other life course transitions that contribute to personality change over the life course that were not included in the current study (mate selection, marriage, launching children, etc.). Costa, Herbst, McCrae, and Siegler (2000) found that job change and changes in marital status had a small effect on personality change in the populations they examined, which does provide evidence that life course events may have an impact on personality change over time. Additionally, the current study had ten year age gaps between each wave of data collection, which doesn't allow for a more pointed, specific examination of personality at the point of transition. Each woman who reported experiencing the life course transitions examined in the study could have experienced the transitions at any point during the 10 year period. A more

precise examination of the timing of these transitions may be necessary to determine if life course theory is a viable explanation for personality change.

Another possible explanation is that the researchers of the current study assumed a linear relationship between life course transitions and personality rather than a bi-directional relationship. Several studies have supported the theory that personality has an influence on choices people make (Asendorpf & Wilpers, 1998; Erdle & Rushton, 2011; Humbad, Donnellan, Iacono, McGue, & Burt, 2010). Therefore, women with certain constellations of personality characteristics may be more or less likely to experience certain life course transitions such as transitioning to parenthood, entering or leaving the workforce, and changing their marital status. For example, women with lower levels of openness may be more likely to divorce because of their more suspicious, judgmental nature (Counts & Sacks, 1991). Additionally, women with higher scores on extraversion may be more likely to enter the workforce because they enjoy interacting with lots of people. Subsequently, experiencing or not experiencing these life course transitions may further embed the pre-existing personality characteristics *or* allow for the emergence of other personality characteristics (Allemand, Gomez, & Jackson, 2010).

Individual Differences

When examining the aggregate group scores in the three personality dimensions, only openness showed significant overall change. However, each of the random effects were significant in every model across all three personality dimensions, suggesting significant individual change. Additionally, each personality dimension showed significant variability in the slopes, again suggesting a wide variety of individual change trajectories. One of the purposes of the current study was to examine not only the group mean, but the individual variations in personality trajectories as well. Discovering significant random effects provides

further evidence that non-significant group changes may mask significant individual differences in personality over the life course (Allemand, Gomez, & Jackson, 2010). The next step in researching inter-individual differences is to determine what factors promote change or stability for certain subsets of women and why they promote change for some women while they may not do the same for others.

In addition to the significant random effects, the intraclass correlation coefficients (ICCs) suggested that a large percentage of variability for each personality dimension was accounted for by within-persons differences (61% for openness, 44% for extraversion, and 56% for neuroticism). An examination of Figures 1, 2, and 3 create a clear picture of the variance in individual slopes across the sample. A rich avenue for future research would include a focus on identifying different subgroups of similar personality trajectories and examining how and why those patterns of change occur over time. Although the group means of two of the personality dimensions showed no significant change, the individual differences in personality change over time tell an interesting story regarding personality change at the intra-individual level.

Clinical Implications

The question of whether or not an individual is capable of change, especially with regards to parts of themselves that they see as concrete and unalterable, is of vast importance to clinicians. As each clinician attempts to enter the client's world and help them find avenues for change, understanding what aspects of a person are capable of change and which are not can aid in directing a clinician's work. The results of the current study showed evidence of change in openness over time, participants first decreasing, and then increasing at a later time point. In addition, the intra-individual changes in all three personality dimensions over time offer a hopeful view of the ability of individuals to make significant shifts in personality across the life

course. Discovering what factors facilitate said changes can help clinicians utilize those factors in precipitating further change in order to improve their clients' standards of living.

Additionally, for the personality dimensions that appear to be more stable over time, a clinician can help clients learn to accept those parts of themselves and their family members that they cannot change. Jacobson and Christensen (1996), in their seminal work *Acceptance and Change in Couple Therapy* suggest that there is too much emphasis on change and not enough emphasis on accepting the things we cannot change. Clinicians often set up a false dichotomy between acceptance and change, but Jacobson and Christensen (1996) define the concepts as follows, "Change involves increases or decreases in the frequency or intensity of behavior; acceptance involves a change in emotional reactions to behavior" (p. 13). Especially when conducting couples therapy or work with families, teaching both acceptance and change is vital to successful therapy outcomes.

Limitations

Generalization of these findings is minimal due to the homogenous nature of the participants. The women in the study were all Caucasian, had relatively high socio-economic statuses, and had high incomes as the wives of medical doctors. Additionally, most of the women in the study scored relatively high in each personality dimension, limiting the variability of personality profiles examined. It is possible that these factors combined may contribute to more stability in personality profiles since people with higher socio-economic statuses and higher income tend to have better access to resources and, therefore, higher levels of psychological health (Allemand, Gomez, & Jackson, 2010). Future research should examine personality profiles of women who have a variety of financial backgrounds, ethnicities, and socio-economic statuses in order to examine whether certain populations are more prone to

stability or change. However, since this is one of the first studies to examine personality over a significant period of time (35 years), it provides a foundation for future research.

Another limitation is the amount of missing data from the personality profiles. Dropout is not an unusual phenomenon in longitudinal studies, especially long-term longitudinal studies. Having women who did not complete all waves of data for personality may have affected the results, either underestimating or overestimating stability or change. Additionally, there might be something about the personalities of those women or life course events that they experienced, or didn't experience, that would lead to non-completion of the questionnaire. Perhaps it is these women who would score lower in openness, extraversion, and neuroticism that would have provided more variability in the data. However, using a stacked analysis minimized these issues as much as possible in the current context. Additionally, the length of time in between data collection (approximately 10 years between each wave) may restrict the results of the current study. Future research should be conducted that attempts to minimize the length between waves of data collection to better capture the events that occur in the interim.

Directions for Future Research

In addition to addressing the limitations discussed above, future research should be conducted using long-term longitudinal studies in order to capture a more accurate vision of personality over time. Using longitudinal studies, future research needs to focus on what environmental factors, if any, influence changes in personality. Evolutionary theory, life history theory, and life course theory offer some ideas as to what may influence change over time. Openness to experience may offer a rich field of study since it was the personality dimension in the current study that showed evidence for change over the life course.

According to previous research, women's personalities are more prone to change than men's personalities (Ardelt, 2006; Rantanen, Metsapelto, Feldt, Pulkkinen, & Kokko, 2007; Schmitt, Realo, Voracek, & Allik, 2008). In order to determine if there truly are significant gender differences in personality change or stability, personality profiles of both men and women should be examined. Without adding men to provide a comparison group, we are unable to assess whether men and women do significantly differ on personality characteristics and trajectories. Future research should look at men and women with comparable characteristics, from the same age cohorts, and with similar cultural backgrounds in order to examine this issue.

Schaie and Willis (1991), when examining data from the Seattle Longitudinal Study, found that each successive cohort in the study became more open to change than the previous cohort. This highlights the importance of examining how the cultural context and the normative or non-normative nature of life course transitions impacts personality profiles over the life course and across generations. The nature vs. nurture debate may never be resolved, but conducting these kinds of multi-layered examinations of personality from an intra-individual level all the way up to a cultural level may assist in the development of a better understanding of just how much influence the environment has on personality.

An examination of alternative predictors of personality change across the life course is an important area of future research. Perhaps normative life course transitions are not powerful enough events to facilitate a significant change in personality. However, significant life stress and trauma may better account for changes in personality as they tend to be more powerful, life-altering events. Extensive research has documented the effects of trauma on the development of personality disorders (Gilbert, Farrand, & Lankshear, 2012; Kaehler & Freyd, 2012), thus it can be hypothesized that trauma and significant life stressors may have the power to alter normative

personality as well. Other possible predictors of personality change that can be examined include cultural context (comparing different cohorts longitudinally), historical national and international events, gender cultures, etc.

The most striking finding of the current study is the variability in intra-individual personality change. Thus, an important area of future research is to look more in depth at personality change at the individual level. Due to the small sample of the current study, the researchers were unable to conduct a mixture model to examine different subgroups of personality trajectories across time. In the future, larger samples are needed to conduct mixture models to examine these different groups and determine what facilitates these differences in personality trajectories.

Conclusion

The current study sought to examine change or stability of personality in a sample of women over the course of 35 years. Using a sample of 187 women tracked over four time points (approximately 10 years between each time point), change and stability in openness, extraversion, and neuroticism was tested using a stacked multilevel growth curve analysis. Four life course events (transition to parenthood, change in marital status, wife entering or leaving the workforce, and husband retiring) were added as predictors to attempt to explain any variance in personality change. Only openness showed significant group-level change over time, first decreasing, and then increasing in subsequent years. However, all three personality dimensions showed significant individual-level change over time. Wives entering or leaving the workforce was a significant predictor of change in extraversion. Clinical implications include using acceptance and change techniques. Limitations and directions for future research encourage researchers to study more heterogeneous samples using long-term longitudinal methodology.

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Table 1. *Descriptive Statistics for Stacked Data (N=187)*

Variables	<i>M</i>	<i>SD</i>	<i>Range</i>	α
Openness	21.43	2.84	12-26	.676
Extraversion	22.71	4.83	8-31	.816
Neuroticism	37.94	3.70	20-43	.770
Wife's Age at T1	25.54	4.02	20-55	
Education (number of school years) T1	6.91	1.04	3-9	
Income (in thousands) T1	36.11	10.06	15-60	

Table 2. *Frequencies*

Variables Range	<i>T1</i>	<i>T2</i>	<i>T3</i>	<i>T4</i>
Openness				
12-15	8	4	6	0
16-19	20	23	22	9
20-23	75	65	54	33
24-26	50	25	10	13
Missing	34	70	95	132
Extraversion				
8-13	12	7	1	2
14-18	23	15	12	6
19-23	41	31	25	17
24-28	52	52	42	31
29-31	19	9	5	1
Missing	40	73	102	130
Neuroticism				
20-24	1	1	1	0
25-29	11	1	1	0
30-34	14	17	15	7
35-39	65	48	56	28
40-43	65	49	27	28
Missing	31	71	87	124
Transition to Parenthood	<i>During Study</i>			
Yes	94			
No	78			
Missing	15			
Wife Entering/Leaving Work				
Yes	108			
No	9			
Missing	70			
Change in Marital Status				
Yes	73			
No	114			
Missing	0			
Husband Retiring				
Yes	19			
No	55			
Missing	113			

Table 3. *Bivariate correlations for Stacked Data*

	1	2	3	4	5	6
1. Openness	1	.286 ^{***}	.562 ^{***}	.151 ^{**}	-.094	-.153 ^{**}
2. Extraversion	.286 ^{***}	1	.316 ^{***}	.120 [*]	-.144 [*]	-.103 [*]
3. Neuroticism	.562 ^{***}	.316 ^{***}	1	.190 ^{***}	-.011	.032
4. Wife level of education T1	.151 ^{***}	.120 [*]	.190 ^{***}	1	-.027	-.036
5. Total income T1	-.094	-.144 [*]	-.011	-.027	1	.192 ^{***}
6. Wife's age in years T1	-.153 ^{**}	-.103 [*]	.032	-.036	.192 ^{***}	1

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4. *Unstandardized Estimates (Standard Errors in Parenthesis) of Openness Across 35 Years (N=187)*

<i>Fixed Effects</i>	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	21.36*** (.18)	21.65*** (.21)	21.68*** (.18)	21.89*** (.22)	21.18*** (.97)
Time		-.29** (.11)	-.32* (.14)	-1.28*** (.33)	-1.49** (.56)
Time ²				.37** (.12)	.30* (.13)
Transition to Parenthood					.13 (.61)
Tran. to Parenthood*Time					.30 (.25)
Change Marital Status					-.20 (1.33)
Change Mar Stat*Time					-.58 (.57)
Husband Retired					-.46 (.72)
Husband Retired*Time					-.24 (.30)
Wife Entering or Leaving Workforce					1.24 (.90)
Wife Entering or Leaving Workforce*Time					.36 (.37)
<i>Random Effects</i>					
Residual Variance	4.93***	4.74***	6.09***	4.62***	3.40***
Intercept Variance	3.21***	3.41***	3.87***	3.40***	2.46***
Slope Variance			.38***	.31***	.05
<i>Model Fit</i>					
-2 LL (# of parameters)	2006.47 (3)	2002.18 (4)	2033.88 (5)	1994.79 (5)	962.09 (15)
AIC	2010.47	2006.18	2039.88	1998.79	970.09
BIC	2018.53	2014.23	2051.96	2006.84	983.42

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 5. *Unstandardized Estimates (Standard Errors in Parenthesis) of Extraversion Across 35 Years (N=187)*

<i>Fixed Effects</i>	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	22.68*** (.98)	22.68*** (.37)	22.57*** (.31)	22.55*** (.37)	24.29*** (1.76)
Time		-.001 (.17)	.09 (.24)	.54 (.53)	-1.02 (.88)
Time ²				-.20 (.18)	-.10 (.21)
Transition to Parenthood					-.34 (1.13)
Tran. to Parenthood*Time					.17 (.40)
Change Marital Status					2.84 (2.61)
Change Mar Stat*Time					-.55 (.88)
Husband Retired					-.78 (1.29)
Husband Retired*Time					-.17 (.45)
Wife Entering or Leaving Workforce					-.49 (1.63)
Wife Entering or Leaving Workforce*Time					1.23* (.58)
<i>Random Effects</i>					
Residual Variance	10.46***	10.50***	16.83***	10.49***	8.41***
Intercept Variance	13.14***	13.13***	14.57***	13.14***	10.21***
Slope Variance			1.28***	1.01***	.89
<i>Model Fit</i>					
-2 LL (# of parameters)	2317.74 (3)	2319.43 (4)	2388.37 (5)	2319.89 (5)	1115.36 (15)
AIC	2321.74	2323.48	2394.37	2323.89	1123.36
BIC	2329.73	2331.47	2406.35	2331.87	1136.49

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 6. *Unstandardized Estimates (Standard Errors in Parenthesis) of Neuroticism Across 35 Years (N=187)*

<i>Fixed Effects</i>	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	37.88*** (.23)	37.74*** (.27)	37.79*** (.24)	37.77*** (.29)	38.77*** (1.23)
Time		.14 (.13)	.05 (.21)	-.02 (.42)	.09 (.69)
Time ²				.06 (.15)	.001 (.16)
Transition to Parenthood					-2.00** (.77)
Tran. to Parenthood*Time					.55 (.32)
Change Marital Status					-.21 (1.67)
Change Mar Stat*Time					-.04 (.67)
Husband Retired					-2.06 (.90)
Husband Retired*Time					-.11 (.38)
Wife Entering or Leaving Workforce					.98 (1.14)
Wife Entering or Leaving Workforce*Time					-.22 (.47)
<i>Random Effects</i>					
Residual Variance	7.72***	7.72***	7.12***	7.75***	5.23***
Intercept Variance	6.17***	6.17***	5.88***	6.14***	4.13***
Slope Variance			-2.17***	-2.15***	.20
<i>Model Fit</i>					
-2 LL (# of parameters)	2308.49 (3)	2309.65 (4)	2373.73 (5)	2311.51 (5)	1111.15 (15)
AIC	2312.49	2313.65	2379.73	2315.51	1119.15
BIC	2320.63	2321.79	2391.94	2323.64	1132.67

* $p < .05$; ** $p < .01$; *** $p < .001$

Figure 1. *Openness: Individual trajectories*

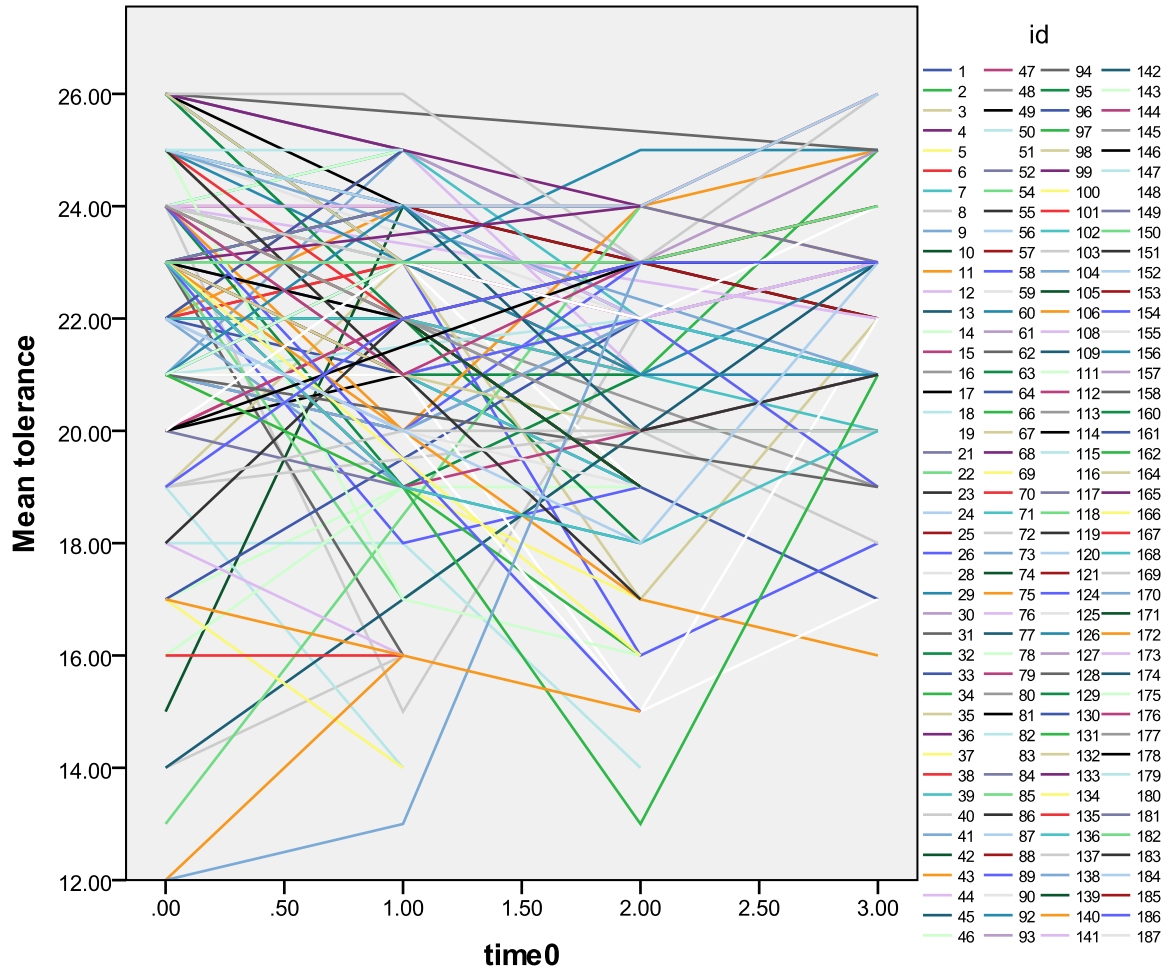


Figure 2. *Extraversion: Individual trajectories*

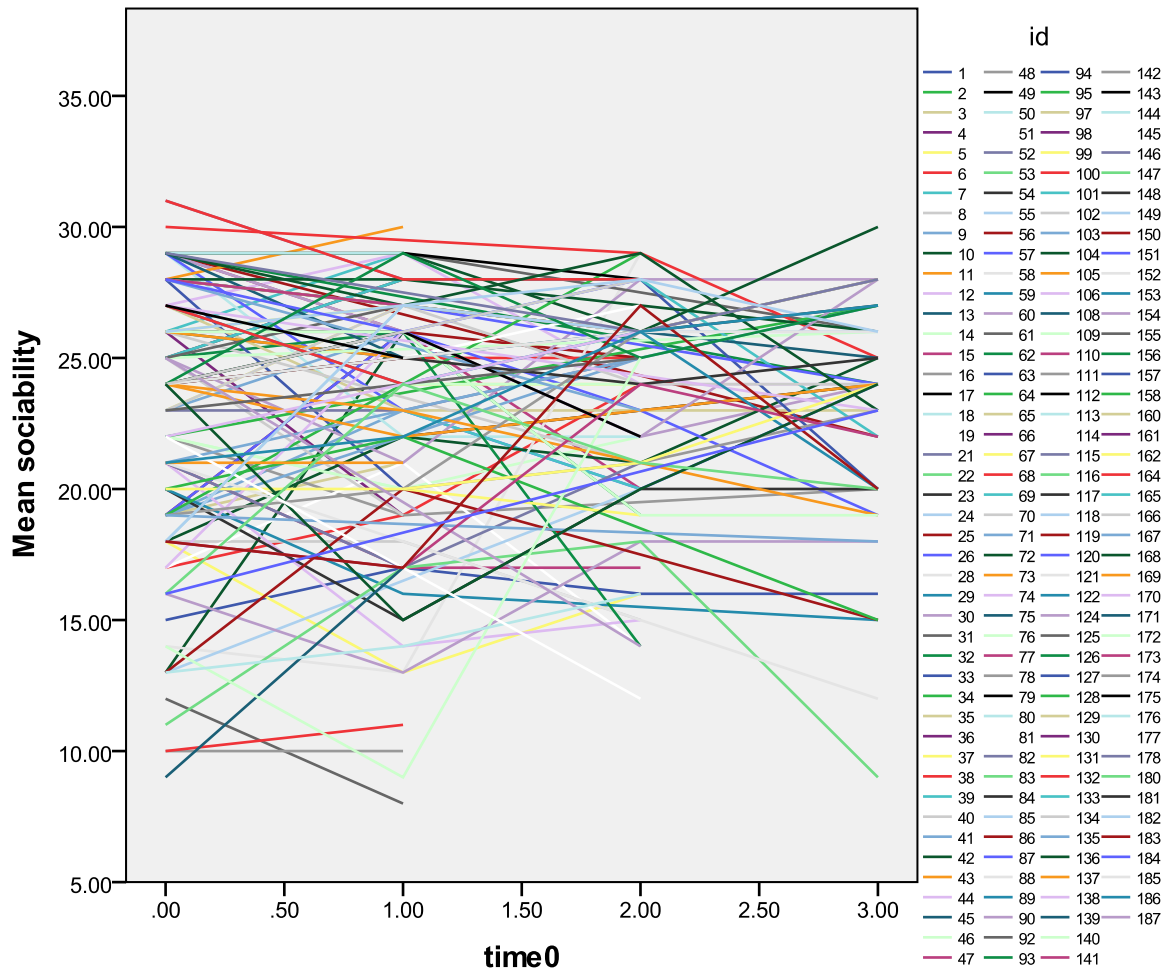


Figure 3. *Neuroticism: Individual trajectories*

