

Temporal Structures of Psychological Well-Being: Continuity or Change?

November 14, 2005

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Prepared for presentation at the 2005 annual meetings of the Gerontological Society of America, Orlando, FL (November 20). The research reported herein was supported by the National Institute on Aging (R01 AG-9775 and P01-AG21079), by the William Vilas Estate Trust, and by the College of Letters and Science and the Graduate School of the University of Wisconsin-Madison. Computation was carried out using facilities of the Center for Demography and Ecology at the University of Wisconsin-Madison, which are supported by Center Grants from the National Institute of Child Health and Human Development and the National Institute on Aging. The opinions expressed herein are those of the authors. Public data from the Wisconsin Longitudinal Study are available at <http://www.ssc.wisc.edu/wlsresearch/>, and public data from the National Survey of Families and Households are available at <http://www.icpsr.umich.edu/access/index.html>. Address correspondence to Robert M. Hauser, Department of Sociology, University of Wisconsin, Sewell Social Science Building, 1180 Observatory Dr., Madison, WI 53706. Email: hauser@ssc.wisc.edu.

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Abstract

Using longitudinal data from the Wisconsin Longitudinal Study (WLS, 1993 to 2004) and the National Survey of Families and Households (NSFH, 1992 to 2001), we estimate confirmatory factor models to assess the temporal stability and factorial structure of psychological well-being (of PWB), as assessed using Carol Ryff's six-factor model (Ryff 1989a; Ryff 1989b). The WLS participants were Wisconsin high school graduates aged 53 to 54 at the initial measurement, and the NSFH participants were originally sampled from the adult household population of the U.S. in 1987. Findings from the later wave of each study independently reconfirm the conclusion of Springer and Hauser (Springer and Hauser 2006a) that, after correction for measurement errors, four of the six sub-dimensions of PWB are very highly correlated ($r \geq 0.90$): personal growth, purpose in life, self-acceptance, and environmental mastery. In the WLS, the temporal stability of each dimension of PWB is very high ($r \approx 0.85$), but stability is substantially lower and less consistent across the sub-dimensions in the NSFH ($.45 \leq r \leq .70$). This inconsistency is a puzzling finding, which holds across a variety of subsamples within the NSFH and across several alternative model specifications.

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In reaction to the traditional focus of psychological and social psychological research on negative aspects of mental health, the "positive psychology" movement has generated a great deal of research focusing on the measurement and correlates of positive psychological characteristics. Carol Ryff's introduction of the six-factor model of well-being is a useful

contribution to the movement (Ryff 1989a; Ryff 1989b; Ryff and Keyes 1995; Ryff and Singer 1996). Current research on well-being has been guided by two general perspectives: the *hedonic* approach that defines well-being in terms of pleasure and happiness; and the *eudaimonic* approach, which focuses on self-realization, personal expressiveness, and the degree to which people are able to actualize their abilities (Waterman 1993; Ryan and Deci 2001). Drawing from the eudaimonic perspective, Carol Ryff has described well-being as “the striving for perfection that represents the realization of one’s true potential” (Ryff 1995:100) and suggested a *multidimensional* model of PWB that comprised six distinct dimensions of human actualization: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Ryff 1989a; Ryff 1989b).

Each dimension of RPWB reflects different challenges that individuals encounter in the process of adult development. Specifically, people attempt to hold positive attitudes about themselves despite the awareness of their limitations (self-acceptance). They also strive to cultivate warm and trusting interpersonal relationships (positive relations with others) and to modify their environment in order to meet personal needs and preferences (environmental mastery). In maintaining individuality within a social system, people seek a sense of self-determination as well as the ability to resist social pressures (autonomy). Finally, finding meaning in one’s efforts and challenges (purpose in life) and developing one’s potential by growing and expanding as a person (personal growth) are central to RPWB (Keyes, Shmotkin, and Ryff 2002).

Although the six dimensions of RPWB have been theoretically proposed to measure distinct aspects of well-being, Springer and Hauser (2006a) find very little empirical support for the conceptually postulated multidimensionality of PWB. They observed that across three large

data sets, the highest latent variable correlations were consistently those among purpose in life, self-acceptance, environmental mastery, and personal growth. For example, in graduate mail data from the 1993 round of the Wisconsin Longitudinal Survey (WLS), Springer and Hauser (2006a) found the following correlations among latent variables: 0.976 between self-acceptance and purpose in life, 0.971 between self-acceptance and environmental mastery, and 0.958 between environmental mastery and purpose in life. Personal growth also correlated highly with self-acceptance (0.951), purpose in life (0.958) and environmental mastery (0.908). Based on these findings, Springer and Hauser conclude that the RPWB scales do not measure six distinct dimensions. Similarly, Kafka and Kozma (2002) failed to support the hypothesis that factor analysis of the items of Ryff's scales should produce a six-factor model.

Various versions of Ryff's scales have been adopted in large-scale social surveys including the Survey of Midlife in the United States (MIDUS) (Brim, Ryff, and Kessler 2004), the Canadian Study of Health and Aging (Clarke, Marshall, Ryff, and Wheaton 2001), the National Survey of Families and Households (NSFH) (Marks 1996; Marks 1998), and the Wisconsin Longitudinal Study (WLS) (Springer and Hauser 2006a). In the present study, we focus on the last two of these studies, WLS and NSFH, for which data are now available from repeated measures of psychological well-being, ascertained about one decade apart.

The analysis has two purposes:

- To test the finding of Springer and Hauser (2006a; 2006b) that purpose in life, self-acceptance, environmental mastery, and personal growth fail to exhibit substantial independent variation. The second waves of WLS and NSFH contain repeated measures from many of the same individuals, widely separated in time from the initial measurements. In principle, these provide a strong basis for cross-validation.

- To measure the temporal stability of each sub-dimension of psychological well-being across a decade. The two-wave data in WLS and NSFH provide a unique opportunity for longitudinal measurement of this kind. A second national survey, MIDUS, is now completing its second wave about one decade after initial measurements, and those data will provide an additional opportunity to assess the stability of psychological well-being.

Both of these purposes may be addressed within a single structural equation model, which simultaneously depicts the factorial structure of psychological well-being and stability in each latent factor across time. We turn now to a description of this model.

A Longitudinal Model of Psychological Well-Being

Let Y_{ijkt} be the i th measure of the j th sub-dimension of psychological well-being for the k th individual at time t , and η_{jkt} be the latent factor for the j th sub-dimension of psychological well-being for the k th individual at time t . Then, a basic version of the model is

$$Y_{ijkt} = \lambda_{ijt} \eta_{jkt} + \varepsilon_{ijkt}, \quad (1)$$

where the λ_{ijt} are factor loadings, and the ε_{ijkt} are stochastic errors, statistically independent of the η_{jkt} . That is, there is an η_{jkt} for each of the six sub-dimensions of psychological well-being in each year.

In order to establish the correlational structure among the Y_{ijkt} , we specify the variance-covariance structure among the η_{jkt} and among the ε_{ijkt} . In general, we specify covariances among the latent factors, η_{jkt} , as $\varphi_{(j)(j')}$ and their variances as φ_{jt} . Thus, the covariance between one of the factors across years is expressed as $\varphi_{(jt)(j't)}$, and the covariance between factors for two different sub-dimensions within a year is $\varphi_{(jt)(j't)}$.

All of the potential $\varphi_{(j^t)(j^t)}$ and φ_{jt} are free parameters of the model; that is, all of the latent factors are freely correlated within and between years. The covariances among errors are expressed by $\theta_{(ijt)(i'j^t)}$, and their variances are expressed by θ_{ijt} . The error variances are free parameters of the model, but initially, we specify that all $\theta_{(ijt)(i'j^t)} \equiv 0$. This provides strong identifying restrictions for the free parameters of the model. However, there are substantive reasons to relax selected restrictions on the $\theta_{(ijt)(i'j^t)}$. For example, suppose that i and $i + 1$ are adjacent items on the survey instrument. There is good reason to think that survey participants tend to choose the same or a nearby response category for adjacent items. Thus, one modification of the model is to permit $\theta_{(ijt)(i+1, j^t)} \neq 0$. Also, survey participants may respond similarly to the content of a specific item at different times, so we may also specify $\theta_{(ijt)(ijt)} \neq 0$.

In many applications, models like equation 1 are congeneric, that is, each observable variable Y_{ijkt} loads on only one η_{jkt} . However, in the present analysis, we also consider an alternative model in which selected items also load on a second latent factor, namely, whether the item is negatively worded (or reverse scored). For example, consider two items that measure personal growth: “For me, life has been a continuous process of learning, changing, and growth,” and “I gave up trying to make big improvements or changes in my life a long time ago.” Positive well-being is expressed by agreement with the first statement and disagreement with the second. However, in the survey instrument, response categories are listed in the same order for both items, and participants may fail to recognize that disagreement expresses a positive response (DeVellis 1991). While the use of reverse-scored items is one method for avoiding acquiescence bias in surveys, we introduce a factor for such items in order to compensate for failure to recognize the reversal of response categories.

We estimate various specifications of this model using LISREL 8.73 (Jöreskog, Sörbom, and SPSS Inc 1996a; Jöreskog, Sörbom, and SPSS Inc 1996b; Jöreskog 2000). The LISREL model assumes multivariate normality in measured variables. Because responses to the well-being items are in ordered categories, and they are typically skewed to the left, we use the PRELIS preprocessor for LISREL to estimate polychoric correlations among the items. The original metric of the variables is lost in this procedure, which yields estimated correlations under the assumption of multivariate normality. All of the models in this report have been estimated by weighted least squares, using elements of the asymptotic variance-covariance matrix of the polychoric correlations as weights.

WLS and NSFH Panel Data

The WLS is a long-term study of a random sample of 10,317 men and women who graduated from Wisconsin high schools in 1957. The respondents were first surveyed during their senior year in high school, when they were 17-18 years old (1957). Subsequent interviews were completed at ages 36 (in 1975), 53-54 (in 1993), and 64-65 (in 2004-2005). In 1993-1994, and, again, in 2004, telephone and mail surveys of the WLS graduates were conducted. In 1993, the WLS included about 8,500 graduates, 6900 of whom participated in the mail survey. In 2004, there were nearly an equal number of survey participants, including some who had not participated in 1993. The present analysis is based on preliminary data from 5217 WLS graduates who participated in both surveys.¹

Items from RPWB scales were included in both the 1993 WLS graduate telephone interview and mail survey. The mail survey contained seven items for each subscale, yielding a

¹ We expect to rerun the present analyses using the full sample when those data become available. Because the WLS data were collected and delivered on a flow basis for 10 sequentially fielded replicate subsamples, we do not expect the findings to change substantially.

total of 42 items (see Appendix A). The mail survey in 2004-2005 included 31 RPWB items: six items for purpose in life and positive relations with others and five items for each of the other four RPWB dimensions. The 1993 and 2004-05 mail surveys have only 19 items in common, that is, included in both mail questionnaires (4 items for purpose in life and 3 items for each of the other five dimensions). Our analysis of the WLS data is based on all 73 items asked of all participants in either year (Appendix A).² We ignored data for the handful of participants who used the same response category for all items in either year.

NSFH. The NSFH began in 1987-1988 with a national sample of more than 10,000 households. In each household, a randomly selected adult was interviewed. The five-year follow-up was conducted in 1992 to 1994 and included data collection from 10,000 respondents, 5,600 interviews with spouses/partners, 2,400 interviews with children, and 3,300 interviews with parents. The focus of this project is on the main respondents. The third wave of the NSFH was conducted in 2001-2003. Due to budgetary constraints, only a subset of the Time 1 sample was selected to be re-interviewed; these included parents of young adult children and respondents in mid- to later life. The parent sample was comprised of main respondents with an eligible focal child. The mid-to-later life sample consisted of main respondents who did not have eligible focal children but who were 45 years and older at Time 3. Overall, the NSFH III sample comprises 4,076 main respondents with an eligible focal child and 4,914 main respondents aged 45 years or older with no focal child eligible for the NSFH 2 interviews. We restricted our analysis to main respondents who participated in NSFH II and NSFH III.

RPWB items were included in the self-administered health module of NSFH in each year and contained 18 items, three for each proposed sub-dimension of psychological well-being,

² One additional item was asked of part of the 2004 WLS sample, but it is not used in the present analysis.

arranged in a seemingly random order. The items are listed in Appendix B. Among respondents who were 29 or older at NSFH II, 4,190 answered at least one PWB item in both waves. Of those 4,190 respondents, 10 chose the same response category for all items in NSFH II and 11 in NSFH III. Those 21 individuals were excluded from analysis, yielding the final sample of 4,169 participants.

Variables

The WLS mail instrument of 1993 included 6 of the 18 NSFH well-being items in addition to 36 other items (Appendix A). In 2004, the WLS instrument included all 18 NSFH items, plus 13 other items that had been used in 1993. Thus, only six RPWB items were included in all three surveys. Those items are: I have confidence in my opinions even if they are contrary to the general consensus (autonomy); I'm good at managing the many responsibilities of my daily life (environmental mastery); It's important to have new experiences that challenge how I think about myself and the world (personal growth); People would describe me as a giving person, willing to share my time with others (positive relations with others); I sometimes feel as if I've done all there is to do in life (purpose in life); In many ways, I feel disappointed about my achievements in life (self-acceptance).

Response categories differ across the surveys. In the WLS and NSFH II surveys, response categories were “(1) agree strongly, (2) agree moderately, (3) agree slightly, (4) disagree slightly, (5) disagree moderately, (6) disagree strongly.” The NSFH III respondents were asked to choose among the following categories: “(1) strongly agree, (2) agree, (3) neither agree nor disagree, (4) disagree, (5) strongly disagree.”

Each dimension of the RPWB scales was measured in each survey and year with both positively and negatively worded items. Positively worded items are those to which individuals

should respond “strongly agree” to indicate the highest level of well-being, e.g., “I have confidence in my opinions even if they are contrary to the general consensus,” “People would describe me as a giving person willing to share my time with others.” Negatively worded items are those to which individuals should respond “strongly disagree” to indicate the highest level of well-being, e.g., “I have not experienced many warm and trusting relationships,” “The demands of everyday life often get me down.” To create a scale for each of the six dimensions, scores for responses were averaged across items. All *positively worded items* were *reverse coded*, so higher scores always correspond to higher levels of reported psychological well-being. There are 22 reverse-coded items in the 1993 WLS, 15 in the 2004 WLS, and 8 in each wave of the NSFH. Negatively worded items are identified in Appendix A and Appendix B.

Findings

First, we describe the fit of several models of the WLS and NSFH data that incorporate features of the confirmatory factor models described earlier. None of the estimated models fits by conventional criteria of statistical significance, for the sample sizes are very large. However, we do find models that fit well when judged using BIC, the Bayesian Information Criterion (Raftery 1995) or the Root Mean Square Error of Approximation (RMSEA). Second, we present and discuss estimates of factor correlations in each sample that are based on the least and most elaborate of the models.

Table 1 shows the fit of five models of the longitudinal WLS data. Model 1 is the basic congeneric measurement model with free correlation among the 12 PWB factors. There are neither error correlations nor a methods factor to compensate for reverse-scored items. This model fits badly. Good model fit is indicated by large negative values of BIC; the larger the positive value of BIC, the worse is model fit. As a rule of thumb, values of RMSEA less than

0.05 are considered an indication of acceptable fit. Here, while RMSEA is in the acceptable range, BIC is large and positive (664.4).

Models 2 through 4 each introduce just one of the method effects discussed earlier. Model 2 introduces correlations between the errors in items that were repeated across years; since there were 19 repeated items in the WLS, this change in specification reduces the degrees of freedom of the model (DF) by 19. This model yields a substantial reduction in the chi-square statistic of the model, and $BIC = -465.3$ is now in an acceptable range. Model 3 introduces the 71 possible correlations between adjacent error terms, that is, 41 correlations between errors in the 1993 items and 30 correlations between errors in the 2004 items. It yields an even larger reduction in chi-square and BIC than Model 2. Model 4 introduces two methods factors, one for the reverse scored items in each year. The methods factors are freely correlated with the factors for the PWB sub-dimensions as well as with each other. This correction improves fit even more than the previous two. It reduces chi-square by more than 3000 with only 62 degrees of freedom, and now $BIC = -1955.7$. Finally, Model 5 introduces all three methodological corrections simultaneously, and its fit is far superior to that of any of the models with only one correction. In this model chi-square is more than 6000 less than in the basic model, $BIC = -4140.6$, and $RMSEA = 0.033$. While other modifications might improve fit relative to this model, fit is satisfactory considering the sample size.

With a few exceptions, the same sequence of models of the NSFH data leads to similar findings and conclusions. This sequence is shown in Table 2. Here Model 1 does not fit by any of the criteria we have proposed, for BIC is large and positive, while $RMSEA = 0.051$. Models 2, 3, and 4 each improve the fit relative to Model 1, and each of them has an RMSEA within the acceptable range. However, unlike the case of the WLS data, introducing correlated errors

between adjacent items does not yield a negative value of BIC. However, in the NSFH as in the WLS data, Model 4 yields an excellent fit by our criteria; BIC = -1792.1, and RMSEA = 0.029. Thus, in both samples, model fit is improved substantially by correcting for each of the method effects and the best fit is obtained by introducing all three corrections.

Table 3 gives the estimated correlations among the latent factors for sub-dimensions of psychological well-being in the WLS graduate sample. Estimates in the upper panel are from Model 1, and estimates in the lower panel are from Model 5. There are a great many numbers in the table, so we have outlined and shaded selected segments and cells of the table to highlight its important features. Each panel has three segments. The upper sub-diagonal block contains estimated correlations among the factors in 1993. The lower sub-diagonal block contains estimated correlations among the factors in 2004. Within each of those blocks we have highlighted the correlations among personal growth, purpose in life, self-acceptance, and environmental mastery. The lower square block contains correlations between the PWB factors of 1993 and those of 2004. The highlighted entries in the diagonal of that block are estimates of the persistence of each PWB factor between 1993 and 2004.

Several findings are evident in the two panels of Table 3. First, in both Model 1 and in Model 5, the correlations among the four suspect PWB sub-dimensions are extremely high. In the basic model, they appear to be slightly higher than in the methodologically corrected model. In both models and in both years the key correlation coefficients range only from 0.94 to 1.00, and most of them are on the upper end of that range. Second, in both models and in both years, the correlations between sub-dimensions across years are also personal growth, purpose in life, self-acceptance, and environmental mastery, but not so high as those among personal growth, purpose in life, self-acceptance, and environmental mastery. In Model 1, inter-period correlations

of the sub-dimensions range from 0.89 to 0.91. They are slightly lower in Model 5, ranging from 0.83 to 0.87. Thus, the WLS data yield the impression that psychological well-being is highly integrated, in the sense that several of the theoretical dimensions distinguished by Ryff (1989a; 1989b) are virtually indistinguishable once measurement error has been taken into account. The alternative is to think that the theoretical distinctions among them may not be viable. Whatever one makes of that issue, the relative positions of individuals in psychological well-being are highly stable across time. Moreover, using the same WLS data, Pudrovskaya (2005) has shown that mean levels of psychological well-being have scarcely changed across the decade from 1993 to 2004.

However, the corresponding findings in the NSFH data differ from those in the WLS. Table 4 shows the estimated correlations among the latent factors for sub-dimensions of psychological well-being in the NSFH sample. First, there are a couple of rather high correlations among the four suspect PWB sub-dimensions in the estimates from Model 1, notably those between growth and purpose in life.³ However, for the most part, the range of those correlations reaches substantially lower, between 0.80 and 0.99. Also, the correlations between sub-dimensions across years are substantially lower in the NSFH under Model 1 than in the WLS. In the top panel of Table 4, they range from 0.61 to 0.75. Also, the NSFH findings are more sensitive to model specification than those in the WLS. In the lower panel of Table 4, that is, with all three method effects, the correlations among personal growth, purpose in life, self-acceptance, and environmental mastery are quite large – all 0.89 or larger – but the temporal stability of the sub-dimensions is much lower even than under Model 1. Here, the correlations

³ A few of the correlations reported in Table 4 and Table 5 are greater than 1.0. Such exceptions, impossible in a real population, are not unexpected in a sample. In a revision of this paper, we will constrain all estimated correlations to lie between 0 and 1.

between sub-dimensions from 1992 to 2002 range from 0.39 to 0.61. In our judgment, the NSFH findings still render suspect the claim that there are as many as six distinct dimensions of psychological well-being, for we strongly prefer Model 5 to Model 1 on grounds of plausibility as well as fit. However, the divergent estimates of temporal stability between the WLS and NSFH are genuinely puzzling.

Our first thought was that differences in population definition between the WLS and NSFH samples might account for the divergent findings. Thus, we re-estimated the same sequence of models in several subsets of the NSFH data – men and women, persons similar in age to the WLS participants, persons similar in education to the WLS participants, and persons similar in age and education to the WLS participants. None of these changes in population definition entirely accounts for the difference between findings in the WLS and NSFH. However, there is some movement toward convergent estimates as the NSFH population definition approaches that of the WLS.

Table 5 shows the estimated correlations among the sub-dimensions of psychological well-being from Model 1 and Model 5 among individuals in the NSFH who were between the ages of 49 and 58 in 1992 and had completed at least a high school education. Here, the key correlations (in shaded cells) are typically larger in Model 1 (upper panel). That is, there are stronger relationships among the four suspect sub-dimensions of well-being than in the full NSFH sample, and there is slightly more persistence in the sub-dimensions across the decade. In the error-corrected model, there are scant differences between the full sample and the reduced sample in correlations among personal growth, purpose in life, self-acceptance, and environmental mastery. However, the estimated persistence of the sub-dimensions from 1992 to 2002 is substantially higher among the midlife high school graduates than in the full sample,

though not as high as in the WLS. In the reduced NSFH sample, those correlations range from 0.57 to 0.74, by comparison to 0.83 to 0.87 among the WLS graduates. Thus, there remains something of a puzzle in the comparison of persistence between the WLS and NSFH.

We think that the differences between findings in the WLS and NSFH should be taken seriously. For example, had we only observed the estimates in the WLS, we should be inclined to suggest that, despite their presumed volatility with respect to the joys and vicissitudes of life, that psychological well-being – at least as measured by the Ryff scales – might better be regarded as a persistent personal trait, rather like the components of the Big Five model of personality – than as a product of changing circumstance. Conversely, had we only observed the NSFH estimates, even as modified by restricting the sample, we should have stressed the volatility of personal well-being in response to changing circumstances, including location in the life course. With divergent findings in hand, there is no better course than to think more about their sources.

One way to resolve the differences between findings in the WLS and NSFH may be to consider the role of specific PWB items. Recall that there six of the 18 NSFH items appear in both waves of the WLS. It may be helpful to see how those specific items – by comparison to the non-common items – behave in the models of persistence. For example, it would be possible to drop the NSFH items from the WLS analysis entirely and see how that would affect the estimates. Another forthcoming possibility is to compare persistence across a decade in NSFH with that in the MIDUS study (Midlife in the United States). The same 18 items have been administered in NSFH and in MIDUS on both occasions. The response categories differed between the two NSFH administrations and not between the two MIDUS administrations. Thus, it will be possible to learn whether findings in MIDUS are more similar to WLS or to the NSFH and to rule out differences in response categories as a source of the difference between the WLS and the NSFH.

Discussion

This analysis had two objectives, to test the finding of Springer and Hauser (2006a; 2006b) that purpose in life, self-acceptance, environmental mastery, and personal growth fail to exhibit substantial independent variation and to measure the temporal stability of each sub-dimension of psychological well-being across a decade. The answer to the first question is clear. Those four sub-dimensions of Ryff's six-factor model of psychological well-being were virtually identical among the WLS graduates in 1993, and they were virtually identical among the graduates in 2004. The evidence of similarity among the four sub-dimensions is less strong in the NSFH data for 1992 and 2004, but it is still strong enough that we would advise researchers ordinarily to combine those four indexes into a single index of well-being.

The answer to the second question remains unresolved. Surely, there is at least moderate persistence in the sub-dimensions of Ryff's well-being model across a decade, and it would appear, also, that persistence in well-being is greater among the better-educated older population than in the entire adult population. Perhaps that differential is attributable to ways in which those with good educational preparation who have survived to maturity are in fact less subject to fluctuations in life circumstances and concomitant changes in psychological well-being.

We think it will be important to extend these queries into the structure and persistence of psychological well-being. Springer and Hauser (2006a; 2006b) have argued elsewhere that their findings should lead us to rethink the six-factor model of psychological well-being. In that endeavor, it will be helpful to carry out additional analyses of structure and change in available data. As mentioned previously, the second wave of MIDUS should make an important contribution, along with closer examination of specific items that appear in NSFH, MIDUS, and

WLS. Also, we plan to add analyses of longitudinal data from WLS siblings as they become available.

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Table 1. Fit of Longitudinal Factor Models to WLS Graduate Data on Psychological Well-Being, 1993 to 2004 (N = 5217)

Model	Chi-square	DF	BIC	RMSEA
1. Congeneric measurement, no error correlations	21969.4	2489	664.4	0.039
2. Model 1 + serial correlation in repeated items	20677.1	2470	-465.3	0.038
3. Model 1 + correlated errors in adjacent items	20011.8	2418	-685.5	0.037
4. Model 1 + reverse-scoring factor	18818.6	2427	-1955.7	0.036
5. Model 1 + all method effects	15863.4	2337	-4140.6	0.033

Table 2. Fit of Longitudinal Factor Models to NSFH Data on Psychological Well-Being, 1992 to 2002 (N = 4169)

Model	Chi-square	DF	BIC	RMSEA
1. Congeneric measurement, no error correlations	6144.4	528	1624.9	0.051
2. Model 1 + serial correlation in repeated items	4075.8	510	-289.6	0.041
3. Model 1 + correlated errors in adjacent items	5269.7	494	1041.2	0.048
4. Model 1 + reverse-scoring factor	3850.2	487	-318.4	0.041
5. Model 1 + all method effects	1931.4	435	-1792.1	0.029

Table 3. Correlations of Latent Psychological Well-Being Factors: Graduates, Wisconsin Longitudinal Study

	AUT93	ENV93	GROW93	REL93	PURP93	ACC93	AUT04	ENV04	GROW04	REL04	PURP04	ACC04
a. Basic Model												
AUT93	1.00											
ENV93	0.86	1.00										
GROW93	0.85	0.95	1.00									
REL93	0.81	0.93	0.91	1.00								
PURP93	0.87	0.99	0.96	0.95	1.00							
ACC93	0.87	0.99	0.96	0.94	0.99	1.00						
AUT04	0.89	0.77	0.79	0.75	0.80	0.79	1.00					
ENV04	0.81	0.89	0.87	0.86	0.88	0.89	0.89	1.00				
GROW04	0.79	0.87	0.91	0.84	0.89	0.89	0.89	0.97	1.00			
REL04	0.75	0.85	0.82	0.90	0.85	0.85	0.83	0.94	0.94	1.00		
PURP04	0.79	0.87	0.87	0.85	0.90	0.88	0.90	0.98	1.00	0.94	1.00	
ACC04	0.80	0.87	0.86	0.84	0.89	0.90	0.90	0.98	0.98	0.93	0.99	1.00
b. Model with all method effects												
AUT93	1.00											
ENV93	0.84	1.00										
GROW93	0.84	0.94	1.00									
REL93	0.79	0.93	0.91	1.00								
PURP93	0.86	0.98	0.96	0.94	1.00							
ACC93	0.85	0.99	0.97	0.93	0.99	1.00						
AUT04	0.83	0.73	0.76	0.71	0.75	0.75	1.00					
ENV04	0.74	0.84	0.82	0.81	0.83	0.85	0.91	1.00				
GROW04	0.74	0.82	0.86	0.80	0.85	0.86	0.92	0.97	1.00			
REL04	0.71	0.80	0.81	0.85	0.82	0.82	0.88	0.95	0.95	1.00		
PURP04	0.74	0.83	0.84	0.81	0.86	0.85	0.90	0.98	1.00	0.95	1.00	
ACC04	0.74	0.83	0.83	0.79	0.85	0.87	0.91	0.98	0.98	0.94	0.98	1.00

Table 4. Correlations of Latent Psychological Well-Being Factors: National Survey of Families and Households

	AUT92	ENV92	GROW92	REL92	PURP92	ACC92	AUT02	ENV02	GROW02	REL02	PURP02	ACC02
a. Basic Model												
AUT92	1.00											
ENV92	0.80	1.00										
GROW92	0.79	0.82	1.00									
REL92	0.67	0.79	0.77	1.00								
PURP92	0.83	0.88	1.00	0.79	1.00							
ACC92	0.75	0.92	0.81	0.83	0.85	1.00						
AUT02	0.67	0.45	0.49	0.36	0.55	0.42	1.00					
ENV02	0.50	0.61	0.50	0.45	0.60	0.56	0.83	1.00				
GROW02	0.51	0.51	0.69	0.47	0.70	0.53	0.83	0.83	1.00			
REL02	0.39	0.49	0.51	0.67	0.54	0.57	0.74	0.83	0.83	1.00		
PURP02	0.52	0.52	0.62	0.45	0.75	0.52	0.86	0.89	0.99	0.85	1.00	
ACC02	0.49	0.57	0.53	0.53	0.61	0.68	0.80	0.96	0.83	0.89	0.86	1.00
b. Model with all method effects												
AUT92	1.00											
ENV92	0.93	1.00										
GROW92	0.87	0.89	1.00									
REL92	0.92	0.92	0.90	1.00								
PURP92	0.90	0.91	1.01	0.92	1.00							
ACC92	0.87	0.97	0.92	0.90	0.93	1.00						
AUT02	0.45	0.41	0.43	0.36	0.43	0.45	1.00					
ENV02	0.39	0.47	0.45	0.38	0.47	0.54	0.93	1.00				
GROW02	0.38	0.44	0.52	0.38	0.52	0.51	0.90	0.92	1.00			
REL02	0.37	0.42	0.46	0.39	0.47	0.51	0.92	0.94	0.95	1.00		
PURP02	0.34	0.40	0.48	0.33	0.47	0.47	0.92	0.93	0.99	0.95	1.00	
ACC02	0.40	0.48	0.48	0.40	0.50	0.61	0.88	0.97	0.92	0.96	0.92	1.00

Table 5. Correlations of Latent Psychological Well-Being Factors: 49 to 58 Year Old High School Graduates,
National Survey of Families and Households

	AUT92	ENV92	GROW92	REL92	PURP92	ACC92	AUT02	ENV02	GROW02	REL02	PURP02	ACC02
a. Basic Model												
AUT92	1.00											
ENV92	0.83	1.00										
GROW92	0.92	0.86	1.00									
REL92	0.70	0.91	0.92	1.00								
PURP92	0.94	0.94	1.02	0.99	1.00							
ACC92	0.81	0.96	0.90	0.85	0.97	1.00						
AUT02	0.65	0.46	0.52	0.33	0.49	0.51	1.00					
ENV02	0.64	0.68	0.60	0.52	0.57	0.68	0.93	1.00				
GROW02	0.62	0.60	0.74	0.60	0.74	0.61	0.89	0.94	1.00			
REL02	0.43	0.53	0.54	0.68	0.54	0.63	0.71	0.80	0.81	1.00		
PURP02	0.54	0.55	0.62	0.54	0.65	0.55	0.82	0.87	0.95	0.80	1.00	
ACC02	0.54	0.62	0.53	0.59	0.58	0.76	0.87	1.03	0.87	0.92	0.84	1.00
b. Model with all method effects												
AUT92	1.00											
ENV92	0.96	1.00										
GROW92	0.90	0.90	1.00									
REL92	0.91	0.90	0.93	1.00								
PURP92	0.93	0.95	1.00	0.94	1.00							
ACC92	0.94	1.00	0.93	0.92	0.94	1.00						
AUT02	0.61	0.59	0.56	0.47	0.57	0.69	1.00					
ENV02	0.54	0.65	0.56	0.43	0.56	0.77	0.98	1.00				
GROW02	0.56	0.58	0.65	0.51	0.68	0.68	0.93	0.87	1.00			
REL02	0.54	0.62	0.67	0.57	0.61	0.73	0.86	0.78	0.84	1.00		
PURP02	0.55	0.56	0.60	0.44	0.57	0.65	0.97	0.94	0.97	0.82	1.00	
ACC02	0.49	0.58	0.49	0.44	0.51	0.74	0.93	1.02	0.90	0.88	0.92	1.00

APPENDIX A. The Psychological Well-being Items in the WLS Surveys.

PWB Items	
<i>1992-1993</i>	<i>2003-2005</i>
<i>I. Autonomy</i>	
I have confidence in my opinions even if they are contrary to the general consensus.	I have confidence in my opinions even if they are contrary to the general consensus.
I'm not afraid to voice my opinions, even in opposition to opinions of most people.	I'm not afraid to voice my opinions, even in opposition to opinions of most people.
*It's difficult for me to voice my opinions on controversial matters.	*It's difficult for me to voice my opinions on controversial matters.
My decisions are not usually influenced by what everyone else is doing.	
*I worry about what others think of me.	
*I often change my mind about decisions if friends or family disagree.	
Being happy with myself is more important than having others approve of me.	
	*I tend to be influenced by people with strong opinions.
	I judge myself by what I think is important, not by what others think is important.

II. Environmental Mastery

I'm good at managing the many responsibilities of my daily life.

***I have difficulty arranging my life in a way that is satisfying to me.**

I've been able to create a lifestyle for myself that is much to my liking.

I'm good at juggling my time so that I can fit everything that needs to be done.

*I often feel overwhelmed by my responsibilities.

*I don't fit very well with the people and community around me.

I do a good job of taking care of my personal finances and affairs.

I'm good at managing the many responsibilities of my daily life.

***I have difficulty arranging my life in a way that is satisfying to me.**

I've been able to create a lifestyle for myself that is much to my liking.

In general, I feel I am in charge of the situation in which I live.

*The demands of everyday life often get me down.

III. Personal Growth

I have the sense that I have developed a lot as a person over time.

***When I think about it, I haven't really improved much as a person over the years.**

It's important to have new experiences that challenge how I think about myself and the world.

*I'm not interested in activities that will expand my horizons.

*I don't want to try new ways of doing things—my life is fine the way it is.

*I don't enjoy being in new situations that require me to change my old familiar ways of doing things.

*There's truth to the saying you can't teach an old dog new tricks.

I have the sense that I have developed a lot as a person over time.

***When I think about it, I haven't really improved much as a person over the years.**

It's important to have new experiences that challenge how I think about myself and the world.

For me, life has been a continuous process of learning, changing, and growing.

*I gave up trying to make big improvements or changes in my life a long time ago.

IV. Positive Relations

***I often feel lonely because I have few close friends with whom to share my concerns.**

***It seems to me that most other people have more friends than I do.**

People would describe me as a giving person, willing to share my time with others.

*I don't have many people who want to listen when I need to talk.

I enjoy personal and mutual conversations with family and friends.

Most people see me as loving and affectionate.

I know I can trust my friends, and they know they can trust me.

***I often feel lonely because I have few close friends with whom to share my concerns.**

***It seems to me that most other people have more friends than I do.**

People would describe me as a giving person, willing to share my time with others.

*Maintaining close relationships has been difficult and frustrating for me.

*I have not experienced many warm and trusting relationships with others.

I enjoy personal and mutual conversations with family members and friends.

V. Purpose in Life

I'm an active person in carrying out the plans I set for myself.

***I don't have a good sense of what it is I'm trying to accomplish in life.**

***I sometimes feel as if I've done all there is to do in life.**

***I used to set goals for myself, but that now seems like a waste of time.**

***I tend to focus on the present because the future nearly always brings me problems.**

I enjoy making plans for the future and working to make them a reality.

***My daily activities often seem trivial and unimportant to me.**

I'm an active person in carrying out the plans I set for myself.

***I don't have a good sense of what it is I'm trying to accomplish in life.**

***I sometimes feel as if I've done all there is to do in life.**

***I used to set goals for myself, but that now seems like a waste of time.**

***I live one day at a time and don't really think about the future.**

Some people wander aimlessly through life, but I am not one of them.

VI. Self-Acceptance

In general, I feel confident and positive about myself.

When I compare myself to friends and acquaintances, it makes me feel good about who I am.

***In many ways, I feel disappointed about my achievements in life.**

*I feel like many of the people I know have gotten more out of life than I have.

*My attitude about myself is probably not as positive as most people feel about themselves.

I made some mistakes in the past, but I feel that all in all everything has worked out for the best.

The past had its ups and downs, but in general I wouldn't want to change it.

In general, I feel confident and positive about myself.

When I compare myself to friends and acquaintances, it makes me feel good about who I am.

***In many ways, I feel disappointed about my achievements in life.**

When I look at the story of my life, I am pleased with how things have turned out.

I like most aspects of my personality.

* Negatively worded (reverse scored) item.

APPENDIX B. The Psychological Well-being Items in the NSFH Surveys.

PWB Items

I. Autonomy

1. * I tend to be influenced by people with strong opinions.
 2. I have confidence in my opinions, even if they are different from the way most people
 3. I judge myself by what I think is important, not by the values of what others think is
-

II. Environmental Mastery

1. * The demands of everyday life often get me down.
 2. In general, I feel I'm in charge of the situation in which I live.
 3. I'm quite good at managing the many responsibilities of my daily life.
-

III. Personal Growth

1. It's important to have new experiences that challenge how I think about myself and the
 2. * I gave up trying to make big improvements or changes in my life a long time ago.
 3. For me, life has been a continuous process of learning, changing, and growth.
-

IV. Positive Relations

1. * Maintaining close relationships has been difficult and frustrating for me.
 2. * I have not experienced many warm and trusting relationships with others.
 3. People would describe me as a giving person, willing to share my time with others.
-

V. Purpose in Life

1. * I live life one day at a time and don't really think about the future.
 2. * I sometimes feel as if I've done all there is to do in life.
 3. Some people wander aimlessly through life, but I'm not one of them.
-

VI. Self-Acceptance

1. I like most parts of my personality
 2. When I look at the story of my life, I'm pleased about how things have turned out.
 3. * In many ways, I feel disappointed about my achievements in life.
-

* Negatively worded (reverse scored) item.