

## Change in Dispositional Well-Being and Its Relation to Role Quality: A 30-Year Longitudinal Study

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In a 30-year longitudinal study of adult women ( $N = 104$ ), we addressed three questions about changes in dispositional well-being: (1) Do women increase in dispositional well-being from young adulthood to midlife? (2) Are changes in dispositional well-being related to role quality? And, (3), Are the correlates between changes in dispositional well-being and role quality dependent on the method one uses to calculate change scores? Three out of four measures of dispositional well-being showed little or no mean-level change from age 21 to age 52. The fourth measure of dispositional well-being, reflecting effective functioning or maturity, showed a statistically significant but substantively small increase over the same 30-year period. The relation between change in dispositional well-being and role-quality was tested across the 30-year span of the longitudinal study. The results showed that positive role-quality was associated with increases on measures of effective functioning and well-being and decreases on measures of anxiety and psychoneuroticism. The method of calculating change scores did affect results with growth modeling and residualized change results being essentially identical and difference scores resulting in fewer statistically significant findings. © 2000 Academic Press

In the present study we sought to address three questions about changes in dispositional well-being across the life course. First, do people become better adjusted as they age? Second, are positive experiences in work and marriage, described by some as “role-quality,” related to increases in dispositional well-being over time? And third, does the analysis of change depend on the technique one uses to estimate change scores, such as residual scores, difference scores, or growth modeling? The present study investigates these three questions using data from the Mills Longitudinal Study (Helson & Moane, 1987; Helson & Wink, 1992) which has followed approximately 100

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women for over 30 years, contacting the participants four times when they were age 21, 27, 43, and 52. The present study tracks change on four indicators of dispositional well-being: anxiety, psychoneuroticism, effective functioning, and well-being. These measures were derived from the primary personality instrument of the Mills Longitudinal Study, the California Psychological Inventory (CPI, Gough & Bradley, 1996).

## DOES DISPOSITIONAL WELL-BEING INCREASE WITH AGE?

By the term dispositional well-being we refer to trait measures of negative and positive affect often associated with emotional stability and psychological adjustment. Our first research question addresses whether dispositional well-being increases over the period from young adulthood to midlife (e.g., ages 21 to 52). Previous longitudinal research focusing on this period of the life course has shown that dispositional measures of well-being either do not change or show positive changes. For example, Costa and McCrae (1998) report that the emotional stability scale from the Guilford Zimmerman Temperament Survey (Guilford, Zimmerman, & Guilford, 1976) did not increase over 6- and 9-year periods for several cohorts over 30. Likewise, Dudek and Hall (1991) in a 25-year longitudinal study of architects (age 45 to 70) reported no increases or decreases on the well-being scale from the California Psychological Inventory (CPI; Gough & Bradley, 1996). Costa and McCrae (1988) reported mixed findings concerning dispositional well-being. Measures of neuroticism did not change significantly over a six year period for three cohorts older than 30. In contrast, the positive emotion facet of extraversion decreased slightly over the 6 years of their study.

Several longitudinal studies have found increases in measures of dispositional well-being over the period from young adulthood to midlife. Haan, Millsap, and Hartka (1986) reported that the self-confidence factor from the California Q-sort increased dramatically from ages 30 to 54. Carmichael and McGue (1994) in a longitudinal study of families found that the Neuroticism scale of the Eysenck Personality Inventory decreased from ages 17 to 35 (EPI, Eysenck, 1975). In another longitudinal study using the EPI, Viken, Rose, Kaprio, & Koskenvuo (1994) reported that women showed decreases in Neuroticism over a 6-year period. These decreases were shown to occur in six separate cohorts of women that ranged in age from 18 to 53.

In summary, most studies show either little change in measures of dispositional well-being or they show "positive" changes. That is, where some studies showed no increases or decreases, other studies show increases in dispositional well-being. The sole exception to this pattern was reported by Costa and McCrae (1988), who also reported that the magnitude of change demonstrated in their study was not large. Given previous research on changes in dispositional well-being, one would hypothesize that the women

of the Mills sample should show either no changes or show positive changes on measures of dispositional well-being. In addition to examining the mean-level changes in dispositional well-being we test the rank-order consistency of these measures.

## ROLE QUALITY AND CHANGE IN DISPOSITIONAL WELL-BEING

Role quality refers to the experience of satisfaction, happiness, or positive affect in roles such as work and marriage (Baruch & Barnett, 1986). Previous research has shown that role quality is strongly related to a variety of state and trait measures of well-being and psychological adjustment (Baruch, Biener, Barnett, 1987; Barnett & Baruch, 1985; Baruch & Barnett, 1986; Verbrugge, 1987). For example, Baruch and Barnett (1986) found that women who rated their marriage as rewarding were more likely to score higher on measures of self-esteem and pleasure and lower on measures of depression. Noor (1996) and Parkes (1990) reported that neuroticism was negatively related to role quality. Barnett, Marshall, and Singer (1992) found that increases in job role quality over a 2-year period were associated with decreases in psychological distress among single women and women without children. Changes in role quality were unrelated to changes in psychological distress for women with partners and women with children (see also Barnett, Raudenbush, Brennan, Pleck, & Marshall, 1995).

Several features of previous research on the association between role quality and well-being should be pointed out. First, most of these studies used state measures of well-being; they did not test whether role quality was associated with changes in *dispositional*, or trait-like, measures of psychological well-being (e.g., Baruch, Biener, Barnett, 1987; Barnett & Baruch, 1985; Baruch & Barnett, 1986; Verbrugge, 1987). Second, those studies focusing on more dispositional constructs (e.g., Neuroticism) used cross-sectional rather than longitudinal designs (e.g., Noor, 1996; Parke, 1990). Finally, those studies that used longitudinal designs were relatively short in duration (e.g., 2 years).

In the present study we sought to determine whether changes over the entire 30-year period from age 21 to age 52 were associated with experiences of role quality at various times in the life course. We use variables drawn from the Mills database as indicators of role-quality, such as marital satisfaction, marital tension, and work satisfaction. Based on previous research we hypothesized that role-quality would be associated with changes in dispositional well-being. More specifically, we expected measures of positive role-quality, such as satisfaction in work and marriage, to be associated with increases in positive indicators of dispositional well-being and decreases in negative indicators of dispositional well-being. Conversely, measures of negative role-quality, such as marital tension and discord, should be related to

decreases in positive indicators of dispositional well-being and increases in negative indicators of dispositional well-being.

## ASSESSING CHANGE IN DISPOSITIONAL WELL-BEING

Some form of a change score is necessary in order to investigate the relation between change in dispositional well-being and role quality. The study of individual differences in change has been plagued with methodological difficulties. The two most common methods for estimating individual differences in change, difference scores and residualized change scores, have been criticized as both unreliable or nonsensical, respectively (Willett, 1988). The problems facing the assessment of change are so pervasive that some have even called into question the entire enterprise of studying individual differences in change (Cronbach & Furby, 1970).

One solution to the dilemma of studying change, growth modeling, has come into wider use in personality research over the past decade (Alder & Scher, 1994; Alsaker, 1992; Hart, Keller, Edelstein, & Hofmann, 1998; Jones & Meredith, 1996; Tate & Hokanson, 1993). Growth methods estimate an individual's rate and pattern of change using multiple assessments and afford several distinct advantages over difference scores and residualized change indices (Willett, 1988; Willett, Ayoub, & Robinson, 1991). For example, the assessment of change over multiple assessments rather than two assessments is assumed to reflect a more reliable index of time. Second, growth modeling is more tolerant of missing data and the timing of assessments which can prove problematic in other techniques of assessing change.

Although growth modeling has gained in popularity it has seldom been used to assess change in personality traits. Moreover, most studies focusing on individual differences in change use only one technique for estimating change (e.g., Hart et al., 1998; Roberts, 1997; Roberts & Helson, 1997), which precludes an explicit comparison of these methods. In the present study we assess change using these three techniques to gain understanding of whether results across all three are comparable and whether there are potential gains to be made using growth methods.

## METHOD

### *Participants*

In 1958 and again in 1960, a representative two-thirds sample of the senior class at Mills College in Oakland, California ( $N = 142$ ), participated in a study of creativity, leadership, and plans for the future among college women. The sample was predominantly White and middle class. Three follow-ups in 1963–1964, 1981, and 1989 traced the personality and life events of approximately 100 women for 30 years (Helson, 1967; Helson, Mitchell, & Moane, 1984; Helson & Wink, 1992). The women averaged 21, 27, 43, and 52 years of age at the four times of testing. The sample sizes for each analysis varies. For mean-level analyses across

time we focused on the 78 women who completed the CPI all four times of assessment. The growth estimates were based on 96 women who completed at least three surveys at ages 21, 27, 43, and 52. The residual scores and difference scores were based on a sample of 104 women that completed the CPI at ages 21 and 52.

### *Measures*

*Dispositional well-being.* The measures of dispositional well-being were taken from the California Psychological Inventory (Gough & Bradley, 1996). The CPI consists of 20 folk scales with three main themes: interpersonal assurance (assertiveness, poise, self-confidence, self-esteem, and investment in the social world), normative orientation (aspects of impulse control and norm-adherence, such as socialization, self-control, responsibility, and achievement via conformance), and flexibility (cognitive complexity and openness).

The CPI consists of 23 standard scales and many special purpose scales derived from the CPI item pool. In this case, Well-Being and Effective functioning are standard scales. The Well-Being scale assesses optimism and emotional health. High scorers on the Well-Being scale are described as optimistic, contented and clear-thinking; low scorers are described as defensive, complaining, and distractible. The Effective functioning scale measures maturity, psychological integration, and openness. High scorers on the Effective functioning scale are described as calm, insightful, and effective; low scorers are described as temperamental, quarrelsome, and lacking direction (Gough & Bradley, 1996). The Anxiety and Psychoneuroticism are special purpose scales. The Anxiety scale was developed by Leventhal (1966) and contains items tapping somatic and mood complaints common to measures of anxiety. The Psychoneuroticism scale was developed by Block (1961) to assess general susceptibility to anxiety. In contrast to the Leventhal Anxiety scale, the Psychoneuroticism scale contains a number of items related to social anxiety in addition to negative affect.

*Role quality.* Role quality was assessed in both the marriage and work roles. The marital role quality measures consisted of a measure of marital tension, available at ages 27 and 52, and a measure of marital satisfaction, available at ages 43 and 52. Marital tension consisted of 32 pairs of items, such as "husband is too bossy" and "wife is too bossy." Each of the marital tension items was rated on a 4-point scale. The marital satisfaction measure consisted of seven items rated on a 5-point scale (see Helson & Wink, 1987). Satisfaction with work was rated by the women at age 43 and age 52 on a 5-point scale, from not very satisfied to very satisfied.

Role quality was assessed in "static" and "dynamic" forms. Static forms of role-quality refer to standard individual differences in role-quality indices at ages 27, 43, and 52. Dynamic forms of role-quality refer to changes in role-quality over time. Simple difference scores were used to estimate changes in role quality because the various role quality measures were only assessed twice at different times in the longitudinal study.

### *Procedure*

As a first step, we present an analysis of mean-level change and rank-order stability over time. As a second step we estimate individual differences in change on the four measures of dispositional well-being. Difference scores were computed by subtracting age 21 scores on the four indicators of dispositional well-being from the age 52 scores. Residualized change was assessed using hierarchical regression. Age 21 measures of dispositional well-being were entered on the first step of the equation predicting age 52 dispositional well-being, followed by measures of role-quality in the second step.

There are now several techniques for estimating growth rates, such as hierarchical linear modeling (Bryk & Raudenbush, 1992), latent curve analysis (Meredith & Tisak, 1990), and growth modeling (Willett, 1988). We chose the latter technique to facilitate replication. It can

be executed by writing code in standard statistical packages (e.g., SPSS and SAS) or by writing simple programs in alternative programming languages.<sup>1</sup> We computed growth estimates from ages 21 to 52. Subjects were required, at a minimum, to have been assessed at ages 21, 27, and 52.<sup>2</sup> Each of the four personality variables was regressed against time to yield estimated slopes and intercepts. For example, the following equation was used to estimate the rate of change on the CPI well-being scale for each woman:

$$\text{Well-being}_{it} = \text{Well-being at time zero}_i + \text{Change rate in well-being}_i (\text{Time}) + \text{error}_i$$

The subscript *i* refers to the fact that the linear function is computed for each individual. The subscript *it* refers to the *i*th individual at the *t*th assessment wave or time. The intercept estimate was for year zero, which corresponds to when the women were approximately 20 years old. We also assumed that the slope, or change over time, was a linear function for each subject. The assumption of linearity is a conservative postulate, but is the most appropriate assumption when available data contain a modest number of repeated measures.

When analyzing of the association of Role quality and change in dispositional well-being using growth modeling it is the "Change rate in well-being" that is the variable of interest. It should be noted that for the analysis of the association between Role quality and Change rate in well-being that the "Well-being at time zero" is included in analyses correlating rate of change with variables such as role quality. This is equivalent to holding constant scores at time 1 in the residual techniques for tracking change. Although this is not a necessary component of growth modeling, it is a common element of programs used to compute growth parameters (e.g., Hierarchical Linear Modeling; Bryk & Raudenbush, 1992).<sup>3</sup>

## RESULTS

### *Mean-Level Change and Correlational Stability of Dispositional Well-Being*

The results of the mean-level change and correlational consistency analyses are shown in Table 1. The Anxiety, Psychoneuroticism, and Well-Being scales showed little mean-level change over the 30 years of the study. As a group, the Mills women did not become more or less anxious, socially uncomfortable, or complaining. The Mills women did increase on Effective functioning according to tests of statistical significance. The magnitude of the increase was relatively small. The increase was a little less than one third of a standard deviation over the 30-year period, which translated into an  $\eta^2$  value of .04. The correlational stability of the four measures varied greatly and appeared to correspond directly to the  $\alpha$  reliability of each scale. The

<sup>1</sup> Alternatively, interested parties can use a program written by Christopher N. Chapman (second author) to compute linear growth modeling estimates. The program is available at <http://home.earthlink.net/~cnchap>.

<sup>2</sup> The response rates were highest for these three assessments. Therefore, attrition was kept to a minimum by including women that had participated at ages 21, 27, and 43.

<sup>3</sup> Growth modeling also affords one the option of specifying any age when the intercept occurs. In the present research this allowed us to test whether the placement of the intercept at different ages affected the results (e.g., 21, 27, 43, 52, or any other age). We reanalyzed the data four times using ages 21, 27, 43, and 52 as the intercept. No changes occurred in the results.

TABLE 1  
Descriptive Statistics over Time for the Measures of Dispositional Well-Being

Scale	Means and standard deviations					Correlations over time				
	Age 21	Age 27	Age 43	Age 52	Age 77	$F$	$r_{12}$	$r_{23}$	$r_{34}$	Rel
Anxiety	4.8 (1.6)	4.7 (1.7)	4.7 (1.4)	4.6 (1.7)	4.7 (1.7)	.14	.33*	.35*	.43*	.42
Psychoneuroticism	8.4 (3.7)	8.0 (3.4)	8.0 (3.5)	7.8 (3.1)	8.0 (3.5)	.65	.46*	.58*	.69*	.69
Effective functioning	42.4 (6.6)	43.6 (5.7)	43.7 (6.6)	44.3 (6.2)	43.7 (6.6)	3.53*	.60*	.67*	.84*	.79
Well-being	32.6 (3.7)	33.1 (3.7)	32.4 (3.2)	32.9 (3.1)	33.1 (3.7)	.79	.65*	.46*	.64*	.73

Note.  $N = 77$ . Standard deviations are shown in parentheses;  $r_{12}$  = correlation between scores at age 21 and age 27,  $r_{23}$  = correlation between scores at age 27 and age 43,  $r_{34}$  = correlations between scores at age 43 and age 52;  $F$  = average alpha reliability across four ages.

\*  $p < .05$ .

TABLE 2  
Change over Time for the Measures of Role Quality

Role quality	Age 27	Age 43	Age 52	<i>t</i>	<i>r</i>	<i>n</i>
Marital tensions	45.9 (9.9)	—	60.3 (13.9)	8.2*	.57*	44
Marital satisfaction	—	21.2 (4.2)	21.1 (5.2)	.1	.33*	53
Work satisfaction	—	4.2 (1.1)	4.0 (1.0)	1.4	.10	61

Note. Standard deviations are shown in parentheses.

\*  $p < .05$ , two-tailed.

Anxiety scale had the lowest  $\alpha$  reliability ( $\alpha = .42$ ) which was partially a result of having fewer items than is normal for a CPI scale (22 vs 32 to 58). It also showed the least amount of correlational stability over time, ranging from .33 to .43. The Effective functioning scale was the most reliable ( $\alpha = .79$ ) and the most correlationally stable over time, with correlations over time ranging from .60 to .84.

#### *Role Quality Descriptive Statistics*

The means, standard deviations, and correlations for the role quality measures are given in Table 2. The marital tension variable showed a statistically significant increase in mean-level from age 27 to 52 and was the most consistent according to the rank-order correlation over time. Both marital and work satisfaction showed relatively little mean-level change from age 43 to 52 and also relatively low rank-order consistency.

#### *The Association between Role Quality and Change in Dispositional Well-Being*

We hypothesized that low role-quality as reflected in measures of tension, would be related to decreases in dispositional well-being and that high role-quality would be related to increases in dispositional well-being. We tested these hypotheses using estimates of change calculated following procedures for growth modeling, residual score, and difference score analyses. Table 3 shows the correlations between Role quality measures and changes in Dispositional well-being across the three methods for assessing change. Our hypotheses were supported when considering the statistically significant results that replicated across two or more change methods (see Table 3). Marital tensions at age 52 and change in marital tensions from 27 to 52 were associated with increases in Anxiety. Conversely, marital satisfaction at age 43 was associated with decreases in Anxiety. A similar, but less robust pattern of relations between marital factors and changes in Psychoneuroticism was found. In addition, work satisfaction at age 52 was associated with decreases in Psychoneuroticism.

The strongest and most consistent pattern of correlations was found be-

TABLE 3  
Correlations between Role Quality and Individual Differences in Change in Dispositional Well-being

Role quality	Individual differences in change in											
	Anxiety			Psychoneuroticism			Effective Functioning			Well-being		
	GM	RS	DS	GM	RS	DS	GM	RS	DS	GM	RS	DS
<b>Marriage variables</b>												
Marital tension: age 27	-.06	-.08	-.14	.09	.13	.10	-.15	-.13	-.04	.08	.14	.25*
Marital tension: age 52	.23*	.22*	-.02	.27*	.23*	.07	-.62*	-.53*	-.25*	-.35*	-.22*	-.04
Change in marital tension: age 27 to 52	.40*	.50*	.24	-.18	.15	-.02	-.53*	-.45*	-.29*	-.40*	-.29*	-.09
<b>Marital satisfaction: age 43</b>												
Marital satisfaction: age 52	-.11	-.21*	-.07	-.22*	-.21*	-.12	.51*	.52*	.37*	.33*	.22*	.12
Change in marital satisfaction: age 43 to 52	-.05	-.06	-.01	-.14	-.15	-.09	.35*	.32*	.29*	.25*	.22*	.17
<b>Work variables</b>												
Work satisfaction: age 43	-.08	-.04	-.10	-.02	-.05	.02	.23*	.21*	.20*?	.16	.16	.12
Work satisfaction: age 52	-.15	-.13	.01	-.34*	-.30*	-.22*	.21*	.21*	.15	.30*	.25*	.23*
Change in work satisfaction: age 43 to 52	-.06	-.06	.11	-.21	-.16	-.15	.10	.11	-.01	.18	.15	.15

Note. GM, growth modeling estimate of change; RS, residual score estimate of change; DS, difference score estimate of change. Scores in italics replicate across two techniques for assessing change; Scores in bold replicate across three techniques for assessing change.

\*  $p < .05$ , one-tailed.

tween the role quality variables and changes in the Effective functioning scale. Marital tensions at age 52 and changes in marital tensions were correlated with decreases in Effective functioning. Marital satisfaction at age 52 and increases in marital satisfaction were associated with increases in Effective function as were ratings of work satisfaction at ages 43 and 52. Changes on the Well-Being scale showed a similar pattern of correlates as the Effective functioning scale, but at a lower magnitude.

Two features of the correlations shown on Table 3 are of note. First, we found little evidence that role quality at age 27, in the form of marital tensions, was associated with changes in dispositional well-being over the 30 years of the study (see Table 3). Second, the majority of the statistically significant correlations were between change in dispositional well-being and role quality at age 52. We will take these points up in the discussion.

In comparing the three different techniques for assessing change, both the magnitude and statistical significance of the growth methods and residualized methods were essentially identical (see Table 3). Seventeen of the 36 sets showed statistically significant correlations for both the growth modeling and residualized change indices. In 9 of the 36 sets of correlations, difference scores showed similar results (e.g., of close magnitude or statistically significant). If one considers replications of both statistically significant and non-significant patterns, then the results replicated across the three methods in 26 out of 36 cases. Although this is relatively impressive consistency, the similarities between growth methods and residualized methods, and the differences between these two techniques and difference scores should be noted and will be discussed below.

## DISCUSSION

In the present study, we set out to track change in dispositional well-being from young adulthood to midlife, to test whether changes in dispositional well-being were related to role quality, and to determine whether different approaches to estimating change show the same pattern of results. We will address each of these issues in turn.

### *Normative Change in Dispositional Well-Being from Young Adulthood to Midlife*

Little normative change in dispositional well-being, in the form of mean-level and rank-order indices, occurred from ages 21 to 52 in the Mills sample. Three of the four measures of dispositional well-being showed no statistically significant mean-level change over time. Although the fourth measure, Effective functioning, showed a statistically significant increase, the magnitude of the increase was small. The rank-order consistency of the four scales varied from relatively low to relatively high consistency. One could conclude from this variability that the women were systematically changing their rank-

order over time. But given the almost perfect correlation between rank-order stability and scale reliability, it is apparent that both scale unreliability and systematic change are responsible for the moderate levels of rank-order consistency.

Mean-level and rank-order consistency approaches to tracking change have both strengths and weaknesses. The strength of these traditional approaches to change is that they can be quite informative about the characteristics of populations. This information is useful for drawing normative conclusions that one would generalize to groups, such as women (Helson, Pals, & Solomon, 1997), or to human beings in general, such as Costa and McCrae's (1994) claim that personality is fixed after age 30. In the present case, our results for normative change were consistent with previous research indicating that if people do increase on measures of dispositional well-being across the life course, the increases are small. The weakness of normative approaches is that they mask the individual differences in change that characterize each person's unique developmental path. That is, despite the fact that people in general do not increase much on dispositional well-being, many individuals do increase or decrease quite significantly. Without an explicit examination of individual differences in change in dispositional well-being, our understanding of personality change is incomplete.

### *Role-Quality and Change in Dispositional Well-Being*

The second goal of this research effort was to determine whether individual differences in change in dispositional well-being were related to role-quality across the life course. Most previous research has addressed this relation by using cross-sectional or two-wave designs to assess the association between role quality and state measures of well-being. The present study improved upon previous research by testing the relation between role quality and changes in dispositional well-being over 30 years of the life course.

Consistent with the research of Baruch and Barnett (1986), role-quality was associated with individual differences in change in dispositional well-being. Marital tension and changes in marital tensions were associated with decreases in Effective functioning and Well-being and increases in Anxiety and Psychoneuroticism. Marital satisfaction was associated with increases in Effective functioning and Well-being and decreases in Anxiety and Psychoneuroticism. A similar, but weaker pattern of effects was found for measures of work satisfaction. These results show that the experience of elevated or depressed levels of role-quality was associated with individual differences in change in all four measures of dispositional well-being. Thus, women who were more satisfied in their work and marriage and who experienced less marital tension had increasing feelings of optimism, confidence, and openness and decreasing mood complaints and social anxiety.

The most salient aspect of these analyses was the fact that they were cen-

tered, for the most part, on role-quality at age 52 or change in role quality from 27 to 52 or from 43 to 52. Role-quality assessed at ages 27 and 43 was only sporadically associated with changes in dispositional well-being, whereas role-quality at age 52 was associated with individual differences in change on three of four measures of dispositional well-being. These findings present a unique causal conundrum. Previous research has either assumed that role-quality caused changes in well-being (e.g., Baruch & Barnett, 1986), or that dispositional well-being caused differing levels of role-quality (e.g., Helson, Elliott, & Leigh, 1990). The pattern of results in the present study invites an additional interpretation. It is just as likely that *increases* in dispositional well-being, perhaps as a result of psychotherapy, led to improved marital and work satisfaction in midlife. That is, the development of dispositional well-being across the life course may cause changes in role-quality.

Unfortunately, determining the causal relation between changes dispositional well-being and role quality is impossible given the passive longitudinal design of the Mills study. In addition, no statistical technique, such as growth modeling, can compensate for the correlational design of the Mills study. Without performing longitudinal experiments where role quality is systematically manipulated, an unethical alternative, it will be difficult to fully determine the causal mechanisms involved. We believe it appropriate to highlight a developmental interpretation of our findings because previous explanations of the relation between role quality and well-being have fallen into static sociogenic (e.g., role quality causes well-being) or dispositional (e.g., well-being causes role quality) categories (see Aldwin & Levenson, 1994).

#### *Advantages and Disadvantages of Different Methods of Assessing Change*

Although increasing in popularity (e.g., Alder & Scher, 1994; Hart et al., 1998; Tate & Hokanson, 1993), the advantage of growth methods to longitudinal personality researchers is still unclear. From descriptions of the model, growth methods would appear to be qualitatively better than assessing change using difference or residualized change scores. This study provided one of the first empirical comparisons using personality longitudinal data. According to our analyses, results based on growth methods were indistinguishable from results based on residualized change scores. Interestingly, both techniques rely on "base free" estimates of change. That is, a persons score, usually at time 1 is automatically controlled for in the analysis of the association of rate of change and an outcome like role quality. Although controlling for the time 1 score is not a necessary component of growth modeling, it is a standard component of most growth modeling systems and statistical approaches (e.g., hierarchical linear modeling; Bryk & Raudenbush, 1992). For those who believe that difference scores have intrinsic merit because of their interpretability (e.g., Rogasa, 1995), the use of partial scores

in many growth modeling approaches should cause concern. In contrast, difference scores showed the least number of correlations that were large enough to reach statistical significance. A positive interpretation of this pattern is that results based on difference scores may be more conservative. A less forgiving interpretation is that the lower number of statistically significant findings for difference scores results from their low reliability.

On the whole, we would choose to endorse the use of growth models because they provide several advantages over difference scores and residualized scores. The most important feature of growth modeling is that they permit researchers to conceptualize and assess change as a process rather than a discreet event. By assessing quantitative change in a process fashion, growth modeling estimates change in a more reliable fashion than two-wave designs. Furthermore, growth modeling is more forgiving than other techniques because it allows for estimates of change even when there is missing data in a person's profile of change over time. In light of the equivocal nature of the results when comparing different techniques, it may be that four assessments is not enough to fully gain the benefits of growth modeling techniques, a fact that may be informative to future research.

#### *Limitations and Future Directions*

The results of the present study must be evaluated in light of the specialized nature of the sample. The Mills women are a relatively privileged sample of women, bound by a specific historical period, with its own particular sequence of cultural constraints and opportunities for women's development. Changes in the prevailing culture may change the availability of role-experiences and their subsequent relations to growth in dispositional well-being. The primary weakness of the present study was the lack of consistent role-quality measures across the life course. Improvements on the present and previous research could be made if changes in dispositional well-being and changes in role-experiences were both estimated using growth methods.

Future research should investigate other factors within role-experiences and how they are associated with changes in dispositional well-being. For example, chronic job stress, burnout, and underemployment may also be associated with decreases in dispositional well-being and increases in neuroticism. Likewise, role conflict between work and marriage, relation with children and parents, and attachment style may also be associated with changes in well-being. Also, future research should investigate the processes underlying change in dispositions (e.g., Stewart, Sokol, Healy, & Chester, 1986). For example, what are the links between changes in behavior and changes in personality (e.g., DiClement, 1994)? Is there a simple one-to-one relation between changing behavior and changing self-perceptions, or do coping mechanisms and identity structures mediate the relation (see Roberts &

DelVecchio, in press)? We believe that these questions lie at the heart of personality change processes in adulthood and merit closer attention.

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