Stability and Change in Personality in Adult Women Over a 37-Year Period

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Abstract

The present study aims to examine mean-level, rank-order, and individual-level change in personality in two population-based samples of women. Participants were followed over 37 years from mid-life to old age, including two cohorts aged 38 to 75 years and 46 to 83 years. Participants completed the Cesarec-Marke Personality Schedule – a self-report measure of Murray’s psychogenic needs – in 1968 and 2005. Mean levels of need for affiliation, order, nurturance, and succorance increased whereas need for dominance, aggression, and defense of status decreased, but effect sizes were generally small and test-retest correlations were generally strong, suggesting personality stability. By contrast, significant changes were observed at the individual level, with participants both increasing and decreasing in most psychogenic needs. Eighty five percent (85%) of the participants changed significantly in at least one psychogenic need.

Keywords. Personality, mid-life, old age, Cesarec-Marke personality schedule, individual change

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Psychologist programme, Advanced level

Spring semester 2012
Stabilitet och förändring av personlighet hos vuxna kvinnor över en 37-års-period

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Sammanfattning


Nyckelord: Personlighet, medelålder, äldre, Cesarec-Marke personlighetsformulär, individuell förändring

1Psykologi, Avancerad nivå, VT 2012. Handledare: Lauree Tilton Weaver
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**Stability and change in personality in adult women over a 37-year period**

To identify the fundamental elements of a person and explain the processes involved in his or her development and differentiation, has always been a challenge for philosophers and scientists (Winter, John, Stewart, Klohnen & Duncan, 1998; Murray, 1938). Modern personality psychology theorists have come a long way in describing how personality changes across the lifespan, and the development of personality continues to attract the attention of scientists and health practitioners as well as policy-makers and the general public (Edmonds, Jackson, Fayard & Roberts, 2008; McAdams & Pals, 2006). There is an ongoing debate about how changeable personality is and when in the life span change is likely to occur (Caspi, Roberts & Shiner, 2005). Some claim that personality does not change after age 30 in cognitively intact individuals (Costa & McCrae, 1999). Others claim that personality changes throughout the entire lifespan (Baltes, 1997). Still others hold the view that personality changes co-occur with environmental changes (Lewis, 2001), or in response to environmental demands. For example, theorists suggest personality change as a result of investment in age-graded social roles such as employee, spouse, and parent (Helson, Kwan, John & Jones, 2002). Thus, there is still some question as to how personality changes across adulthood.

Personality may be one of the greatest sources of individual differences in psychological functioning. It has commonly been used to predict important real life outcomes such as depression (Duberstein, Pålsson, Waern & Skoog, 2008; Wilhelm, Parker, Geerlings & Wedgwood, 2008), anxiety (Watson, 1999), schizophrenia (van Os & Jones, 2001), mortality (Shipley, Weiss, Der, Taylor & Deary, 2007), educational success (Busato, Prins, Elshout & Hamaker, 2000), occupational success (Barrick, Mount & Judge, 2001), and social relations (Vollrath, Krahé & Hampson, 2004). Understanding personality and how it changes, provides important insight into people’s well-being.
Despite the breadth and depth of the research on personality, the literature that investigates the question of temporal stability in people’s goals, values, strivings, and other motivational aspects of personality from mid-life to late-life is limited. Using Murray’s (1938) theoretical focus on motivation as personality constructs, the aim of this study was to examine the personality development of women from mid-life to late adulthood. The focus on motivational aspects of personality draws attention to the ways that people adapt to changing environments and role expectations (McAdams & Olsen, 2010).

**Defining personality**

Personality can be defined in a variety of ways, depending on theoretical perspectives (Barenbaum & Winter, 2009; McCrae & John, 1992). Some perspectives can be traced back to ancient Greek philosophers. Empedocles (490-430 BC) conceptualized human nature as two motivational forces; love and strife, whereas Theophrastus (371-287 BC) conceptualized it as character types or patterns of behavior. Empedocles’ motivational dualism influenced Freud whereas Theophrastus’ theory of character types influenced Jung. Freudian and Jungian theories both, in turn, have had enormous influence on modern psychology and society in general (Winter et al., 1998). Although other traditions and theories of personality exist in contemporary psychology (e.g. humanistic, phenomenological, social learning, evolutionary/biological theories), the traditions of viewing the fundamental elements of human nature as either motivational forces or types/traits drives two major theoretical approaches in current personality research (McAdams & Olson, 2010; Mayer, Faber & Xu, 2007; Deci & Ryan, 2008).

**Traits and the five-factor model**

In personality psychology today, the concept of trait enjoys a privileged status, nearly the default way (but not the only way) of conceptualizing personality (McAdams & Pals, 2006). In contemporary personality psychology the concept of trait originates from the writings of
Gordon Allport (1937). He described traits as the fundamental units of personality in that they represent the “considerable consistency in a person’s mode of conduct” (p. 334). Today, traits are defined as relatively enduring characteristic patterns of thoughts, feelings, and behaviors, (Edmonds et al., 2008; Caspi et al., 2005) and refer especially overt behavioral expressions (Winter et al., 1998). Traits are, by definition, consistent across situations and over time (McAdams & Olson, 2010) and they are said to cause change in other constructs, but are not themselves subject to change by life experiences (Roberts, 2009; Costa, Herbst, McCrae & Siegler, 2000).

Behind the heightened scientific status of traits lies the increasing consensus about the structure of personality at the level of higher-order traits, the five-factor model (McCrae & John, 1992) (McAdams & Pals, 2006). This structure has been verified empirically (McCrae & John, 1992), with the conclusion five factors represent the most general dimensions of individual differences in personality: neuroticism (tendency to experience distress), extraversion (tendency to experience positive emotions; be active, assertive, energetic, and enthusiastic), openness to experience (artistic, curious, imaginative, and have wide interests), agreeableness (altruism, nurturance, caring, and giving emotional support) and conscientiousness (efficient, organized, responsible, and “strong-willed”). Accordingly, then, many scholars today study these so-called Big 5 personality traits.

**Motives and personality in the present study**

Despite growing consensus that personality can be described with only five trait dimensions, other theorists approach personality from different perspectives. One well-known viewpoint comes from Henry Murray (1893-1988), who identified motives as the fundamental element of personality. From his perspective, personality could be viewed as needs, and he differentiated between primary (viscerogenic) needs and secondary (psychogenic) needs. The former has a basis in cyclic organic processes such as thirst, hunger and sexuality. The latter
needs have no organic basis, but are to some extent dependent on the primary needs.

Murray’s definition of need:

A need is a construct (a convenient fiction or hypothetical concept) which stands for a force (the physio-chemical nature of which is unknown) in the brain region, a force which organizes perception, apperception, intellection, conation and action in such a way as to transform in a certain direction an existing, unsatisfying situation. (1938, pp. 123-124)

Taking a broader view, motives help to develop individuals’ psychic energy and to guide people toward important tasks, goals, wishes and desires, what people want to bring about and what people want to avoid (Mayer et al., 2007). Motives are sometimes referred to as the “why” of behavior whereas traits are referred to as the “what” (Deci & Ryan, 2000). The construct of motive is based on the fundamental postulate that most behavior is oriented toward a goal and shows intelligent variation in moving toward the goal and responding to obstacles, incentives, circumstances, and other current goals (Barenbaum & Winter, 2009).

Particular actions may or may not be highly intercorrelated because overt behavioral expressions will vary with the situation, expectancies, skills, obstacles, and other motives. In that sense, motives help to unify and give a common meaning to a wide range of seemingly dissimilar behaviors. They all have the same function. A given motive can thus energize a wide variety of seemingly dissimilar behaviors that are functionally similar. In addition, seemingly similar behaviors may also be the overt expression of a wide variety of different motives.

Historically, since trait-theorist Allport (1937) and motive-theorist Murray (1938) both wrote their influential textbooks, the debate has been concerned with deciding which theoretic framework, traits or motives, is most fundamental, and thus subsume the other. Here, I assume the position that traits and motives serve different purposes in explaining people’s
behavior. Whereas traits explain behavior by subsuming phenomena onto a general pattern, motives explain behavior through emphasizing the goal toward which behavior tends (Winter et al., 1998). For example, it is not necessary for the viability of the concept of extroversion that an extraverted person strives to obtain a particular goal, although of course such a person may do so. Extraverted people simply are extraverted; whether they try to be or not is irrelevant. The independence of the constructs can also be explained by an example using the trait extroversion and the motive need for affiliation. Some might argue that extraverted people, who are outgoing and report that they enjoy themselves at social functions, and that they like large noisy parties, must also want to be affiliative. But this is not necessarily true. Some affiliation-motivated people might of course agree: Large, noisy parties and social functions represent perfect opportunities to establish and enjoy relationships with other people. But some affiliation-motivated people might disagree. Parties might increase their sense of loneliness and seeing other people having a better time than they are might be distressing, or they might instead prefer spending time with a few close friends. Conversely, some people low in need for affiliation might also like large noisy parties because they are essentially impersonal and anonymous, and may be a perfect opportunity to network for a new job (i.e. pursue a goal related to need for achievement). The same reasoning can be applied to the need for dominance. Some high in this need might enjoy large noisy parties because they represent an opportunity to impressing people, others may find such events aversive because the exposure to the power of other people, who might have gone to the party in order to impress others in the first place, might increase their sense of inferiority. The concepts of traits and motives are independent and each plays an important but different role in regulating behavior (Winter et al., 1998; Roberts, O’Donnell & Robins, 2004). Murray’s own position in the discussion is clear:
According to my prejudice, trait psychology is over-concerned with recurrences, with consistency, with what is clearly manifested (the surface of personality), with what is conscious, ordered, rational. It stops short precisely at the point where a psychology is needed, the point at which it begins to be difficult to understand what is going on. (Murray, 1938 p. 715)

Whereas trait-theorists see the person as an actor, motive-theorists see the person as an agent, drawing attention to human intentionality and agentic efforts to achieve both short-term goals and lifelong aims (McAdams & Olsen, 2010). Personality theorists focus on mid-range goals because these are broad and stable enough to organize people’s future selves while still concrete enough to be reflected in current behavior in everyday life (McAdams & Olsen, 2010; Riediger & Freund, 2006). Personality change is thus assessed by examining the content and structure of goals over time.

**Principles of personality change**

Personality change in adulthood and old age, and expectations thereof, have been guided by contrasting principles. Proponents of the five-factor model argue that personality traits do not change after adulthood is reached (i.e. at the age of 30), and if it does it is because of activation of genetic factors (Terraciano, Costa & McCrae, 2006). By contrast, Murray’s construction of personality does not rely on biological roots for personality, but focuses on adaptation to changing contexts and social roles (McClelland, Koestner & Weinberger, 1989). Events across adulthood that might cause change in the context and social roles include among others, peaking of the own career, children moving out of the house, retirement, and having grandchildren, but also the process of aging itself. Developmental studies of goal constructs in personality have found a number of changes in the way people think about, pursue and relinquish goals due to age-related changes (McAdams & Olson, 2010).
Across adulthood, people become increasingly aware of age-related decreases in biological, physiological, and cognitive functioning (Baltes, 1997). As social and functional resources are diminishing they need to be more carefully allocated. As a result, people select goals that are important and can be realistically obtained (Charles & Carstensen, 2010). These goals are often selected at the cost of other, less important priorities that are eventually discarded. And if the goals cannot be met using their usual strategies, people may use compensatory strategies such as asking for help from others. According to this line of reasoning, aging might be associated with increased need for affiliation. As the capacity to do things by oneself decreases, the need to always have friends around becomes prioritized.

The way people handle goals that cannot be met is also shaped by age. Younger adults typically use primary control strategies; strategies aimed at changing the environment to fit one’s wishes and goal pursuits. With age, there is a shift toward secondary control strategies; strategies aimed at changing oneself to adjust to limitations and constraints in the environment. With age-related decrease in functioning individuals typically need to use secondary control strategies such as adjusting expectations so that the decrease in functioning doesn’t undermine motivation (Heckhausen, Schultz & Wrosch, 2010. Moreover, as certain goals become unattainable individuals need to disengage from those goals in favor of pursuing other more attainable goals (Riediger & Freund, 2008; Baltes, 1997).

In short, consequences of aging force individuals to prioritize some goals over other, compensate for losses in functioning, and withdraw from goals that are unattainable. These all reflect strategies to “...transform in a certain direction an existing, unsatisfying situation”, to cite the definition of need used by Murray (1938, p. 124).

**Personality change**

Personality change is a concept that may be studied in multiple ways (Allemand, Zimprich & Hertzog, 2007). Here I will present three major types of personality change; mean-level
change (Roberts, Walton & Viechtbauer, 2006), rank-order consistency (Roberts & DelVecchio, 2000) and individual differences in change (Nesselroade, 1991). These three ways of viewing developmental change shed light on different and unique aspects of individual’s differences in personality over the course of adulthood. Each aspect has its own strengths and weaknesses.

Mean-level change refers to whether the mean within a group increases or decreases on a measure of personality over time (Roberts et al., 2006). This gives information about the group as a whole, and the fact that the group’s mean changes over time does not mean that the individuals in the group all change in the same way.

Rank-order consistency refers to the relative placement of individuals within a group, and is, as mean-level change, also a group level definition of change (Roberts & DelVecchio, 2000). High rank-order consistency (or low rank-order change) means that individuals who score higher on a personality measure at one point, also score higher at a subsequent point in time. Rank-order consistency is indexed by test-retest correlations. Although estimates of both mean-level change and rank-order consistency are based on group averages and standard deviations, they are best thought of as independent estimates, because one is often uninformative of the other (Roberts et al., 2006). For example, if an entire sample of people all increase significantly in some characteristic, but in the same direction and in very similar strength, the estimate of rank-order stability will suggest little change because they have all changed, but maintained their rank order. By contrast, the estimate of mean-level change will suggest a good deal of change. Rank-order consistency of personality measures higher than zero suggest that factors such as genes or a constant environment make people’s personality persist over time.

The third type of personality change, individual differences in change, sometimes referred to as intraindividual change, is different from the two other (mean-level change and
rank-order consistency) in that it is concerned with the individual, regardless of what happens to the whole group. The individual may have a unique developmental pattern. A high rank-order correlation on a personality measure across two points in time does not mean that every individual’s personality is stable. He or she might change more or less than the rest of the study sample. Nor does high or low mean-level change mean that every person changes or does not change accordingly. Some might change more than others, some might not change at all, and some might even change in the opposite direction. Because personality tests are imperfect measures of personality, random fluctuations in scores are expected even if personality does not change. Individual differences in change could either reflect random fluctuations or actual change. A method used to assess the reliability of change is the reliable change index (RCI) (Jacobson & Truax, 1991). Each of the three ways of describing change gives unique information about personality change. Each of the estimates of change requires longitudinal data. Although longitudinal research is considered as assessing primarily maturational (age related) change, confounding generational (culture related) influences cannot be ruled out unless multiple cohorts are also assessed.

**Mean-level change in the adult and old population**

In a study of women aged 20 to 40 years, Stevens and Truss (1985) found evidence for mean level change in increased need for achievement, autonomy, succorance and dominance and decrease in need for affiliation (Stevens & Truss, 1985). They used the Edwards Personal Preference Schedule (Edwards, 1958), which, like the Cesarec-Marke Personality Schedule (Cesarec & Marke, 1968), is also a self-report measure of Murray’s psychogenic needs. Another study assessing longitudinal change of the Cesarec-Marke Personality Schedule variables from age 70 to age 79 found that women increased in need for order, succorance, and acquiescence, and decreased in need for exhibition and dominance (Nilsson & Persson, 1984).
Rank-order consistency in the adult and old population

Previous research concerning motivational measures of personality in the adult and old population is limited. Stevens and Truss (1985) found 20-year test-retest correlations ranging from .35 to .55 on the needs shared between the Edwards Personal Preference Schedule and Cesarec-Marke Personality Schedule.

Individual difference in change

Rank-order consistency and mean-level change are, as noted above, measures that refer to a group of people as a whole. These two estimates may obscure important information about individual differences in stability and change. Studies from the trait-perspective of personality research have found reliable individual change in all ages from childhood to old age (Edmonds et al., 2008). To my knowledge, the present study is the first to assess reliable individual change in adulthood using a motive measure of personality.

Cohort effects

In a study assessing cohort differences using the Cesarec-Marke Personality Schedule (Cesarec & Marke, 1968) and a different subsample from the prospective population study of women in Gothenburg, Sweden (Bengtsson et al., 1973), used in the present study, André and colleagues found that later born cohorts showed significantly higher need for achievement, aggression, dominance, exhibition, and autonomy, and significantly lower need for defense of status (i.e. sensitivity to the opinion of others) and order (see definitions of study variables below). The differences were found for both 38-year olds and 50-year olds assessed 37 years apart (André et al., 2010). A study comparing 16-year-olds in 1964 and 16-year-olds and 1992 found the same cohort effects regarding need for achievement, aggression, exhibition, and order in both boys and girls. They also found gender specific cohort effects. The later born cohort of girls had a higher need for defense of status and succorance whereas the later born cohort of boys had a lower need for nurturance (Berg, Cesarec & Marke, 2000).
Dementia

The study of personality stability and change in late life is complicated by the fact that dementia is common in older populations. The prevalence of dementia in the age span 60-64 is 1.5% and from then prevalence increases exponentially. Aged 75-79, 14% and aged 85-98, 25% are demented. Of people over 95, 48% are demented (Socialstyrelsen, 2009). Personality changes in dementia are common and of considerable magnitude (Wahlin & Byrne, 2011). Failure to take this into account may limit the interpretation of results from studies of personality change in population-based samples.

The present study

In the present study, I aimed to describe which personality motives are stable and which change from middle adulthood to old age. By “personality”, I henceforth refer to the conceptualization of personality from the perspective of motives. Using archival data, I studied the personality of two cohorts of Swedish women. The age of the participants (from 38 and 46 years to 75 and 83 years of age at followup), the length of the longitudinal interval, and assessment of reliable individual change are unique aspects of this study. I investigated personality change in longitudinal data including two birth cohorts. In order to fully describe change in personality, I examined the three types of change—mean-level, rank-order, and individual-level change—and examined whether cohort effects were present. The research questions guiding this study were: (a) How does personality change in women from adulthood to old age, (b) does women’s personality change in different ways depending on the definition of change (i.e. mean-level, rank-order, or individual-level change), and (c) are cohort effects evident in mean-level change?

Given previous work on similar samples, I expected there might be some change in order, succorance, acquiescence, exhibition, and dominance. In addition, I expected cohort differences because of changing historical environments. However, it was unclear what
direction these effects would take. Estimates of rank-order change in previous work suggest that this should also be expected. However, because the women sampled in this study were from different cohorts and contexts than previous studies, these expectations are speculative. Moreover, because this is the first study of its kind—describing individual-level change in personality, no specific increases or decreases in personality were expected.

Method

The data used in this study were taken from the Prospective Population Study of Women in Gothenburg, Sweden (Bengtsson et al., 1973). The original study was designed to examine the epidemiology of women’s health in mid-life, a little researched topic at the time of the study initiation in 1968. For the original study, the sample was obtained from the Revenue Office Register and consisted of women living in Gothenburg at the beginning of 1968 and born on certain dates (6, 12, 18, 24, and 30) of the years 1918, 1922, and 1930. In the 24-year follow-up study with special reference to participation, representativeness and mortality Bengtsson and colleagues (1997) conclude that the initial participants of the Prospective Population Study of Women in Gothenburg, Sweden, were characteristic of the general population also after a long follow-up period.

The prospective research design used in the original study is especially relevant and important for research on the etiology of diseases and disorders in humans because for ethical reasons people cannot be deliberately exposed to suspected risk factors in controlled experiments.

Sample and procedures

A sample comprising 710 women born in 1918, 1922 or 1930 underwent a comprehensive psychiatric examination in 1968-1969, and 521 (73%) of those completed the self-report Cesarec-Marke Personality Schedule (CMPS). The women were re-examined in 2005. Of those who provided CMPS data in 1968, 240 (46%) died before follow-up and 150 (29%)
declined participation or didn’t return the CMPS questionnaire in 2005. Seven were excluded because of dementia leaving a total of 124 participants with both baseline and 37-year follow-up data for at least one of the CMPS scales. The 1918 birth cohort was excluded due to small sample size. In the 1922 birth cohort, there was 47 participants with both baseline and 37-year follow-up data for at least one of the CMPS scales. In the 1930 birth cohort there was 48 participants with both baseline and 37-year follow-up data for at least one of the CMPS scales. For different study variables, participation in the 1922 birth cohort ranged from $n = 38$ to $n = 43$ and in the 1930 birth cohort from $n = 41$ to $n = 46$. See Table 1 for sample demographics.

Table 1
Marital status, education and children at baseline 1968 for participants with both baseline and follow-up data for at least one study variable

<table>
<thead>
<tr>
<th>Year of birth</th>
<th>1922</th>
<th>1930</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$ (47)</td>
<td>%</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>39</td>
<td>83</td>
</tr>
<tr>
<td>Unmarried</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Widow</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than elementary school</td>
<td>19</td>
<td>40</td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>42</td>
<td>89</td>
</tr>
</tbody>
</table>

Note. Elementary school was in 1968 a form of schooling lasting six years. More than elementary School refer to every kind of education after having finished the six years of elementary school.

Measures

The Cesarec-Marke Personality Schedule (CMPS) (Cesarec & Marke, 1968) is a normative (non-ipsative) self-report measure of Murray’s (1938) psychogenic needs. Another personality schedule based on Murray’s needs is the Edwards Personal Preference Schedule (EPPS) (Edwards, 1959). The CMPS is constructed using Murray’s original variable
CMPS is constructed using both Murray’s original suggested items and items from EPPS have been used. EPPS and CMPS can on some variables be seen as parallel forms (Cesarec & Marke, 1968, p 41). The CMPS consists of 11 subscales and an acquiescence scale. Each subscale consists of 15 items. The subscales are:

1. Achievement. A need to accomplish something important and difficult and to compete with and surpass others.

2. Affiliation. A need to form close emotional relations, to always have friends around to share emotions with.

3. Aggression. A need to take revenge, to tease others and to enjoy doing so, irritability, impulsive aggression.

4. Defense of status. Sensitivity to the opinion of others, tendency to refrain from action in order to avoid failures and a need to explain and defend mistakes.

5. Guilt feelings. A strict conscience, with a strong sense of duty and a need to reform oneself.

6. Dominance. A need to take the lead, to assert oneself and to instruct and monitor others.

7. Exhibition. A need to be in the center, to be noted and to dramatize.

8. Autonomy. A need to be independent, to disregard the opinion of others, to oppose others, to be free of responsibilities and obligations.

9. Nurturance. A need to help, to take care of and defend others.

10. Order. A need for order, cleanliness, punctuality, and planning.

11. Succorance. A need to be taken care of and to be helped, both emotionally and practically, difficulties in managing alone.

The acquiescence scale measures the tendency to answer yes to a question irrespective of its content.
Reliability measures from the test manual (Cesarec & Marke, 1968) regarding internal consistency (split half correlations) range from .70 to .80 and test-retest correlations range from .77 to .94, with the exception of need for autonomy (split half = .52, retest .56). Test-retest correlation for the acquiescence scale was .63 (Cesarec & Marke, 1968).

Dementia

The diagnosis of dementia according to DSM-III was used for exclusion. Any type of dementia diagnosed at follow-up was a sufficient criterion for exclusion from all analyses.

Analyses

For mean-level change analyses paired samples t-tests were used, and for rank-order analyses Pearson correlations were used. Effect sizes were calculated using Cohen’s d. Individual change was calculated using reliable change index (RCI) according to Jacobson & Truax (1991). RCI scores were calculated for each participant on each personality scale to assess the extent to which participants showed reliable change over the retest interval. If individual level change were random the distribution of RCI scores would be normal, with approximately 2.5% above +1.96, and 2.5% below -1.96. In a second step, the amount of reliable changes was added for each participant, giving information about how many variables each individual changed in. Only participants with complete data were included in the analysis. In order to see if there were any cohort differences between those born in 1922 and 1930 a mixed effects regression model with time, cohort and the interaction between time and cohort was fitted. A random intercept was included to account for between person heterogeneity and correlation between repeated measurements. Tests of intercept and slope differences address the hypothesis if there are any differences regarding cohort in the intercept and slope levels. The significance level was set to $p < .05$. 
Ethics

For the present study, anonymized archival data from the Prospective Population Study of Women in Gothenburg, Sweden (Bengtsson et al., 1973) were used. Regarding the original study all participants gave their written informed consent to participate. The Ethics Committee for Medical Research at the University of Gothenburg gave their approval to the conduction of the study (Bengtsson et al., 1973).

Results

Mean-level change

Analyses of mean-level changes show a number of significant differences over the 37-year period. For the 1922 birth cohort (Table 2), there was an increase in need for succorance \( (p < .001) \) and a decrease in need for dominance \( (p < .05) \) and aggression \( (p < .05) \). For the 1930 birth cohort (Table 3), there was an increase in need for affiliation \( (p < .001) \), nurturance \( (p < .05) \), and order \( (p < .01) \) and a decrease in need for aggression \( (p < .05) \) and defense of status \( (p < .05) \). The decrease in need for aggression was found in both birth cohorts.

Effect calculations (Cohen’s d) for the mean level changes shed light on the magnitude of the statistically significant changes. Effect sizes for the 1922 birth cohort; succorance (0.44), dominance (-0.34), and aggression (-0.31). Effect sizes for the 1930 birth cohort; affiliation (0.53), nurturance (0.31), order (0.49), aggression (-0.28), and defense of status (-0.20).

In terms of cohort effects, at baseline, mean level of need for affiliation was significantly higher \( (t(78) = -2.53, p < .05) \) for the 1922 birth cohort compared to the 1930 birth cohort. Mean level of need for aggression was significantly lower \( (t(86) = 2.12, p < .05) \) for the 1922 birth cohort compared to the 1930 birth cohort. In other words, the group of 46-year-olds had a higher need for affiliation and a lower need for aggression than the group of 37-year-olds, at baseline in 1968. Longitudinal increase (mean-level change) in need for
succorance was significantly steeper ($t(86) = -2.21, p < .05$) for the 1922 than for the 1930 birth cohort. (T-values from the mixed effects regression model.)

Table 2
1922 birth cohort: Mean levels and standard deviations for CMPS variables at baseline and follow-up and paired samples t-test

<table>
<thead>
<tr>
<th>Year of assessment</th>
<th>1968</th>
<th>2005</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>6.93</td>
<td>8.00</td>
<td>1.88</td>
<td>39</td>
</tr>
<tr>
<td>Affiliation</td>
<td>8.74</td>
<td>9.53</td>
<td>1.77</td>
<td>37</td>
</tr>
<tr>
<td>Aggression</td>
<td>4.19</td>
<td>3.42</td>
<td>-2.06*</td>
<td>42</td>
</tr>
<tr>
<td>Defense of status</td>
<td>6.62</td>
<td>7.00</td>
<td>0.72</td>
<td>41</td>
</tr>
<tr>
<td>Guilt feelings</td>
<td>7.36</td>
<td>7.48</td>
<td>0.30</td>
<td>41</td>
</tr>
<tr>
<td>Dominance</td>
<td>7.46</td>
<td>6.44</td>
<td>-2.62*</td>
<td>38</td>
</tr>
<tr>
<td>Exhibition</td>
<td>5.30</td>
<td>4.79</td>
<td>-1.19</td>
<td>42</td>
</tr>
<tr>
<td>Autonomy</td>
<td>7.21</td>
<td>6.88</td>
<td>-0.85</td>
<td>41</td>
</tr>
<tr>
<td>Nurturance</td>
<td>11.38</td>
<td>11.53</td>
<td>0.44</td>
<td>39</td>
</tr>
<tr>
<td>Order</td>
<td>11.26</td>
<td>11.40</td>
<td>0.39</td>
<td>42</td>
</tr>
<tr>
<td>Succorance</td>
<td>7.98</td>
<td>9.02</td>
<td>.63***</td>
<td>42</td>
</tr>
<tr>
<td>Acquiescence</td>
<td>44.00</td>
<td>46.18</td>
<td>1.96</td>
<td>39</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.

Table 3
1930 birth cohort: Mean levels and standard deviations for CMPS variables at baseline and follow-up and paired samples t-test

<table>
<thead>
<tr>
<th>Year of assessment</th>
<th>1968</th>
<th>2005</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>6.33</td>
<td>7.29</td>
<td>1.93</td>
<td>41</td>
</tr>
<tr>
<td>Affiliation</td>
<td>8.43</td>
<td>9.62</td>
<td>3.44**</td>
<td>41</td>
</tr>
<tr>
<td>Aggression</td>
<td>5.20</td>
<td>4.20</td>
<td>-2.30*</td>
<td>44</td>
</tr>
<tr>
<td>Defense of status</td>
<td>7.41</td>
<td>6.67</td>
<td>-2.04*</td>
<td>45</td>
</tr>
<tr>
<td>Guilt feelings</td>
<td>7.13</td>
<td>6.67</td>
<td>-1.19</td>
<td>44</td>
</tr>
<tr>
<td>Dominance</td>
<td>7.15</td>
<td>6.54</td>
<td>-1.27</td>
<td>40</td>
</tr>
<tr>
<td>Exhibition</td>
<td>4.96</td>
<td>4.62</td>
<td>-1.00</td>
<td>44</td>
</tr>
<tr>
<td>Autonomy</td>
<td>6.75</td>
<td>6.98</td>
<td>0.55</td>
<td>43</td>
</tr>
<tr>
<td>Nurturance</td>
<td>10.51</td>
<td>11.31</td>
<td>2.19*</td>
<td>44</td>
</tr>
<tr>
<td>Order</td>
<td>10.70</td>
<td>11.91</td>
<td>3.29**</td>
<td>43</td>
</tr>
<tr>
<td>Succorance</td>
<td>8.38</td>
<td>8.47</td>
<td>0.24</td>
<td>44</td>
</tr>
<tr>
<td>Acquiescence</td>
<td>45.20</td>
<td>45.85</td>
<td>0.77</td>
<td>40</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001

Rank-order consistency

Pearson’s correlations between baseline and follow-up for the two birth cohorts are presented in Table 4. For the 1922 birth cohort, correlations from age 46 to age 83 range from .50 to
.70. For the 1930 birth cohort, correlations from age 38 to age 75 range from .41 to .84. Two exceptions are notable: need for achievement, for which low and non-significant correlations were found in both birth cohorts (.08 and .19 in the 1922 and 1930 birth cohort respectively); and need for autonomy for which low correlations were found (.31 and .35 in the 1922 and 1930 birth cohort respectively).

Generally, rank-order estimates were relatively high, suggesting some rank-order consistency. However, there is still considerable change, as the estimates between .41 and .84 leave between 83% and 29% of the variance in personality unexplained.

Table 4
Pearson correlations between baseline and follow-up (37 years)

<table>
<thead>
<tr>
<th>Year of birth</th>
<th>1922</th>
<th>1930</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age span</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46-83</td>
<td></td>
<td>38-75</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>40 .08</td>
<td>42 .19</td>
</tr>
<tr>
<td>Affiliation</td>
<td>38 .54***</td>
<td>42 .47**</td>
</tr>
<tr>
<td>Aggression</td>
<td>43 .53***</td>
<td>45 .64***</td>
</tr>
<tr>
<td>Defense of status</td>
<td>42 .50***</td>
<td>46 .76***</td>
</tr>
<tr>
<td>Guilt feelings</td>
<td>42 .63***</td>
<td>45 .69***</td>
</tr>
<tr>
<td>Dominance</td>
<td>39 .68***</td>
<td>41 .60***</td>
</tr>
<tr>
<td>Exhibition</td>
<td>43 .70***</td>
<td>45 .76***</td>
</tr>
<tr>
<td>Autonomy</td>
<td>42 .31*</td>
<td>44 .35*</td>
</tr>
<tr>
<td>Nurturance</td>
<td>40 .67***</td>
<td>45 .50***</td>
</tr>
<tr>
<td>Order</td>
<td>43 .69***</td>
<td>44 .41**</td>
</tr>
<tr>
<td>Succorance</td>
<td>43 .70***</td>
<td>45 .56***</td>
</tr>
<tr>
<td>Acquiescence</td>
<td>40 .51***</td>
<td>41 .73**</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001

Individual-level change

Individual change identified as RCI values greater than ± 1.96 is presented in Table 5.

Reliable individual change was found in all variables in both birth cohorts. As many as one third of the sample showed reliable change in need for aggression and exhibition in the 1922 birth cohort, and in need for achievement, dominance, order, and succorance in the 1930 birth
Table 5
*Individual change categorized by reliable change index (RCI) greater than ±1.96*

<table>
<thead>
<tr>
<th>Personality need</th>
<th>1922 Birth year</th>
<th>1930 Birth year</th>
<th>1922 Birth year</th>
<th>1930 Birth year</th>
<th>1922 Birth year</th>
<th>1930 Birth year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>N</em></td>
<td>Decreased</td>
<td>Increased</td>
<td><em>N</em></td>
<td>Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>Age span: 46-83</td>
<td></td>
<td></td>
<td></td>
<td>Age span: 38-75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>40</td>
<td>1 (3%)</td>
<td><strong>8 (20%)</strong></td>
<td>42</td>
<td>4 (9%)</td>
<td><strong>12 (29%)</strong></td>
</tr>
<tr>
<td>Affiliation</td>
<td>38</td>
<td>3 (8%)</td>
<td>4 (10%)</td>
<td>42</td>
<td>36 (86%)</td>
<td>6 (14%)</td>
</tr>
<tr>
<td>Aggression</td>
<td>43</td>
<td><strong>9 (21%)</strong></td>
<td>5 (12%)</td>
<td>45</td>
<td>4 (9%)</td>
<td>39 (87%)</td>
</tr>
<tr>
<td>Defense of status</td>
<td>42</td>
<td>3 (7%)</td>
<td>6 (14%)</td>
<td>46</td>
<td>4 (9%)</td>
<td>41 (89%)</td>
</tr>
<tr>
<td>Guilt feelings</td>
<td>42</td>
<td>3 (7%)</td>
<td>3 (7%)</td>
<td>45</td>
<td>2 (4%)</td>
<td>43 (96%)</td>
</tr>
<tr>
<td>Dominance</td>
<td>39</td>
<td>5 (13%)</td>
<td>34 (87%)</td>
<td>41</td>
<td><strong>8 (20%)</strong></td>
<td>28 (68%)</td>
</tr>
<tr>
<td>Exhibition</td>
<td>43</td>
<td><strong>9 (21%)</strong></td>
<td>5 (12%)</td>
<td>45</td>
<td>6 (13%)</td>
<td>35 (78%)</td>
</tr>
<tr>
<td>Autonomy</td>
<td>42</td>
<td>3 (7%)</td>
<td>2 (5%)</td>
<td>44</td>
<td><strong>3 (7%)</strong></td>
<td>38 (86%)</td>
</tr>
<tr>
<td>Nurturance</td>
<td>40</td>
<td>1 (3%)</td>
<td>37 (92%)</td>
<td>45</td>
<td>3 (7%)</td>
<td>37 (82%)</td>
</tr>
<tr>
<td>Order</td>
<td>40</td>
<td>1 (3%)</td>
<td>36 (90%)</td>
<td>40</td>
<td>2 (5%)</td>
<td>27 (67%)</td>
</tr>
<tr>
<td>Succorance</td>
<td>43</td>
<td>1 (2%)</td>
<td><strong>7 (16%)</strong></td>
<td>45</td>
<td><strong>7 (15%)</strong></td>
<td>31 (70%)</td>
</tr>
<tr>
<td>Acquiescence</td>
<td>40</td>
<td>38 (95%)</td>
<td>2 (5%)</td>
<td>41</td>
<td>39 (95%)</td>
<td>2 (5%)</td>
</tr>
</tbody>
</table>

*Note. Increases or decreases in 15% or more are indicated by bold type; decreases were indicated by RCI values equal to or less than -1.96; increases were indicated by RCI values equal to or greater than 1.96.*
cohort. Generally, there was both reliable individual increase and reliable individual decrease within the same study variable.

Regarding the number of variables each participant had reliable change in, some participants did not change in any variable (8% in the 1922 birth cohort and 15% in the 1930 birth cohort). In the 1922 birth cohort most people (64%) changed in one or two variables. In the 1930 birth cohort 42% changed in one or two variables, and 31% in three variables. Three participants changed in five or six variables, but none changed in more than six variables (Table 6).

Table 6

<table>
<thead>
<tr>
<th>Amount of study variables in which each individual was increasing or decreasing (RCI greater than ±1.96)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of birth</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Variables with RCI greater than ±1.96</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Comparisons of change estimates

The three estimates capture different aspects of personality change. For example, analyzing need for achievement from all three aspects suggest that there were not mean-level increases over the retest interval and that there is little rank-order stability. Note that even though the mean level values are not significantly different, the initial values are lower than the latter values. The analysis of individual-level change showed that 20% of the 1922 birth cohort and 29% of the 1930 birth cohort increase. A large portion of the remainder, however, did not reliably change (77% in the 1922 cohort, 62% in the 1930 cohort). Together the results suggest
that there is change at the individual level, but not enough to emerge as significant change at the group level.

Now consider the three estimates of change for need for exhibition. No significant mean-level change and high (.70 and .76 for the 1922 and 1930 birth cohort respectively) rank-order stability, but at the same time reliable changes were found in 33% of the 1922 birth cohort sample, both increasing and decreasing. Reliable changes (increases and decreases) were also found in 21% of the 1930 birth cohort. However, 67% of the 1922 cohort and 78% of the 1930 cohort exhibited no reliable individual change—in other words, they did not change. Taken together, the estimates suggest a great deal of stability, and little change at the group level, but some reliable changes (mostly decreases) at the individual level.

A similar general pattern was found for need for succorance in the 1930 birth cohort, but for this cohort and variable, rank-order consistency was .56. Notably, there were significant individual increases and decreases in succorance in this cohort. This suggests that at the group level, the women who increased in succorance cancelled out, to some extent, those who decreased in succorance. This contributed to having little systematic change at the mean level and some stability in rank order.

Mean-level need for aggression decreased in both cohorts. However, both cohorts also had significant rank-order stability. In addition, a significant 21% of the 1922 cohort also had reliable individual decreases. However, most of the women in both cohorts (67% in the 1922 cohort and 87% in the 1930 cohort) did not exhibit reliable individual change. Taken together the results on aggression suggest that for the 1922 cohort, the mean-level change was probably driven by the significant number who reliably decreased. Most women did not change individually, contributing to some degree of rank-order stability.
Discussion

To my knowledge this is the longest follow-up examining personality change from midlife to old age in a population-based sample of women. I examined mean-level, rank-order, and individual-level changes in the personalities of two cohorts of women. Mean-levels of psychogenic needs increased for need for affiliation, nurturance, order, and succorance, and decreased for need for aggression, defense of status, and dominance. Rank-order results suggest a high level of consistency, as 10 out of 12 personality constructs had over-time correlations above .50 and four were over .70 in at least one of the two cohorts. Individual-level changes were found in a substantial part of both samples. Many of the changes found at the individual level were in concordance with mean-level changes, but there were also individuals who showed reliable change in the opposite direction and on variables where no statistically significant mean-level change was found.

Mean-level change

Researchers focusing on traits argue that mean-level changes reflect a process of increasing psychological maturity, an evolutionary beneficial process helping to foster the next generation, characterized as increasing emotional stability, conscientiousness and agreeableness (Roberts et al., 2006). The findings from the present study of decreasing need for dominance in the 1922 birth cohort and decreasing need for aggression in both cohorts could be interpreted as population shifts toward greater levels of agreeableness. The mean-level increases in need for order and nurturance may also be interpreted as changes toward increasing capability to bring up the next generation. Because there were not cohort differences in these mean-level changes, the source of these changes could be similar environmental presses, occurring when the two cohorts’ ages overlap, or similarity in maturational processes.

The mean-level increases in need for succorance in the 1922 birth cohort, but not the 1930 cohort, are intuitively easy to understand because these changes may be driven by a
factual decline in their physical functioning—i.e., they need to be taken care of. Moreover, the cohort difference can be understood in the light of Swedish epidemiological data (Socialstyrelsen, 2009) stating that people in general do not decline in everyday functioning until the age of 80. In comparison to the earlier cohort, the participants in the later born cohort were 75 years old at follow-up and had thus theoretically no increased need to be taken care of. This cohort may instead need to take care of their spouses, possibly reflected in the increased need for nurturance in the later born cohort. Previous findings regarding the age span 70-79 (Nilsson & Persson, 1984) also suggest that women increase in need for succorance but not nurturance between these years. Increased need for order may also reflect a logical consequence of age-related limited cognitive capacity to handle disorganization (Schaie, 1983). The increase in need for succorance in the 1922 birth cohort, and the increase in need for nurturance and order in the 1930 birth cohort, may thus represent an effect of being either 83 years old (and needing succorance) or being 75 years old (and being driven by a need to nurture and to have more order). The effect may in other words represent a need that is more prominent at the age of assessment, instead of representing an increase in the need earlier in time.

The mean-level decreases in need for aggression and dominance may together with the finding of mean-level increases in need for affiliation in the 1930 birth cohort lend support to Carstensen’s (2006) socioemotional selectivity theory. Whereas need for aggression and dominance imply pushing other people away in order to gain status and maximize potential future rewards, need for affiliation is concerned with here and now reward contingencies. Decreasing level of functioning and narrowing social network makes the temporal horizon of death appear more clearly and thus increase focus on the emotional quality of ongoing relationships (Charles & Carstensen, 2010). Need for aggression and dominance can also be thought of as focused on primary control strategies, as focused on bringing about change in the
environment in general and in other people in particular. Decrease may then represent a shift toward secondary control strategies. When people grow older they are better at re-assessing their goals and needs and thus meet environmental limits through lowering their own expectations. Young people are more prone to try to bring about change in the environment, instead of changing themselves (Heckhausen et al., 2010). However, this does not automatically imply that older people lower their standards in all goals. Instead the process might be seen as an increased flexibility in withdrawing from goals that are not very important (Riediger & Freund, 2008). By selecting fewer goals to attend to the general age-related decreases in functioning may be regulated (Baltes, 1997). The decreases in need for dominance and aggression represent change toward selecting emotionally relevant goals that increase individual’s chances of having a good time in the here-and-now (Charles & Carstensen, 2010; Freund, Hennecke & Riediger, 2010). Need for defense of status may be interpreted as a need to maintain social status in order to maximize future social possibilities. The mean-level decreases in defense of status found in the 1930 birth cohort may thus also represent a shift toward focusing on the present moment as opposed to future possibilities.

Findings of cohort effects in a sample from the same population and using the same measures shed a different light on the findings regarding mean-level change found in the present study (see above; André et al., 2010). Note that level of defense of status was lower in the later born cohorts, making it difficult to disentangle maturational effects from generational effects. Regarding changes in need for aggression, dominance, and order, the results of this study were in the opposite direction of the cohort effect found in the study by André and colleagues, lending additional support to seeing these mean-level change findings as maturational effects. For example, the fact that people who were 38 years old in 2005 have a higher need for aggression than people who were 38 years old in 1968 (both groups assessed at age 38), suggesting that secular trends may have affected the later born cohort, driving a higher
need for aggression (André et al., 2010). Despite this generational effect, participants of the present study decreased in need for aggression, suggesting that this change has to do with becoming older (maturational effect).

Cohort-comparisons within the present study suggest that the data are telling a very consistent story. The only difference in mean-level change across the cohorts was in need for succorance, and this was only a difference in magnitude, not in the direction of change. As previously stated, this may have to do with the difference between being 83-years-old compared to being 75-years-old. In other words that is to say that the mean-level change might in fact happen between age 75 and age 83. For the other study variables the groups did not differ regarding mean-level change. These findings are not surprising considering the large overlap between the cohorts. Twenty-nine years between 46 and 75 are shared between the cohorts. However, there were differences between the cohorts in that mean-level changes were found to be statistically significant for one birth cohort but not for the other. For example, mean-level of need for affiliation changed for both cohorts, but only for the 1930 birth cohort the change was statistically significant. Between age 38 and 75 there was a significant increase, but not between age 46 and 83, suggesting a relatively greater increase in the eight years from 38 to 46, than the increase in the eight years from 75 to 83, but note that this difference is not statistically significant.

**Rank-order consistency**

Regarding rank-order consistency, relatively high test-retest correlations were found. Although in previous study (Stevens & Truss, 1985) using Murray’s needs, correlations over a 20-year interval between age 20 and age 40 were somewhat low (.35 to .55). Correlations were generally higher in the present study, and despite having a longer interval, this might be due to increasing rank-order stability with age.
Over 37 years, only need for autonomy and the acquiescence scale had correlations lower than .40. The measure I used (Cesarec-Marke Personality Schedule) is said to capture motivational forces that may or may not be manifested as overt behaviors. In contrast to trait measures, which focus on overt behavioral expressions of personality and show decreases in rank-order stability as test intervals increase (Roberts & DelVecchio, 2000; Ardelt, 2000), the motivational measure used in this study may focus on covert psychological needs, which might be more stable over long periods of time. Some motivational theorists suggest that there are goals that are temporally stable over long periods of time, reflecting long-term rather than short-term goals. Such constructs include personal strivings (Emmons, 1986), personal projects (Little, 1999), or life longings (Scheibe, Freund & Baltes, 2007). In other words, behaviors may differ greatly in their surface features but have functional similarities in that they create a similar inner affective state associated with goal satisfaction (Murray, 1938).

Related to the long-term goal constructs is the concept of identity. As adults grow older they become more sure of who they are (Whitbourne & Whitbourne, 2010). A strong identity provides in turn, a clear reference point for making life decisions and may thus facilitate personality stability. By midlife, the individual’s personality may fluctuate with changing environmental demands, but identity might serve as a more stable aspect of self. If environmental changes are small they might fit into the individual’s established views of who they are. Some environmental changes might not fit and individuals would then need to change the way they view themselves. Much of people’s identities are made up by psychological commitments to social roles, such as being an employee, spouse, or parent (Helson et al., 2002). Role transitions in old age may thus change the way people view themselves. In other words, identity may explain both rank-order stability and change as well as individual-level change.
The principle of niche-building may also guide interpretation of the high rank-order estimates found on some variables. The principle means that individuals create, seek out, or end up in environments that are correlated with their personality. The environment may in turn have a causal effect on personality, promoting persistence in personality and minimizes possibility to change. The environment or situation may instead influence the person in a way that deepens the characteristic that placed the person in the environment in the first place. This might be a way to interpret high rank-order estimates in combination with a fair amount of bidirectional individual-level change found in some variables.

**Individual-level change**

Turning the attention to the analyses of reliable individual change, another interpretation is to be made regarding some group-level findings. Consider for example that there was no significant mean-level change in need for exhibition in the 1922 birth cohort or in need for succorance in the 1930 birth cohort, but still reliable change in over 30% of the individuals. For a majority of the variables there was reliable change in both directions, which might make global or overly general theories of aging difficult to apply. For theories to be applicable they need to allow for individuals to change differently. In the humanistic tradition the concept of maturity is not defined as a process toward becoming more able to foster the next generation; maturity is instead defined as self-actualization and personal growth. Maturing is seen as a process of becoming less defensive and rigid and more creative and open to feelings. This definition allows room for personality to change in any direction. The individual is at the theoretical center and the definition ignores a person’s impact on or responsibility to others (Hogan & Roberts, 2004). The individualistic definition may be especially applicable to the age span over which people were followed in the present study. Age 50 is often the time when major career goals have either been reached, adjusted, or abandoned, and the time when children have left the house and started their own families (Ardelt, 2000). Most people start to
recognize the first signs of old age but are still in good physical and mental health (Socialstyrelsen, 2009; Schaie 1983). This context may thus provide both opportunity due to reduced obligations, as well as an incentive to take a new look at goals and priorities in life (Ardelt, 2000). The two different ways to define maturity may explain different levels of analysis. Evolutionary beneficial psychological maturity may explain group-level change whereas the humanistic maturity concept may explain individual-level change. However, there might also be biological explanations for heterogeneous individual-level changes in old age. Historically, humans lived much shorter, making the years after 50 biologically irrelevant. Most people died before their possibly negative genetic attributes could become manifest. Genetic attributes that are manifested in old age are (i.e. were in the history of human evolution) irrelevant to the essential component of natural selection; reproductive fitness (Baltes, 1997). From a biological perspective it is thus possible to explain both mean-level changes and heterogeneous individual-level changes, but possibly to different degree depending on the age of the participants.

As noted above, theorists propose that most people, as a consequence of awareness of temporal horizons, prioritize secondary control strategies over primary control strategies (Heckhausen et al., 2010), and gratifying experiences at the moment over possibility of future rewards (Carstensen, 2006). The process of withdrawing from unattainable or unimportant goals might also explain the relatively large portion of people who increase in need for achievement. First, people ignore the unimportant achievement-related goals and focus exclusively on the few they really want to accomplish. By selecting fewer goals, the chances of optimizing performance increase (Baltes, 1997). Second, the time left to accomplish something important and difficult is decreasing, further spurring motivation. Some individuals might thus increase in need for achievement, and still be seen as agreeable by others because they are flexible when it comes to withdrawing from unimportant goals.
Individual-level change on at least one study variable was found in 85% of the sample. There is a real possibility of changing significantly in late adulthood. But, at the same time, almost nobody changes in many aspects of themselves. Most people change in one, two or three personality variables. This is both expected and logical. Even though individual-level personality change exists and can be studied, the viability of the personality concept depends on relative stability. If someone were to change completely in every aspect of themselves we would probably say that the person lacks personality. Or we would possibly try to find another way to conceptualize personality so that relative stability was found. From this perspective, change in 85% of the participants in at least one aspect of themselves may be interpreted as a lot of change. This means that for each individual there is real potential for change, perhaps as adaptation to life circumstances, social roles, or any other influences, and that this potential is realized. However, the fact that each participant change in just a few personality variables suggests that change is effortful. Theorists propose that individuals remain the same because of habits and heuristics that promote adaptive functioning. Continuity in personality is defined as a natural form of behavioral inertia (Allemand et al., 2007). In other words, the default way is to stay more or less the same. Significant changes are in that perspective only something brought about by some specific cause. Unless there is a reason to change due to new opportunities, limitations, circumstances, or for other reasons, people generally do not.

**Limitations**

Multiple sources of attrition are potential limitations in all longitudinal studies of personality in late life (Wilson et al., 2003). Stability in personality may be seen as a variable that increases longevity (Shipley et al., 2007). Subjects who volunteer to participate are on average more social and higher in need for social approval and less conventional in behavior (Kazdin, 2009). Those who participated in the 2001-2002 follow-up of the prospective population study of women in Gothenburg were healthier than those who did not participate (Lissner et al., 2003).
It may also be that people who change in personality are more likely to decline participation, or for other reasons, such as moving away, cannot participate in the follow-up.

Another limitation is that cultural changes in society or maturational processes could include changes in perception of the measures used. This could imply that results refer to changes in perception of the personality measure rather than changes in personality. This might be especially true for scale assessing the need for achievement, which may assess different things for the potential work force compared to those who have retired (Nilsson & Persson, 1984).

The present data set contains two data points and therefore conclusions about the shape of change cannot be made. Change might happen in a linear, curvilinear, or in any other shape between the two points. The present data set cannot be used to tell how or when the change took place. It is possible, for example, that individuals first increase significantly on a personality measure and then decrease significantly within the study period. This is especially true when the study period is as long as 37 years.

The use of reliable change index as a method to assess reliable individual change might be discussed. There are several other methods available but the agreement between measures is considerable why the commonly used was preferred, in order to make comparisons with other studies possible (Atkins, Bedics, McGlinchey & Beauchaine, 2005).

Besides dementia, I did not control for other possible disease processes that might also affect stability and change of personality. One possible culprit is depression, which affects 10-15% of the population aged 65 or older (Socialstyrelsen, 2009). Controlling for depression would have been one more step toward assuring that the study object is normative age changes in personality and not a disease process.

The results cannot be generalized to men. The original study was designed specifically to examine the epidemiology of women’s health in mid-life, a little researched topic in 1968.
Previous studies have suggested that there is a difference in the flexibility between the male and female role (Stevens & Truss, 1985), and especially that there is a gender difference in the age-related change of role flexibility. Whereas the general trend allows for women to adopt a traditionally more masculine role, men may be restricted from adopting a more feminine one (Twenge, 1997). Secular trends allow for women to become more dominant, aggressive, achievement-oriented, and exhibitionistic with age. The findings from the present study suggest that women in general become less dominant and aggressive with age, and that very few have reliable individual increase in these personality variables. But regarding need for achievement and exhibition there were in fact a considerable group of women who had reliable individual increase.

Another limitation concerns self-report measures of psychogenic needs. In order to capture the full range of the original definition of need the measure has to capture needs that are more or less conscious as well as more or less manifested in behavior (Cesarec & Marke, 1968). This is not possible when using self-report measures. Critics suggest that self-report measures best capture conscious, socially acceptable motivational aspects of personality regardless of what the measure was originally designed to capture (Murray, 1938; Mayer et al., 2007). The measure used in the present study still captures conscious needs under which seemingly dissimilar behaviors are organized according to their function in terms of goal fulfillment, but this limitation suggest that results might be biased towards conscious and socially acceptable aspects of personality that in turn might be more stable the other aspects of personality.

Validity of the Cesarec-Marke Personality Schedule can be questioned. The measure was used in the original study because it was considered a reliable and valid option at the time of the the original study initiation in 1986. In contemporary personality research the subscales used in the Cesarec-Marke Personality Schedule can be considered outdated, especially compared to
personality measures using the taxonomy of the five-factor model that are measuring traits. However, that is not to say that motive measures of personality are outdated. Researchers today typically use a subset of Murray’s needs (i.e. need for achievement, affiliation, and dominance) and not as many as are used in the Cesarec-Marke Personality Schedule (McClelland et al., 1989; Mayer et al., 2007; Deci & Ryan, 2000; 2008). (See Mayer et al., 2007 for a historical review of motivation measures.)

**Strengths**

Two major strengths of the study are population-based sampling, which contributes to the generalizability of the findings, and the interval between the initial measurement and the longitudinal follow-up. Very few studies of this length are available, and despite the focus on women only, the data provided a valuable opportunity to examine change over adulthood.

A third strength of the study is the exclusion of dementia, as it may affect personality, but even though dementia was rigorously diagnosed and affected subjects excluded, very few were actually excluded. Prevalence of dementia is much higher in most populations. The fact that very few actually had to be excluded might be because people affected by dementia decline participation, cannot participate, or for any other reason do not take part in epidemiological studies anyway. This does not affect the present study, but the opposite (i.e. that many participants with both baseline and follow-up data had to be excluded because of dementia) would have shed a different light on previous research.

**Future directions**

Assessment of reliable individual change is a way to view personality from the same perspective as the individual participant. Previous research regarding individual differences in change has mainly been concerned with predicting variation around mean-level change and not actual change that is significant for the individual. Predictors of reliable individual change might differ from predictors of changes that are not significant to the individual. Describing
and predicting reliable individual change is a future area of research that brings personality research towards explaining the person.

Research of motivational aspects of personality is another area of future research. Phenomena need to be explained from different perspectives, and this might be especially true in research at the individual level. Viewing personality from this theoretical perspective can add information to theories of personality development, as well as give a more nuanced understanding of the individual. For example, in behavior therapy both assessment of individuals’ excess and deficit behaviors, as well as assessment of the function of behaviors together explain a particular phenomenon.

Another future area of study regarding motivational aspects of personality is personality’s relation to secular trends. It is of importance to differentiate generational effects from maturational effects in order to be able to say anything about both the patterns of maturational change and potential predictors of maturational change. And it is only in a study design where developmental change and cohort effects are simultaneously that a stringent test of developmental theories of aging can be conducted.

Previous research suggests that there are differences between men and women regarding role expectations in young age as well as in old age. There is also research that suggests that the female role changes with age in a different way than the male role changes with age. In order to be able to describe and explain personality changes in men the research also need to be conducted with male participants. Regarding the feminine role, a future area for research is generational effects on rank-order change and individual-level change. It is suggested that whereas the feminine role in old age are becoming increasingly flexible due to secular trends, the feminine role for younger women is becoming more rigid (Twenge, 1997; Berg et al, 2000).
Conclusions

The present study provides evidence for both stability and change in personality in adulthood and old age. Interpreting the findings from the present study depend on the way in which change is construed. Studying group-level changes, the findings consist of small mean-level changes and high rank-order consistency. Studying change at the individual level, however, collectively, the findings suggest that 85% of the individuals changed in at least one aspect of their personality and many changed in more than one aspect.

There are important theoretical implications for how personality change is viewed that have practical implications for how older people are viewed and treated. The fact that people generally do not change at the group level is very different from the idea that people cannot change. On the individual level people can and do change. This might be especially important to bear in mind for psychologists, counselors, psychotherapists, and others in helping professions who work with changing individuals in a meaningful way.
References


