SELF-PERCEPTIONS OF STABILITY AND CHANGE IN PERSONALITY AT MIDLIFE: THE UNC ALUMNI HEART STUDY

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The finding of personality stability in adulthood may be counterintuitive to people who perceive a great deal of change in their own personality. The purpose of this study is to determine whether self-reported perceived changes in personality are associated with actual changes based on a 6- to 9-year follow-up of 2,242 middle-aged male and female participants of the UNC Alumni Heart Study (UNCAHS). Respondents completed the Revised NEO Personality Inventory on two occasions and were asked to reflect back over a 6-year period and assess changes in their personality. The majority of respondents (n = 1,177; 52.5%) reported they had "stayed the same," while 863 (38.5%) reported they had "changed a little" and 202 (9%) reported they had "changed a good deal." Coefficients of personality profile agreement computed to evaluate global personality change for the three perceived change groups were essentially equivalent. Further, directional analyses of domain-specific changes in personality showed that perceived changes were weak predictors of residual gain scores. In an absolute sense, perceptions of stability or change were discordant in 8 of 15 (53%) comparisons. Self-perceptions of change are not an adequate substitute for objective assessments.

Keywords: Personality, stability, perceptions, longitudinal, midlife

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The normative stability of personality in adulthood (Costa, Herbst, McCrae, & Siegler, 2000) may seem counterintuitive to individuals who perceive a great deal of change in their own personality. Though many individuals see primarily continuity when looking back across their lives, others are convinced by their life experience that change in personality is common. Self-perceptions of personality change and stability are thought to represent meaningful psychological constructs from both phenomenological and developmental perspectives (Ryff, 1982). Whether or not these perceptions are veridical, they are potentially relevant to present psychological adjustment as well as readiness for change in the future (Ryff & Heincke, 1983). Perceived stability or change may form an important part of an individual’s life narrative (McAdams, 1993), associated with a sense of stagnation or a myth of redemption. It is thus of considerable interest to know if these perceptions are accurate or if they are in fact best regarded as personal myths. That requires some independent documentation of what changes have actually occurred, and longitudinal assessment using the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992) can provide those essential data.

Perceptions of personality change for people in general were studied by Krueger and Heckhausen (1993). Young, middle-aged, and older adults described their conception of the developmental course of 50 desirable and 50 undesirable personality trait adjectives representing the Big Five personality factors of Emotional Stability, Extraversion, Intellect, Agreeableness, and Conscientiousness (Goldberg, 1992). For all age groups, respondents predicted increases in desirable traits (e.g., energetic, good-natured, purposeful, realistic, intelligent) up to age 60 years with modest declines thereafter. Correspondingly, undesirable traits showed moderate decreases in early adulthood followed by small increases after age 60 years.

Respondents also rated themselves on these 100 adjectives, but there were no cross-sectional differences on the five factors. The discrepancy between the expected curvilinear course of development and the observed stability might indicate that lay conceptions of adult development are groundless stereotypes. But Krueger and Heckhausen (1993) argued that real age differences in self-descriptions would not appear if individuals used their own age cohort as a standard of comparison. If that were the case, an average 20-year-old would rate him- or herself the same as an average 50-year-old, even though 20-year-olds as a group are less Agreeable and Conscientious than 50-year-olds (McCrae et al., 1999). Further, Krueger and Heckhausen noted that “inasmuch as cross-sectional and longitudinal studies rely on the same testing procedures, both may elicit social comparison processes that mask real change” (p. P105).

It seems likely that such effects, if they exist at all, would be more pronounced in global adjective ratings than in questionnaire responses. If asked whether one is “active,” it may be necessary to consider some comparison group to formulate a response. But the NEO PI-R (Costa & McCrae, 1992) E4: Activity item, “I often feel as if I’m bursting with energy” can be answered without reference to any group. Evidence that responses to the NEO PI-R are not made with respect to one’s own age group come from studies that document modest but consistent age differences in personality between adolescence and middle age (McCrae et al., 1999). Where there are real changes, they are captured by the NEO PI-R. It thus seems appropriate to evaluate subjective changes in personality by reference to objective changes measured by questionnaire.

Only a handful of longitudinal studies have contrasted subjective and objective personality changes. Woodruff and Birren (1972) compared scores from the California Test of Personality taken in college with actual and recalled scores administered 25 years later. While participants perceived large changes, only small objective changes were found. Woodruff (1983) later showed that recalled scores were poorly correlated with initial scores, suggesting poor memory as a contributing factor to the discrepant results. Costa and McCrae (1989) investigated whether perceptions of personality change were associated with actual 6-year longitudinal changes in personality among participants of the Baltimore Longitudinal Study of Aging (Shock et al., 1984). They found
that the majority of respondents claimed they had either “stayed pretty much the same” (51%) or “changed a little” (35%), while a substantial minority felt that they had “changed a good deal” (14%). However, none of the five personality factors of the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985) had consistently lower 6-year stability coefficients for individuals who perceived change (either a little or a good deal) compared to those who perceived that they had stayed the same, and repeated measures analyses showed little evidence of mean level changes. Costa and McCrae (1989) concluded that most people perceive stability in their personalities, and the few who do not are contradicted by objective evidence. In that study it appeared that self-perceived personality change was illusory.

The present study reexamines the question of the veridicality of perceived personality changes based on a follow-up of over 2,200 male and female participants of the University of North Carolina Alumni Heart Study (UNCAHS). In addition to the assessment of overall personality change, respondents were queried about whether they had increased or decreased on each of the five broad dimensions of the five-factor model of personality—Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Subjective perceptions of personality change were contrasted with objectively measured changes over a 6- to 9-year interval on the Revised NEO Personality Inventory (Costa & McCrae, 1992). Both rank-order and mean-level stabilities were examined in this investigation.

**Method**

**Sample**

This investigation included 2,242 participants (1,756 men and 486 women) from the UNCAHS, who ranged in age from 39 to 45 years in 1988 (M = 41.3 years, SD = 1.1). Selection and recruitment of the participants in the UNCAHS are discussed in Siegler et al. (1992), and administration of the NEO PI-R is detailed in Costa et al. (2000). Briefly, the sample consisted of generally well-educated and healthy men and women, almost all White, who were retested on the NEO PI-R after 6 to 9 years.

**Procedure and Measures**

The NEO PI-R was developed through rational and factor analytic methods to assess the Five-Factor Model (FFM) of personality. It provides scores for the five broad personality domains of Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C). Six specific traits or facets are assessed for each of the five domains. Evidence on the reliability and validity of the scales is summarized in the manual (Costa & McCrae, 1992).

In 1988, the 181-item NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985) was administered. In 1991, a 74-item NEO Supplement was administered to measure the newly developed Agreeableness and Conscientiousness facet scales (Costa, McCrae, & Dye, 1991). The 181 NEO-PI items and 74 NEO Supplement items were combined to provide a baseline NEO PI-R assessment. In 1997, the full 240-item NEO PI-R was administered to provide 9-year longitudinal data for the domain and facet scales of N, E, and O, and 6- to 9-year longitudinal data for the domain and facet scales of A and C.

UNCAHS participants also completed a questionnaire in 1997 that asked them to report self-perceived personality changes. Respondents were asked to reflect back over a 6-year period and assess changes in both their overall and domain-specific personality functioning following the method of Costa and McCrae (1989). To assess overall personality change, participants were asked: “Please think back over the last six years to the way you were in 1991. Consider your basic feelings, attitudes, and ways of relating to people—your whole personality. Overall, do you think you have: (a) changed a good deal in your personality, (b) changed a little in your personality, or (c) stayed pretty much the same in personality since 1991?”

To assess domain-specific personality changes, participants were asked to judge whether their personality had increased or decreased on each of the five factors. For example, to assess whether participants felt they had changed on the dimension of Extraversion, they were asked: “compared to how you were six years ago, how lively, cheerful, and sociable are you now?” Respondents could choose
more, less, or same. Perceived change on the other four factors was assessed in a similar manner.

Results

Self-Perceptions of Overall Personality Change

The majority of respondents believed they had either "stayed the same" (52%; n = 1,177) or "changed a little" (39%; n = 863) in their overall personality, and a clear minority of respondents (9%; n = 202) felt that they had "changed a good deal." These percentages are similar to those reported by Costa and McCrae (1989) in their earlier study. Similar percentages were found for men (54% "same," 38% "little," and 8% "good deal") and women (48% "same," 41% "little," and 11% "good deal"), although slightly more women reported change, χ²(2, N = 2,241) = 7.7, p = .02.

Global change might be due to any number of causes, including intervening life events, changes in health, or psychotherapeutic intervention; and some people may have increased in trait level whereas others decreased. The three self-perceived change groups thus may not differ in mean levels. However, they should differ in rank-order stability. Rank-order stability refers to the relative placement of individuals within a given group on a given trait over time. If there really is change, with some individuals increasing and other individuals decreasing, then stability coefficients should be lower in the groups that perceive change. In other words, stability coefficients should be high in the "stayed the same" group, moderate in the "changed a little" group, and low in the "changed a good deal" group.

As shown in Table 1, the stability coefficients are essentially equivalent among the three change groups for 2 of the 5 domains of the FFM: There were no significant differences among the correlations for the A and C domains. The N, E, and O domains had significantly lower stability coefficients in the "changed a good deal" group compared to the "stayed the same" group, but the magnitudes of the differences were modest (.07 to .13). Of the 15 stability coefficients (the three perceived change groups for each of the five domains), all were above .72 in magnitude with the sole exception of N (.65) for the "changed a good deal" group.

A potentially more sensitive index of global personality change is provided by a measure of profile agreement (McCrae, 1993a) across the two administrations. The coefficient of profile agreement, rₚₐ, combines information on all five orthogonal factor scores, and is affected both by

<table>
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<tr>
<th>Table 1</th>
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<tr>
<td>Stability Coefficients&lt;sup&gt;a&lt;/sup&gt; for Revised NEO Personality Inventory Domain Scales Within Perceived Change Groups in the UNC Alumni Heart Study</td>
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| Criterion | Perceived change |
| --- | --- | --- |
| | "Stayed the same" (n = 1,177) | "Changed a little" (n = 863) | "Changed a good deal" (n = 202) |
| NEO PI-R domain | | | |
| Neuroticism | .78 | .72<sup>b</sup> | .65<sup>b</sup> |
| Extraversion | .85 | .82<sup>b</sup> | .75<sup>bc</sup> |
| Openness | .85 | .85 | .78<sup>bc</sup> |
| Agreeableness | .81 | .78 | .77 |
| Conscientiousness | .84 | .83 | .83 |
| Profile agreement | | | |
| rₚₐ | .67 | .66 | .68 |

<sup>a</sup>Retest correlations. <sup>b</sup>Significantly lower than "Stayed the same" group (p < .05). <sup>c</sup>Significantly lower than "Changed a little" group (p < .05).
the difference between corresponding profile elements and their mean extremeness. Individuals who claimed they “changed a good deal” ought to show lower mean $r_{pa}$s than others. In fact, however, mean $r_{pa}$s for the “stayed the same,” “changed a little,” and “change a good deal” groups were .67, .66, and .68, respectively, and did not differ significantly, as shown in the last row of Table 1.

If actual personality change is rare, why do some people perceive change? One possible determinant may be personality traits themselves. To test this possibility, the baseline and follow-up NEO PI-R profiles of the three perceived change groups were examined. The baseline NEO PI-R profile of the three change groups is displayed in Figure 1. The 202 respondents who felt that they had “changed a good deal” scored significantly ($p < .001$) higher in N and O and lower on A than the other two groups on both administrations. In terms of the more specific facet scales, on both occasions the “changed a good deal” group scored within the high range on the profile sheet on total O and two facets, O1: Fantasy and O3: Feelings. It appears that respondents who report large overall personality changes may be particularly emotional and imaginative individuals who are open to possibilities.

**Self-Perceptions of Directional Domain-Specific Personality Change**

For the individual factors, respondents were asked about the direction of change, and thus hypotheses about mean level changes were appropriate. A series of repeated measures analyses of variance (ANOVAs) were performed to determine whether the five domain scores of the NEO PI-R changed as a function of self-perceived change groups. The Time x Perceived Change Group interaction term in these analyses is the focus of interest. It was hypothesized that increases over time would be seen for individuals who claimed to be more extraverted (or agreeable, or open) now than 6 years previously, whereas decreases would be seen for individuals who claimed to be less. In all repeated measures ANOVAs, significant Time x Perceived Change Group interactions were followed by Scheffé post hoc tests to determine significant across time differences within the change groups.

When asked to judge whether and how their personality had changed on each of the five broad domains of the FFM, on four of the five domains the majority of respondents reported that they had stayed the same. On N, however, only 44% perceived that they had stayed the same; 37% perceived that they became less “anxious, upset and unhappy.” For each domain, about 20% of the sample reported increases.

The mean NEO PI-R domain scores at baseline (Time 1) and follow-up (Time 2) within the domain-specific change groups are presented in Table 2. The main effects for Time are essentially the same as those discussed by Costa et al. (2000). All five NEO PI-R domain scales had significant Time x Perceived Change Group interaction terms in the hypothesized direction. Relative to the “Same” group, the “Less” group declined and the “More” group increased. However, as shown in Table 2, effect sizes were quite modest. Only the effect size estimate for N exceeded .03, with the remaining effect sizes averaging .02.

A more intuitive way to present these data is through correlations. For each domain, perceived change was coded −1 for “Less,” 0 for “Same,” and +1 for “More.” This variable was then correlated with the residual gain score for the same domain. The residual gain score (the raw change score corrected for initial level) is the best estimate of true change; if perceived change reflects measured change, these two should be positively correlated. In fact, all five correlations were positive and significant, but they ranged in magnitude only from .10 for A to .24 for N. On average, perceptions of change accounted for less than 3% of the variance in measured change.

If the veridicality of perceptions is the focus of interest, then absolute, as well as relative, accuracy must be considered. From this perspective we would expect to find no significant changes for the “Same” group, but as shown in Table 2, four of the five domains (all but A) show significant declines that are consistent with the normative trends mentioned in the Costa et al. (2000) article, where the total sample declined about 2 T-score points on N, E, O, and C. Similarly, for the “More” group we would expect significant increases, but
Figure 1. Baseline Revised NEO Personality Inventory (NEO PI-R) profile of three perceived change groups: Stayed the same (n = 1,177), Changed a little (n = 863), and Changed a good deal (n = 202). Profile form reproduced by special permission of the publisher, Psychological Assessment Resources (PAR), Inc., 16204 North Florida Avenue, Lutz, FL 33549, from the Revised NEO Personality Inventory, by Paul T. Costa and Robert R. McCrae. Copyright 1978, 1985, 1989, 1992 by PAR, Inc. Further reproduction is prohibited without permission of PAR, Inc.
Table 2
Revised NEO Personality Inventory (NEO PI-R) Domain Scale Scores Within Direction of Perceived Change Groups in the UNC Alumni Heart Study

<table>
<thead>
<tr>
<th>NEO PI-R Domain</th>
<th>Direction of perceived change</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Effect size&lt;sup&gt;a&lt;/sup&gt;</th>
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<tbody>
<tr>
<td></td>
<td>“Less” (T1)</td>
<td>T2</td>
<td>“Same” (T1)</td>
<td>T2</td>
<td>“More” (T1)</td>
<td>T2</td>
</tr>
<tr>
<td>Neuroticism (N)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>50.6</td>
<td>10.4</td>
<td>48.1*</td>
<td>9.8</td>
<td>48.5</td>
<td>10.4</td>
</tr>
<tr>
<td>Extraversion (E)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>50.9</td>
<td>10.5</td>
<td>48.1*</td>
<td>10.5</td>
<td>51.9</td>
<td>9.9</td>
</tr>
<tr>
<td>Openness (O)&lt;sup&gt;d&lt;/sup&gt;</td>
<td>50.2</td>
<td>11.1</td>
<td>47.2*</td>
<td>11.9</td>
<td>51.9</td>
<td>10.6</td>
</tr>
<tr>
<td>Agreeableness (A)&lt;sup&gt;e&lt;/sup&gt;</td>
<td>46.8</td>
<td>9.6</td>
<td>46.0</td>
<td>10.7</td>
<td>49.6</td>
<td>9.1</td>
</tr>
<tr>
<td>Conscientiousness (C)&lt;sup&gt;f&lt;/sup&gt;</td>
<td>47.7</td>
<td>10.8</td>
<td>44.4*</td>
<td>11.4</td>
<td>53.1</td>
<td>10.0</td>
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<sup>a</sup>Partial eta squared (cf. Cohen, 1988) for Time x Perceived Change Group interaction. <sup>b</sup>Perceived change in “anxious, upset, and unhappy;” ns for “Less” = 835 (37.5%), “Same” = 980 (44.0%), “More” = 415 (18.5%). <sup>c</sup>Perceived change in “lively, cheerful, and sociable;” ns for “Less” = 436 (19.5%), “Same” = 1,298 (58.2%), “More” = 497 (22.3%). <sup>d</sup>Perceived change in “curious, open-minded, and imaginative;” ns for “Less” = 190 (8.5%), “Same” = 1,554 (69.7%), “More” = 485 (21.8%). <sup>e</sup>Perceived change in “helpful, sympathetic, and trusting;” ns for “Less” = 292 (11.8%), “Same” = 1,490 (66.8%), “More” = 476 (21.4%). <sup>f</sup>Perceived change in “responsible, hard-working, and organized;” ns for “Less” = 174 (7.8%), “Same” = 1,604 (71.9%), “More” = 453 (20.3%).

*Post hoc comparison, p < .05.
only N and A show the predicted increases. People who perceived themselves as becoming more extraverted, open, and conscientious did not in fact show corresponding increases in these domain scores. In an absolute sense, 80% of the comparisons are discordant for the self-perceived “Same” group, and 60% for the “More” group.

For the “Less” group, four of the five domain scales showed significant decreases consistent with their self-perceived change, with the exception being A. Thus, only for those who perceive themselves declining on the domains is there concordance or accuracy. It is interesting to consider whether people are more accurate in detecting decreases in personality domains than in detecting increases, or whether participants in this change group simply appear to be more accurate because they are consistent with normative change trends in the whole sample. Overall these data suggest that self-perceived changes are more often discordant with objective assessments of personality change.

**Discussion**

In the present study, we compared retest stability coefficients and mean level changes on the NEO PI-R over a 6- to 9-year interval to evaluate subjective perceptions of the magnitude and direction of personality change. In terms of test scores at the two administrations, there was very little change in either rank-order or mean levels, so the widespread perception that personality had stayed “the same” was generally concordant with psychometric assessment. Although people may believe that traits typically rise and fall across the course of adulthood (Krueger & Heckhausen, 1993), when they consider their own experience, most people see little change.

Among those who did report change, we examined both non-directional magnitude of change and domain-specific direction of change. We reasoned that people who reported having changed a little or a good deal would show lower retest correlations than those who believed they had stayed the same. Analyses of stability coefficients showed some evidence for the concordance of self-perceptions of change with objective stability. Three of the five domain scores for the “Changed a good deal” group showed lower stability coefficients than the other two perceived change groups. Similarly, N and E showed significantly lower stability coefficients for the “Changed a little” compared to the “Stayed the same” group. But despite these statistically significant differences, the magnitudes of the stability coefficients were uniformly high regardless of the self-perceived change group. When a coefficient of profile agreement was used to evaluate the profile of all five factor scores simultaneously, nearly identical values were seen for the three self-perceived change groups.

Analyses of directional, domain-specific changes also showed limited evidence for concordance between self-perceptions and measured changes. For each domain, NEO PI-R residual gain scores were significantly correlated with self-perceptions of directional change (“Less,” “Same,” or “More”), but the correlations accounted only for a small percentage of the variance in gain scores. In an absolute sense, these judgments were discordant more often than not, perhaps because respondents did not seem to be aware of sample-wide declines in four of the factors.

Recall that small but significant changes were frequently seen in respondents who had perceived they had stayed the same. This might mean that many people are insensitive to subtle personality changes. But as shown in the companion paper by Costa and colleagues (2000), there are overall changes for the sample as a whole in N, E, O, and C. Perhaps people who believed that they had stayed the same compared themselves to their age cohort (Krueger & Heckhausen, 1993), and in that respect they really were much the same.

If self-perceptions of directional change are not, by and large, accurate reflections of real change, why do they arise? There appears to be some operation of a self-enhancement bias (John & Robins, 1994). As shown in the footnotes to Table 2, people were more likely to claim that they had increased (on average, 24.7%) than decreased (13.2%) in desirable traits. Interestingly, the self-enhancement bias is more pronounced for N, where 37.5% of respondents reported a decrease,
than for E, O, A, or C, where about 21% reported increases. Costa and McCrae (1989) reported that perceptions of change were associated with age, with older respondents more likely to report declines in E, O, and C. They speculated that this might be due to an internalization of stereotypes of aging. Due to restriction of age range, it was not possible to replicate that finding in the present study. However, analyses did suggest that the personality characteristics of respondents may influence perceptions of personality change. When the NEO PI-R scores of the three perceived change groups were compared, respondents who felt they had changed “a good deal” scored higher on the dimensions of Neuroticism and Openness to Experience than did the other groups. These highly emotional individuals may falsely imagine that they have changed substantially, or they may be particularly sensitive to real but subtle changes. It is noteworthy that psychologists as a group tend to be high in Openness (Costa, Fozard, & McCrae, 1977), so professional interest in adult developmental changes and transitions may be linked to personal perceptions of change.

It should be noted that the present study examined only self-reports of personality, and biases introduced by method of measurement might be operating. Costa and McCrae (1989) found evidence for the veridicality of perceived changes in Neuroticism and Extraversion using self-reported NEO PI-R data, but could not replicate the finding using spouse ratings of personality. That failure may have been due to a smaller sample size on which spouse ratings were available. Future large-scale studies should supplement self-reports with spouse or other observer ratings of personality (McCrae, 1982, 1994). Further, the two-point design used in the present study does not allow detailed analysis of the time course of personality changes, which may have been transient. Future longitudinal follow-ups of this cohort can determine whether changes observed so far are preserved over long intervals, and will permit the application of sophisticated statistical techniques such as latent growth curve estimates of change (Jones & Meredith, 1996; Meredith & Tisak, 1990).

The veridicality of perceptions of personality change is important for practical as well as theoretical reasons. Studies of personality change and its antecedents require that researchers identify individuals who have shown marked change. Documenting longitudinal changes requires time and effort, and change scores may reflect little more than error of measurement (McCrae, 1993b). If self-perceptions of change were veridical, samples could be identified simply by asking participants if they had changed. Similarly, psychotherapy outcome studies could be easily conducted by asking clients at the end of therapy or after a follow-up period whether and in what ways their personality had changed.

Unfortunately, the present analyses indicate that self-perceptions of change account for only a small proportion of the variance of psychometrically assessed change. Self-perceptions of change are not an adequate substitute for repeated objective assessments in studies of personality change or in psychotherapy outcome research.

References


