

Personality Changes

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PERSONALITY CHANGES IN THE VERY OLD: A
LONGITUDINAL STUDY

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Abstract

Many studies have examined the issue of personality stability/instability in early and middle adulthood; yet, very few studies have explored the limits of personality stability in the very old who are often confronted with major changes in their health and life circumstances which can severely test their normative behavior. Thus, as an extension of this research, we conducted a longitudinal study on 74 elderly women with a mean age of 80 residing in rural western New York. These individuals were selected from a sample of 358 individuals assessed in 1987 (60 years or older) and they were assessed again in 1993/94 on selected items of Costa and McCrae's (1978) NEO Personality Inventory on the personality traits of Neuroticism (N), Extroversion (E), and Openness to Experience (O). Multiple regression analyses, uncorrected for measurement error, revealed moderate to strong stability on all three traits, ($r = .34$, $r = .32$, $r = .42$, respectively, $p < .01$). Moderate change was also found. Personality traits were found to be influenced by negative changes in life circumstances. For example, decreased social support and increased unmet need were associated with more N in 1993. Also in 1993, less E went with poorer health and greater need, while E in 1987 went with being Extroverted in 1993. The trait of O was very stable and appeared to be least affected by the course of life events. O predicted itself and was also predicted by one's level of education. This conflictual finding of moderate stability and moderate change is reconciled by considering personality development within an interactionist framework.

Introduction

Does personality change? This is an age-old question which reaches back to the dawn of psychology (Field, 1991). And, the answer has gone full circle going from stability to instability to stability again. With a few exceptions, the current research on self-reported personality traits is replete with studies showing that personality traits are generally stable after one enters adulthood even among the elderly. However, we believe that (which may even seem obvious to many people) personality traits are also modifiable in adulthood. We believe they can particularly change during time intervals when people are faced by changing life circumstances that are negative or require adaptation (Haan, Millsap, & Hartke, 1986). We agree with the rule that most people maintain a stable personality under stable life circumstances (Brody, 1972)-- such as is found in one's level of education, friends, marriage, career, hobbies, --that most adults enjoy after the age of 30. However, during more turbulent time periods, we believe that personality can change as people attempt to adapt to their changing circumstances.

There are several recent studies that support our contention that people can change (Vaillant, 1991; Field & Millsap, 1991; Haan et al., 1986; Shaie & Willis, 1991). For example, Haan et al., (1986) found that personality was most stable during childhood and adolescence, and young adulthood and is least stable during the time interval between adolescence and early adulthood. It was also markedly unstable during the transition period from the middle to late adulthood. Another period of great change is the transitional period between being old and being very old can be especially trying, fraught with negative life experiences. Thus, we focused on this time interval as a good test of our hypothesis that an individual's personality can change

when he/she faces negative life events that are traumatic and negative. To underscore how change may occur (i.e., what particular set of life circumstances is important in this process), we operationalize negative life events by measuring changes in our participants' physical health, social activity, and unmet needs. The ensuing data from this study were suggestive. Personality traits in the very old appeared to change differentially as a result of how our participants adapted to their particular set of life circumstances. These findings are important for two reasons. One, they show that nonuniform changes in personality are possible. Two, they point to an interactive model of personality development. Before we present these findings, we will first briefly review the research literature on this topic.

Past History of Personality Stability

At the turn of the century Sigmund Freud (1920) held that one's personality or character was organized by one's pre-genital sexual experiences and became fixed by the age of five and remained fairly stable thereafter. Around that time, William James (1918) also proposed that one's personality became stable with maturation, but, for James, one's character did not crystallize until after the age of 30.

A few years later the situationists or environmentalist challenged Freud's and James' notion of a stable character. For example, Harshorne and May (1928) in their classic study showed that the personality trait of honesty in children and adults was inconsistent across situations. During the 30s, 40s, and early 50s, environmental theorists, such as Dollard and Miller (1950) and Skinner (1938), also argued that the situation or set of environmental contingencies determined how one behaved in a particular instance and that the presumed idea of

an internal enduring personality structure or dispositions was, at best irrelevant or, more likely, non-existent, a figment of one's imagination.

Then, in the late 60s and throughout the 1970s (at the time when I was a graduate student) the social interactionists held sway. Theorists, such as Walter Mischel (1968), David Magnusson and Norman Endler (1977) who were influenced by the seminal research and ideas of Kurt Lewin (1935), Roger Barker (1965), and Henry Murray (1938), especially Magnusson and Endler, began to question the ideas of the early trait theorist (e.g., Eysenck & Rachman, 1965; Cattell, 1946) who contended that the personality was genetically determined, stable, and relatively unchanging in adults. They argued that personality as measured by trait theorists was primarily based on self-reports which may be stable from time 1 to time 2, but had little relationship with predicting how an individual would actually act or behave in a particular situation. While theorists such as Magnusson and Endler were sympathetic to the situationists' position regarding the role the environment has in influencing personality or character, they argued that knowing what the environmental conditions were was not sufficient to predict behavior. Two other factors must be considered which are: 1) the social cognition of the person or person being examined (i.e., his motives, expectations, perceptions, and self-concept), and 2) the dynamic and reciprocal interaction between these intra-person variables and the environment (Magnusson & Endler, 1977). For example, Mischel reports (1977) on a study that predicted the adjustment of mental patients upon their release from an institution. He found that adjustment to deinstitutionalization depended essentially upon the reciprocal interaction between the individual and his/her environmental conditions. Little or no consistency was found in one's behavior or assessments of personality traits prior to the individual's discharge. Mischel

concluded that “accurate predictions of post-hospital adjustment require knowledge of the environment in which the ex-patient is living in the community--such as the availability of jobs and family support--rather than any measured person variable [such as on the MMPI] or in-hospital behavior” p. 349. Other researchers in the interactionist camp reported a similar pattern of findings, that is, when you look at actual behavior, people are inconsistent across different situations. For example, Flood and Endler (1976) found this to be the case when they looked at the personality trait of anxiety. In their research, they observed the anxious behavior of athletes high on the trait of anxiety could not be predicted by the trait of anxiety alone. They found that whether or not anxiety was expressed as operationalized by the athlete’s pulse rate depended upon what situation the individual was in. Athletes who scored high on the self-reported trait of anxiety showed an increased pulse rate when they were faced with an ego- threatening situation with observers and showed a decreased pulse rates when they were unobserved or in a non-ego threatening situation. Thus, there was an interaction effect. However, these researchers in the interactionist’s camp were soon challenged by others such as Epstein (1980) who noted that when a number of behaviors were examined across many situations and conditions, considerable consistency and high stability was found once again on various measures of personality traits such as anxiety.

Around this time and also evolving from the early adherents of personality stability (such as Cattell, 1957; Allport, 1937; Guilford, 1959), another school of theorists had begun to undertake the study of determining the major traits that define personality organization and structure. These traits were generally based on paper and pencil self-reports or descriptions and which were then factor analyzed (e.g., Norman, 1963). These factors tended to differentiate into

five primary traits and became known as the “Big Five” or the five-factor trait theory of personality organization. Although this school of thought has had many adherents over the years, Costa and McCrae (1989) and McCrae and Costa (1984) have clearly conducted the most extensive, elaborate, and cutting edge research on individual differences in personality traits. Based on their seminal studies on self-reported personality traits (Costa & McCrae 1978, 1988a, 1988b, 1989, 1991; McCrae, 1982; McCrae & Costa 1984, 1987), they have articulated a sophisticated theory on personality structure and functioning which they believe accurately reflects not only how people say they will behave but also how people really behave across different situations. What is most important for our purposes is they demonstrate very persuasively in their research (although they do report some discrepancies) that personality disposition (as measured by self-report) changes very little for the vast majority of adults after the age of 30.

In conducting their research, they carefully make a distinction between two types of stability: 1) stability of the mean levels of a personality trait at time 1 and time 2, and 2) stability in the rank order of individuals on a trait at time 1 and time 2, i.e., determining if the individual maintains the same position with respect to his peers at time 1 and time 2. Their initial investigations into the stability of mean levels were cross-sectional and they (McCrae & Costa, 1982; Costa & McCrae, 1986; Costa et al., 1986) found that the mean levels of the traits of Neuroticism, Extraversion, and Openness to Experience to be exceedingly stable across different age groups over time. However, some decreases did occur. Two facets within the Extraversion trait, activity and excitement seeking, showed small but significant declines over time (Costa & McCrae, 1992).

Later, they (Costa & McCrae, 1988, 1992) looked at individual differences in the rank order of individuals to see if people tended to maintain their position on a particular trait with respect to their peers over time and again they found people were exceedingly stable in maintaining their rank order over time. Indeed, they reported the remarkable finding that the correlations on the personality traits were in the 90s and approached perfect stability when corrected for attenuation and measurement error (Costa & McCrae, 1989). Since they found over and over again consistency in self-reported personality traits on the three dimensions of neuroticism, Extraversion, Openness to Experience, and later for their added traits (McCrae & Costa, 1987) of Agreeableness, and Conscientiousness, they have recently proposed a biological explanation for personality stability. They contend (taking a strong position) that personality unfolds in a similar pattern across cultures and is not determined by and/or is little affected by changes in the environment of an individual (McCrae and Costa, 1997). In fact, they argue, pitting themselves against the interactionists and the environmentalists, that it is the other way around, that is, environments don't change people, rather people change their environments to suit their personality. For example, McCrae et al. Observed that conscientious doesn't fully develop in people until early adulthood when they shape their environment by taking on adult responsibilities of family and career. Similarly, people are more extraverted their late teens and early twenties when people modify their cultural environment engaging in searching for a mate.

Needless to say, the propositions that personality is not influenced by individual's situation or culture and that personality is virtually immutable after the age of 30 have not gone unnoticed (Lawton, 1999), and many theorists are have challenged their research. For example, one criticism of their work which frequently arises (Finn, 1986) is that the stability of self-

reported personality traits may be more a reflection of the persistence of the individual's self-perception than it is a reflection of an enduring underlying veridical personality traits. Costa and McCrae (1992) have responded to this criticism, however, by expanding their research by including observer ratings on their spouses' or friends' personality traits. When they (Costa & McCrae, 1988b; McCrae & Costa, 1982) had the spouses rate their mates on the same personality traits as they had rated themselves on, they found remarkable agreement over a six-year period. They called this research consensual validation. (Also, see Conley, 1985, for corroborative findings comparing the observations made by friends.) Although the correlations of the couples with each other were in the moderate range and less strong than the stability found in the individual's own self-reports, the results do add further support to their claim that personality organization in adults remains fairly stable across time. Of course, it should be noted that spouses and friends may also be guilty of harboring stable stereotypes and subtle changes in their spouse's or their friend's personality may go unrecognized. A true test (Field, 1991) would involve a naive observer assessing an individual on two different occasions.

Another challenge raised is that the stable findings might be an artifact of the actual instrument used to measure one's personality traits. Conley (1985) effectively responded to this challenge by conducting a meta-analysis of many previously published studies that examined the same personality traits using different measures, on a number of different personality traits, across many different occasions, and over time. Basically, his analysis corroborated Costa and McCrae's contention that personality traits remain consistent over time. Whether different scales are utilized or the same scales are used to measure personality traits, all measures revealed long term stability. When he performed his meta-analysis, Conley (1985) found that personality

remained stable even after 45 years had elapsed. However, Conley's test-retest correlations were more moderate (40s and 50s) than those reported by Costa and McCrae (1988b, 1989). Of course, with many variables being measured at different times and in different ways, some of this reduction in coefficient size can be attributed to measurement error, but not all of it. Indeed, in the shorter time intervals 10 to 19 years, Conley suggested that correcting for attenuation would produce coefficients as high as 0.98. But, it is particularly noteworthy that the longer the time period between the measures, the smaller the correlations that were yielded. This fact implies (as is noted earlier, Haan et al., 1986; and has been conceded by Costa & McCrae, 1992) that personality organization gradually erodes or deteriorates over time. It seems that over the long run, the chances for personality to change increases in likelihood.

However, when we look at all the data what is most salient is that these findings generally support the supposition that personality is exceedingly stable across adulthood. Because of this, Costa and McCrae (1989) have suggested that the research on the stability of personality traits be extended to time intervals where one might expect greater change to occur such as at the end of adolescence or at the very end of the life span.

Currently, very few studies have done this with the elderly. Yet, recently there have been a few studies looking at continuity and change. Surprisingly, they tend to emphasize personality development and take a reciprocal interactionists' perspective. Most of these studies report evidence for both moderate stability and moderate change (Field, 1991). As suggested by Costa and McCrae, they demonstrated that transitional intervals are important loci where personality change or adaptation is possible especially during the transitional intervals in the late adulthood and particularly in the case of older women (Haan et al., 1986).

The researchers of these studies allowed for some environmental influences and proposed a more comprehensive contextual model of developmental change (Haan et al.; Field, 1991, also, see Kogan, 1990, for a contextual analysis of change). For example, in a study conducted by Field and Millsap (1991), they analyzed data from the Berkeley Growth Study (Bayley, 1933). In their longitudinal study, they examined the stability of the personality organization of 47 individuals aged 74 to 84 and in 27 very old individuals aged 85 to 93 across 14 years. On several personality dimensions, they observed moderate stability for life satisfaction and intellect, declines on the traits of extraversion and energetic, and an increase in agreeableness. While not actually measuring the level of health either subjectively or objectively in their participants, the authors assumed the declines they found on energy and extraversion traits were related to the putative health problems experienced by the aged.

Neugarten (1974) was one of the first to note this transitional period between the young-old and the old-old reflect substantial differences in their life experiences. She noted that the old-old were more likely to face problems in health, social relations and economic resources than the young-old. More recent observers have made a further distinction between the old-old (around age 75) and oldest-old (85 or older) (Sultzman and Riley, 1985; Bould et al., 1989). Bould et al. reported about half of the oldest-old suffers from at least one significant physical impairment. Furthermore, when they enter this latter category, they are more likely to be socially isolated, to be frail and bereft of friends, or widowed, and/or poor. Many other recent observers have reported similar findings looking at different populations of the elderly within the United States and outside of it (Peterson & Maiden, 1993; Longino, 1988; Zarit, 1995).

The purpose of this study is to take up Costa and McCrae's challenge (1989) and extend

the research on personality stability to the very old. In doing so, we believe we make three contributions to this research literature. One, our sample of participants is relatively larger than those used in prior studies. Two, this study utilizes a standardized measure of personality traits based on the Costa and McCrae NEO-PI (1978), whereas most studies have relied on different measures that were approximations of the NEO-PI traits through Q-sorts (based on expert observers) or by “intensive interviews” or by looking at personality measures that were comparable but were not quite the same as the ones uncovered in the standard (Costa & McCrae) five-factor model. Third, and perhaps most important, we actually operationalize environmental and biological changes that occurred in the lives of our participants both at time 1 and time 2. By doing this, we were better able to determine if the changes in personality when they occurred were related to changes in the life events of our participants. When we analyzed our data, we used a hierarchical regression analysis on our participants’ self-reported measures of the traits of Neuroticism, Extraversion, and Openness to Experience reported at time 1 and again approximately seven years later at time 2 and associated them with changes they experienced in their biological health, social activity, and need for resources.

Our two major hypotheses are based on the relatively recent studies of Field and Millsap (1991) and Haan et al. (1986). First we expected to find moderate stability and change in personality functioning. We anticipated that many of our participants would show moderate consistency on the personality traits of Neuroticism, Extraversion and Openness to Experience over time. Second, we also anticipated moderate change and that this change would be associated with negative life events encountered by our participants as they entered the transitional time interval between late life and very late life.

Method

Subjects:

In 1987, we surveyed 358 older Americans in Allegany County — a rural region in upstate Western New York. We randomly selected the people who participated in this study from a comprehensive mailing list of elderly individuals residing in the county (defined as individuals 60 years old or older). The Area Office compiled this mailing list for the Aging. It was fairly comprehensive representing about two-thirds of the elderly citizens.

Six to seven years later in 1993 and 1994, we re-interviewed a sample of 74 women from our 1987 sample. In 1987, our subjects' mean age was 73, now it was close to 80. As a group, the subjects had a high level of education — the mean level of years of schooling was 12, with some years of high school being the mode. They were a fairly stable group, the majority having lived in the same house for more than 20 years. The subjects' level of income was relatively low, averaging \$14,000 with the mode being less than \$8,000. Only 14% were married, and more than 70% of them were widowed.

While clearly poorer and less privileged, the demographic characteristics of our surviving rural sample were comparable to the characteristics of the subjects used in previous longitudinal studies. They, like ours, were generally composed of white and, compared to their age mates, fairly highly educated people who tend to volunteer for such studies and are willing to be retested (Costa & McCrae, 1988).

For this study, we selected elderly women. We did this for several reasons. First, they comprise the majority of the oldest-old cohort--the group we were most interested in. Second,

women merit special attention in our study because they tend to be at higher risk than males are of encountering major traumatic disruptions in their lives because they are more likely to be widowed which, in turn, often renders them to a lower economic status where they have less money to provide for their basic needs (McLaughlin & Holden, 1993; Maiden, Leitko, & Peterson, 1984). Third, women in later life are more susceptible to chronic illnesses than men (Bubrick, Silver, & Perls, 1998) which, in turn, may impact their personality functioning (Costa and McCrae, 1985). Finally, differences exist among all age groups (Costa & McCrae, 1985; McCrae & Costa, 1997; Haan et al., 1986; Field & Millsap, 1991) on how the respective genders score on personality traits, but also on their susceptibility to show change on them (Stewart & Ostrove, 1998; McCrae & Costa, 1982). For example, one common finding is that women in general score higher on the Neuroticism scale and they show different patterns of change on this scale than men do (Costa & McCrae, 1985; McCrae & Costa, 1997; Haan et al, 1986).

Measures

Traits

In 1987, we employed selected items from the NEO Personality Inventory (Costa & McCrae, 1978, 1985) to measure the personality traits of Neuroticism (N), Extroversion (E), and Openness to Experience (O). N referred to the personality dimension of emotional stability, E, to one's degree of gregariousness and warmth, and O, to one's aesthetic interest, and intellectual curiosity. To measure these traits, we selected items based on their S Form version (Costa & McCrae, the NEO Personality Inventory Manual, 1985) of their personality inventory. These items composing the three factors of Neuroticism, Extraversion and Openness have been shown

to possess excellent internal consistency and retest reliability (Costa & McCrae, 1985). We chose the shorter version of their instrument because these questions were appended to a larger needs assessment survey and we did not wish to over tax our respondents by extending the questionnaire any further than we had to.

In 1993, we tapped all three factors again by asking the subjects to respond to the same self-describing statements in terms of whether they agreed or disagreed with them on a five-point likert scale.

These three factors were our dependent variables. We also correlated them with several important measures of life events that we thought had the potential to challenge a person's stability. These included negative changes in health, social support, and level of unmet need, along with, level of education, and age.

Life Events

Health was measured by the number of days of illness encountered in 1987 versus 1993. The number of friends that were available in their neighborhood and the number of social contacts they had reflected social support. Unmet need was measured by the problems they experienced in income, and in supporting health care, housing, transportation, nutrition, employment and leisure time activities.

Age and level of education were based on the self-reports of the participants. Change on the first three variables was measured by subtracting scores of the 1993 data from the 1987 scores.

Results

The findings tend to support our hypotheses. As predicted, we found moderate stability on all three personality traits on individual rank order over time. By the same token, we also found moderate individual change on all three variables. And, as predicted, two of the three personality factors, Neuroticism and Extraversion were affected in varying degrees by the negative life events encountered by the elderly women in this study.

Interestingly, despite the changes found in the rank order of our participants over the seven-year period, a comparison of their group means revealed little or no change over time (see Table 1). This suggests that these traits remain fairly stable across groups of individuals even when there are individual differences, and it compares well with a large body of literature which has shown group means to change little with age (Costa & McCrae, 1982; McCrae & Costa, 1984; Costa & McCrae, 1992), particularly when they are not confounded by cohort effects and are measured longitudinally.

Although statistically significant declines have been reported in the literature particular with respect to extroversion and neuroticism (Costa & McCrae, 1985; 1988,1992), they are generally attributed to sample bias or cohort differences. We did not find this decrease in Extraversion. Besides its inherent stability, another possibility why there was so little change is that women maintain their level of outgoingness and dominance as they age. This finding alludes to what Gutmann (1977) calls the “cross over effect” where women tend to maintain or increase their traits of social dominance and outgoingness with greater age while men tend to show declines in dominance and increased feminization. McCrae and Costa (1982) have also found declines in extraversion for men with greater age but not for women. Since we did not use

males in this study, we basically replicated Costa and McCrae's findings of little or no change in group means over time.

Insert Table 1 about here

Be that as it may, the main focus of this paper is examining individual differences on these traits. Hierarchical regression is the statistical method of choice. For each of the three personality variables, as assessed by personality in 1994, we ran the following predictive variables: that personality trait as scored in 1987, changes in health status, needs, social support, age, and education.

First we look at N in 1994. Table 2 displays the results. Pearson *r*s suggest the following predict neuroticism: Neuroticism in 1987, greater need in recent years, decline in social support, and lower levels of education. These data suggest that N is substantially influenced by environmental and social factors, although it is also influenced by the earlier level of N. When we use the hierarchical analysis where we enter the highest loading item first, the next second, and so on, we see a similar pattern of findings. It is interesting to note that Leonard Pearlin and Morton Lieberman (1979) found that when they measured life strain caused by recent and unexpected economic hardship they found it to be particularly potent in inducing symptoms of anxiety and depression in their subjects. They suggested, in anticipation of an interactionist model of personality change, their data illustrated "one mechanism through which external events and inner emotional states become joined" p 237.

Although not significant, there is also a directional finding linking illness with

Neuroticism. Past research has also shown a connection between these two items (Costa & McCrae, 1985b; Schroeder & Costa, 1984) which perhaps suggest that a person's level of health can affect the level of neuroticism or emotional upsetness that is reported.

Insert Table 2 about here

Table 3 explores factors shaping openness in 1994. Pearson's *rs* indicate that more educated respondents and those showing higher levels of O were most open in 1994. We also see the same pattern with the hierarchical regression. This replicates essentially a very common finding in the literature (McCrae & Costa, 1985).

Insert Table 3 about here

In this case, it appears that the trait is relatively stable over time, since openness in 1987 is the best predictor of openness in 1994. Education and (indirectly intelligence) appears to have some role, as well, indicating that socioeconomic status may be involved.

Finally, Table 4 focuses on the sources of extraversion in 1994. Pearson's *rs* displayed that an increase in need and illnesses over the seven intervening years reduce the extent of extraversion, whereas, extraversion in 1987 predicted itself in 1994. No other variable in 1987 is associated with extraversion in the hierarchical analysis. The pattern is roughly the same, with a few non-meaningful changes in the coefficients, in the case of the hierarchical analysis.

This hierarchical analysis demonstrates the "staying power" of increased economic

dependency and unmet needs. Greater need in 1994 compared with need in 1987 clearly depresses the level of extraversion. It is interesting to note that age per se is not a relevant factor in any of the three analyses, but particularly interesting regarding extroversion as it has been suggested that people disengage or withdraw from society as they grow older (Cumming & Henry, 1961). Our data do not support this theory.

More noteworthy, the magnitudes of our coefficients of personality stability are smaller than those reported in the research literature using similar scales (Costa & McCrae, 1988; McCrae & Costa, 1986). But, they are more in line with most other stability studies using other measures of personality traits (Costa & McCrae, 1992). Why are our coefficients smaller? The most likely explanation for this concerns the instrument we used. Since we utilized the S form of the NEO (Costa & McCrae, 1985) to measure personality, our factors were composed of a limited number of items to measure each trait. Psychometrically, this attenuated our findings. If we had used the aggregate instrument with 144 items, larger correlations would have occurred suggesting greater consistency on these traits than we observed. Second, measurement errors may have transpired--e.g., different interviewers, interviews conducted on different times of the day in different months, and so on, which further attenuated our findings. Our best guess is that if we made these corrections our data would reveal coefficients in the 50s and 60s.

Discussion

The data tended to support our hypotheses. As predicted, moderate stability and moderate change were found in individuals on all three personality traits. Although our coefficients are somewhat smaller than what has been generally reported in the literature, they are nonetheless comparable to what has generally been reported in the literature (Conley, 1985;

Field & Millsap, 1991; Shanan, 1991).

Clearly, (as Shanan, 1991, has noted) the sizes of the over-time correlations of our study and those that are generally reported suggest the possibility of inter- and intra-individual variability of a magnitude greater than the variance explained. Even if we allow that measurement error necessarily plays a role in these findings, all unaccounted for variances cannot be written off as simply due to measurement error. Some of it, must reflect the fact that real change had occurred. The literature also shows that personality change generally occurs over time. For example, when the time interval between measures is increased, the resulting correlations are reduced correspondingly (Costa & McCrae, 1992; Haan et al., 1986; Costa & McCrae, 1985; McCrae & Costa, 1982) indicating that personality structure gradually decays over time.

It was predicted that changes in personality would be associated with the negative changes in life events that befell individuals in the transitional interval between old age and very old age. Just so, we found that change on the traits of Neuroticism and Extraversion was associated with negative encounters in later life. As we have noted earlier, several other researchers have reported similar findings (Field & Millsap, 1991; Haan et al., 1986, Shanan; 1991). And they attribute these types of changes to external social, cultural and historical factors. Indeed, Costa & McCrae (1984) have also reported correlations on the NEO traits of Neuroticism and Extraversion and self-reported health, well-being, and other environmental variables decreased over a six-year period. This suggested that personality may have changed as result of being influenced by changing life circumstances. These authors allowed that the lower test retest coefficients on the variables could be attributable to unreliability or measurement error

or (what we think) to sensitivity to change.

However, the authors are somewhat reluctant to accept this line of thought. They argued further that personality traits can cause people to interpret their environmental conditions accordingly. For example, they noted adjusted people are always cheerful even when they are ill, while neurotic individuals are unhappy and will find something to complain about even when they are well and their health is no longer a problem (Costa & McCrae, 1985). Indeed they even hint that personality traits are causes, not effects (McCrae et al, 1997). Being high on the trait of Neuroticism, for example, may actually cause poor health as the literature has shown that subjective health is also correlated to some degree with objective health (Costa & McCrae, 1985).

What our study adds that is new to this issue is we have objective environmental and health measures at time 1 and time 2. This may not have been done before. This allows us to determine better the direction of the influence by looking at how change on these variables is associated with change on our personality traits time 1 versus time 2. When we control for the personality trait at time 1 (also see Maiden et al., for path analyses of this data, 1997), we find that factors such as health, social activity, and problems in meeting essential needs directly and indirectly influence the personality traits of Neuroticism and Extraversion, while they seem to have little or no impact on the trait of Openness at time 2.

Why is this so? Perhaps, we can find some clues as to why these variables change or remain unaffected by negative life events in terms of their internal structure. As reported by Costa and McCrae (1985), the Neuroticism scale is composed of the following six facets: anxiety, hostility, depression, self-consciousness, impulsivity, and vulnerability. It seems

inconceivable that items measuring facets such as depression, vulnerability, and anxiety would be unaffected by encountering negative and traumatic changes in life circumstances. In particular, past research has shown that increased economic hardship and unmet need are likely to set up a cascade of events which cause's one to feel more depressed, anxious, and vulnerable (Pearling & Liebermann, 1979). And, Costa and McCrae (1992) have also noted that personality may change as a result of traumatic stressors. Costa and McCrae (1982) have indicated that Neuroticism is a measure of mental health and in women it increases with greater age as their mental health improves over time. Presumably, the facets of neuroticism can change either through psychotherapy (Costa & McCrae, 1982, 1992; Seligman, 1995) or through improvements in one's life circumstances.

We offer a similar rationale for the changes associated with the Extroversion scale. Extroversion is composed of the following six facets: warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotions. Again, it seems to follow logically that facets such as assertiveness, activity, and positive emotions would be affected by poor health and other environmental variables. Field and Millsap (1991) have argued similarly. In their study, they noted the trait they called energetic declined with age. They suggested it was due to the putative health problems associated with aging. Costa and McCrae have reported declines over time on the extraversion scale although they provide little explanation other than to suggest that such changes may be biologically driven and maturational in nature (McCrae & Costa, 1997)

By the same token, it would be expected, that the trait of Openness would be less likely to be affected by biological and environmental factors than neuroticism and extraversion as it consists of a different set of facets. These are: fantasy, aesthetics, feelings, actions, ideas, values.

These facets have been shown to be influenced by education and to some degree IQ that also was replicated in this study. Yet, it is unclear how changes in life circumstances would change these facets. And, it is possible these individuals experience fewer life problems and less economic strain because they are somewhat more insulated from them by their higher levels of education and income. It has been widely replicated in the literature that higher levels of education are associated with a host of positive outcomes in the elderly, including better health, higher income, less cognitive decline, and greater sense of well being. Indeed, one of the best things a person can do for himself to dramatically increase his chances of aging successfully is to get a college education.

Overall, these findings suggest that personality is more changeable than is currently believed. To explain this change, an interactionist model is required (Davis and Millon, 1994).

The literature basically presents three positions on this issue. There are those theorists who emphasize the environment's influence in shaping personality. For example, although he sympathizes with the interactionist, Mischel (1968) has argued that the behavior depends upon the environmental setting or "stimulus conditions." He alludes to studies such as (Haney, Banks, & Zimbardo, 1973) classic simulated prison study in which college student volunteers seemed to be completely taken over by their roles as prison guards and engage in sadistic and antisocial behavior while those who played the prisoners exhibited passive and masochistic personality traits. These personality changes were not predicted by the diagnostic testing and selection process they had undergone prior to their role assignment. Yet, the situationists have been challenged by Epstein (1980) who noted that when a variety of settings and situations are considered, consistency in personality emerges and is the rule.

Costa and McCrae (1988), McCrae and Costa (1997) have argued for a different unit of analysis. They propose that for adults after the age of 30, personality factors are stable and more important than changes in life circumstances, social roles, and the biological health of people. Moreover, McCrae et al., (1977) acknowledge personality can change particularly in early adulthood but they assert that this change is biologically determined unfolds according to its predetermine genetic program irrespective of whatever cultural or environmental influences that may exist. They challenge the interactionist such as Haan et al. (1986) who hold that personality traits and the environment reciprocally interact to produce a final product. They argue that perhaps Haan et al. “had it backwards, and it is society that must accommodate to personality,” reserving certain experiences for adults who have sufficiency developed the personality structure to handle the task.

Our data places us between the environmentalists and geneticists, right square in the interactionist camp. We contend the unit of analysis in the study of personality development should be “reciprocal interactionism.” We recognize that in some cases the environment may rule over individuals such as “we all tend to be quiet and on the introverted side when we are in Church or noisy and extroverted when we are attending a hometown athletic event.” And, certainly we recognize there are occasions where the personality traits seem to be causes rather than effects such as in the case of profoundly neurotic individuals many of whom seem totally unaffected by their life circumstances and persist in repeating the same ineffectual behavioral patterns over and over again.

But, we also believe all people can change according to how they interact with their environmental condition or life circumstances. In outlining this model, we recognize several

possibilities exist. For example, there may be subpopulations of people: those who are more prone to change and those who are less prone to change (e.g., see Bem & Allen, 1974; Shanan, 1991). We also recognize that change in personality structure may be temporary for some as an individual deals with a particularly traumatic life event, and the previous level of functioning on a specific personality trait may be restored once a crisis is past (Shanan, 1991; Costa & McCrae, 1982, 1992).

However, we also speculate that a much broader biosocial contextual model needs to be utilized to reconcile the complex findings of this and past research that indicate personality is both stable and mutable depending upon the specific personality trait that is involved and one's particular set of life circumstances. Viewed within this larger framework, we envision that personality change or stability occurs at the intersection of a number of interacting systems, such as one's biological health, social support system, and levels of unmet needs due to economic constraints. Generally but not necessarily the stability of these systems are most challenged during transitional time intervals over one's life span from one stage or phase of development into another one each with its own set of challenges. We believe another important factor undergirding personality which we did not examine in this paper and which complicates the picture even further is an individual's ability to cope and adapt to mold their environment in old age (e.g., Bandura, 1994; Lawton, 1985). Thus, we contend that an individual's stability or instability in personality as measured by traits depends upon the total sum of reciprocal interactions among the above-mentioned four systems: one's environment or life circumstances, one's biological health, one's self-perception of personal competency (see Bandura, 1994, and Whitbourne, 1996) and one's customary mode of behaving, that is, one's personality traits.

Furthermore, we believe that when there is profound and significant change in any one of the three interacting systems of life circumstances, health, and self-efficacy, subsequent changes in an individual's personality are likely to follow.

Certainly there is a plethora of studies demonstrating the need for an interactionist model. Numerous studies have clearly demonstrated the influence of socio-cultural-historical factors have on the personality development on different birth cohorts (Shaie & Willis, 1991; Stewart & Ostrove, 1987; Haan et al., 1986; Field & Millsap, 1991; Shanan, 1991; Helson and Moane, 1987). It seems inconceivable that this model would not also hold for personality change within a cohort as well.

Future researchers need to look more closely at these patterns of interactions to better explain how biology and the environment can buffer or can disrupt the stability of personality organization. Researchers need to further operationalize and explore the effects of negative and other life events on all five personality traits, but perhaps to pay particular attention to the permutations on the trait of N as it is paradoxically the most stable of the personality traits (personal communication, McCrae, 1966, 1997; Conley 1984) while also being one of the personality traits (Costa & McCrae, 1992) most susceptible to change.

We would like to underscore that there are several problems with this study. First, it is not definitive but only suggestive. The sample size is small and restrictive comprising individuals from a rural community in upstate western New York. Second, the instrument used was an abbreviated version of a larger version of the NEO-PI was not utilized (Costa & McCrae). Certainly, this in itself would restrict the range of the measures and decrease the correlations found on these scales. Third, at the time of our study, the two additional dimensions

of Agreeableness and Conscientiousness were not fully developed. If it is at all possible, studies in the future ought to include the full range of personality traits to get a clearer picture how life circumstances interact with them.

Despite its shortcomings, this study is suggestive and contributes to the research. It suggests an interactionist model as the unit of analysis. As Shanahan (1985) notes that “questions such as stability versus change need to be reformulated into who changes and who remains stable” (quoted in Field & Millsap, 1991, p. 300) and under what conditions this change or stability occurs.

References

- Bandura, A. (1994). Social cognitive theory of mass communication. In J. Bryant & D. Zilman (Eds.), Media effects. Hillsdale, NJ: Erlbaum.
- Bould, S., Sanborn, B., & Reif, L. (1989). Eighty-five plus. Belmont, Ca: Wadsworth Publishing Company.
- Bubrick, E., Silver, M., & Perls, T. (1998). Gender crossover in the oldest old: men are better off than women. Harvard Division on Aging, Boston, Ma.
- Conley, J.J. (1984). The heirarchy of consistency: a review and model of longitudinal findings on adult individual differences in intelligence, personality and self-opinion. Person individual differences, 5, 11-25.
- Conley, J.J. (1985). Longitudinal stability of personality traits: A multitrait-multimethod-multioccasion analysis. Journal of Personality and Social Psychology, 49, 1266-1282.
- Costa, P.T., Jr., & McCrae, R.R. (1978). Objective personality assessment. In M. Storandt, I.C. Siegler, & M.F. Elais (Eds.), The clinical psychology of aging, 119-143. New York: Plenum Press.
- Costa, P.T., Jr., & McCrae, R.R. (1982). An approach to the attribution of age, period, and cohort effects. Psychological Bulletin, 92, 238-250.
- Costa, P.T. Jr., & McCrae R. R. (1985b). The NEO Personality Inventory Manual. Odessa FL: Psychological Assessment Resources.
- Costa, P.T., Jr., & McCrae, R.R. (1986). Personality stability and its implications for clinical psychology. Clinical Psychology Review, 6, 407-423.

- Costa, P.T., Jr., McCrae, R.R., Zonderman, A.B., Barbano, H.E., Lebowitz, B., & Larson, D.M. (1986). Cross-sectional studies of personality in a national sample: 2. Stability in neuroticism, extraversion, and openness. Psychology and Aging, 1, 144-149.
- Costa, P.T., Jr., & McCrae, R.R. (1988). From catalog to classification: Murray's needs and the five-factor model. Journal of Personality and Social Psychology, 55, 258-265.
- Costa, P.T., Jr., & McCrae, R.R. (1988). Personality in adulthood: A six-year longitudinal study of self-reports and spouse ratings on the NEO Personality Inventory. Journal Of Personality and Social Psychology, 54, 853-863.
- Costa, P.T., Jr., & McCrae, R.R. (1989). Personality continuity and the changes of adult life. In M. Stanford & G.R. Vanden Bos (eds.), The adult years: Continuity and change, 45-77. Washington, DC: American Psychological Association.
- Costa, P.T., Jr., & McCrae, R.R. (1992). Trait psychology comes of age. In T. B. Sonderegger (Ed.), Nebraska Symposium on Motivation: Psychology and aging, 169-204. Lincoln, NE: University of Nebraska Press.
- Coward, R.T., Netzer, J.K., & Peek C.W. (1998). Older rural African-Americans. In R. J. Coward & J. A. Krout (Eds.), Aging in Rural Settings: Life Circumstances & Distinctive Features, 167-185. Springer Publishing Company.
- Cumming, E. & Henry, W. (1961). Growing old. New York: Basic Books.
- Davis, R.D. & Millon, T. (1994). Personality change: Metatheories and alternatives. In T.F. Heatherton & J.L. Weinberger (eds.), Can personality change?, 85-120. Washington, DC: American Psychological Association.

- Dollard, J. & Miller, N.E. (1950). Personality and Psychotherapy: An analysis in terms of learning, thinking and culture. New York: McGraw-Hill.
- Epstein, S. (1980). The stability of behavior: II. Implications for psychological research. American Psychologist, 35, 790-806.
- Finn, S.E. (1986). Stability of personality ratings over 30 years: Evidence for an age/cohort interaction. Journal of Personality and Social Psychology, 50, 813-818.
- Flood, M. & Endler, N.S. (1976). The interaction model of anxiety: An empirical tests in an athletic competition situation.. Unpublished manuscript.
- Freud, S. (1963). A general introduction to psychoanalysis. New York: Pocket Books.
- Gutmann, D. (1977) The cross-cultural perspective: Notes toward a comparative psychology of aging. In J.E. Birren & K.W. Schaie (Ed.), Handbook of the psychology of aging, 303-326. New York: Van Nostrand Reinhold.
- Haan, N., Millsap, R., & Hartka, E. (1986). As time goes by: Change and stability in personality over fifty years. Psychology and Aging, 1, 220-232.
- Haney, C., Banks, W., & Zimbardo, P. (1973). Interpersonal dynamics in a simulated prison. International Journal of Criminology and Penology, 1, 69-97.
- Hartshorne, H. & May, M. (1928). Studies in deceit. New York: Macmillan.
- Helson, R. & Moane, G. (1987). Personality change in women from college to midlife. Journal of Personality and Social psychology. 53, 176-186.
- James, W. (1918). The principles of psychology. New York: Dover Publications.
- Kogan, N. (1990). Personality and aging. In J.E. Birren and K.W. Schaie (eds.) Handbook of the psychology of aging, 3rd ed. San Diego, CA: Academic Press.

- Lawton, M. P. (1999). Personality, experience, and well-being in older people. Unpublished manuscript.
- Longino, C.E. (1988). Who are the oldest americans? The Gerontological Society of America, 28, 515-523.
- Maiden, R.J. (1981). The attribution of learned helplessness and depression in the elderly. Dissertation Abstracts International, 42. 3.
- Maiden, R.J., Leitko, T., & Peterson, S. (1985). Rural elderly: Impact of social, psychological, health, and demographic experiences on adjustments in women and men. ERIC, Resources In Education, No. 255 778.
- McCrae, R.R. (1982). Age difference in the use of coping mechanisms. Journal of Gerontology, 37, 454-460.
- McCrae, R.R. & Costa, P.T., Jr. (1982). Self-concept and the stability of personality: Cross-sectional comparisons of self-reports and ratings. Journal of Personality and Social Psychology, 43, 1282-1292.
- McCrae, R.R. & Costa, P.T., Jr. (1987). Validation of the five-factor model of personality across instruments and observers. Journal of Personality and Social Psychology, 52, 81-90.
- McCrae, R.R. (1996) Personal communication. Annual meeting of the Gerontological Society, Washington, D.C.
- McCrae, R.R. & Costa, P.T., Jr. (1984). Emerging lives, enduring dispositions: Personality in adulthood. Boston: Little Brown Company.
- McCrae, R.R. & Costa, P. T., Jr. (1985).

- McCrae, R.R., Costa, P. T., Jr., Piedmont, R.L., Chae, J.H., Caprara, G.V., Barbaranelli, C., Maruvsic, E., & Bratko, D. (1996). Personality development from college to midlife: A cross-cultural comparison. Annual convention of the Gerontology Society of America, Washington, DC.
- McCrae, R.R. & Costa, P.T., Jr. (1987). Validation of the five-factor model of personality across instruments and observations. Journal of Personality and Social Psychology, 52, 81-90.
- McCrae, R.R. & Costa, P.T., Jr. (1997). Personality trait structure as a human universal. American Psychologist, 52, 509-516.
- McLaughlin, D.K. & Holden, K.C. (1993). Nonmetropolitan elderly women: A portrait of economic vulnerability. Journal of Applied Gerontology, 12, 320-334.
- Mischel, W. (1968). Personality and Assessment. New York: Wiley.
- Pearlin, L.I. & Lieberman, M.A. (1979). Social sources of emotional distress, Research in Community and Mental Health, 1, 217-248.
- Peterson, S.A. & Maiden, R.J. (1993). The public lives of rural older Americans. Lanham, MD: University Press of America.
- Quam, J.K. (1983). Older women and informal supports: Impace on prevention. Prevention in Human Services, 3, 119-133.
- Scott, J.P., & Roberto, K.A. (1987). Informal supports of older adults: A rural, urban

compar
ison.

Family

Relatio

ns. 36,

444-

449.

Shanan, J. (1985). Personality types and culture in later adulthood. Basel: Karger.

Suzman, R. & Riley, M.W. (1985). Introducing the 'oldest-old.' Milbank Memorial Fund Quarterly, 63, 177-186.

Whitbourne, S.K. (1996). The aging individual: Physical and psychological perspectives. New York: Springer Publishing Company, Inc.

Zarit, S.H., Johansson, B., & Malmberg, B. (1995). Changes in functional competency of the oldest old: A longitudinal study. Journal of Aging and Health, 7, 3-23.

Table 1			
Neuroticism 1993*			
	<u>direct</u>	<u>indirect</u>	<u>total</u>
educ 87	-.13	-.07	-.20
neuro 87	.37	-.05	.32
age 87	-.05	.04	-.01
Chsick	.00	.00	.00
Chsocsup	-.15	.00	-.15
Chneed	-.35	-.06	-.41

*Significance at the .05 level equals a r .06 or greater

Table 2

Openness 1993*			
	<u>direct</u>	<u>indirect</u>	<u>total</u>
educ 87	.24	.10	.34
openness 87	.35	-.02	.33
age 87	.14	.01	.15
Chsick	-.06	.00	-.06
Chsocsup	.16	.01	.17
Chneed	-.04	.04	.00

*Significance at the .05 level equals a r .06 or greater

Table 3

Extroversion 1993*			
	<u>direct</u>	<u>indirect</u>	<u>total</u>
educ 87	.16	-.03	.13
extroversion 87	.24	.08	.32
age 87	.20	-.05	.15
Chsick	-.19	.00	[-.18]
Chsocsup	.19	.03	.22
Chneed	-.23	.03	-.20

*Significance at the .05 level equals a r .06 or greater