Psychosocial Development in Adulthood: A 22-Year Sequential Study

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Data supporting the notion of adult personality stability are challenged by the present findings, in which developmental change was demonstrated using the Eriksonian-stage-based Inventory of Psychosocial Development (IPD; Constantinople, 1969). A sequential design over the ages 20–42 was used on 2 cohorts of college students and alumni originally tested in 1966 and 1976–1977 (*n*s in 1988 = 99 and 83, respectively), and a 3rd cohort of college students in 1988–1989 ($n = 292$). Results of longitudinal, cross-sectional, and sequential analyses challenged ideas about personality stability, with evidence of increasingly favorable resolutions of the early Eriksonian psychosocial stages up through the oldest age studied. There was evidence of a trend over the past decade toward less favorable resolution of ego integrity versus despair. The findings were interpreted in terms of developmental change processes during the adult years interacting with culturally based environmental effects on psychosocial development.

In the past 10 years, a coherent and convincing body of data has accumulated to support the position that personality in adulthood changes little, if at all, after the age of 30 years (Conley, 1985; Finn, 1986; McCrae & Costa, 1990; Schaie & Parham, 1976). Such research indicates that, for example, individuals who are extraverted at age 30 tend to remain extraverted 10 and 20 years later. This view of the adult personality as stable contrasts sharply with the position advocated by theorists such as Erikson (1963), who regard adulthood as a time of continued psychosocial evolution common to most adults. Stage views of adult development (e.g., Levinson, Darrow, Klein, Levinson, & McKee, 1978) build on this notion that the adult personality has the potential to undergo major transitions at predictable intervals.

Various attempts have been made to resolve the empirical and theoretical divergence between the advocates of adult personality stability and those who propose that there are stages in personality development (e.g., Whitbourne, 1986). In part, the divergence of theory and data may be due to differing definitions of personality and consequently, differences in the variables selected for measurement. Researchers arguing for stability in adulthood have typically focused on personality traits that are, by definition, inherently stable dispositions. Measures of personality traits undergo extensive psychometric refinement until they are proven to be consistent indicators of temperament that are relatively impervious to errors of measurement from testing to testing. Thus, it is not necessarily surprising to find a lack of intraindividual change over time on such indexes as reported, for example, by McCrae and Costa (1990). Unanswered by such research is the question of whether change in adulthood would be observed on indexes of personality functioning that are intended to be sensitive to developmental processes.

Erikson's (1963) theory is an attempt to conceptualize in a coherent fashion a set of theoretical effects of environmental and biological forces on personality development throughout the life span. This theory is regarded as the quintessential example of a theory of personality "change" in adulthood, with change following a sequential arrangement in which stages unfold in varying degrees of regularity depending on a constellation of biological, psychological, and social-historical forces. Each crisis stage is theorized to build on the preceding ones and to influence the outcome of successive ones, according to Erikson's epigenetic principle.

A point usually overlooked in descriptions of Erikson's (1963)

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theory is that the proposed stage scheme is not specific by age, nor is it exclusively unidirectional. In line with the epigenetic principle, there is for healthy personality "a progression through time of a differentiation of parts" (Erikson, 1959/1980, p. 54) involving a succession of potentialities for significant interactions with people and institutions optimally occurring within "the proper rate and the proper sequence" (Erikson, 1959/1980, p. 54). However, developmental concepts used by Erikson (1959/1980, 1963) such as vertical compensation and regression (vertical decompensation) suggest that an individual's life circumstances and the social environment may markedly alter the timing and patterns of psychosocial development. Theoretically, for any stage component, movement toward increased or decreased psychological health could occur at any point in the life cycle as a function of history-graded or idiosyncratic life events.

Researchers investigating Erikson's (1963) theory and the more general issues regarding stability and change in adult personality are encumbered by the potential confounding of age and period effects in developmental research designs, all of which represent threats to internal validity (Schaie, 1988). Erikson's discussion of adult personality development implies that not only does personality change with age, but that similar changes are often likely to occur for different people at about the same age. Researchers seeking to test this proposition must contend with the fact that if age differences in personality are found, caution must be taken before concluding that these differences represent a developmental trend in personality common to most people. For cross-sectional designs, what appear to be age "changes" may really be cohort differences, the product of comparing individuals of different cohorts, born in different decades or generations, who were exposed at birth to differing environmental influences on their personality development. Furthermore, people within the same birth cohort continue to receive differential exposure to contemporary historical and social conditions throughout their adult lives compared with people of other cohorts (e.g., Elder, 1974). Thus, even if personality changes are detected in a longitudinal study of adults of one cohort, such changes do not necessarily occur in other cohorts.

The problems of separating age-related changes common to most adults from effects specific to cohorts or historical eras can be managed by gathering data on several different samples spanning different ages and different times of testing. Only a handful of studies have used these more sophisticated sequential designs recommended by Schaie (1965) and Baltes (1968). Although no design can definitely lead to the conclusion that any longitudinal changes measured will be replicated in samples of different historical and cultural backgrounds, the sequential approach provides greater internal validity than the traditional single cohort or single time of measurement designs.

In the present research, which is an extension of a previous longitudinal and time-lag study of psychosocial development in early adulthood (Whitbourne & Waterman, 1979), a sequential strategy was applied to responses to an expanded version of the Inventory of Psychosocial Development (IPD), a questionnaire measure of Eriksonian personality development designed by Constantinople (1969). This measure provides scores on six of the eight psychosocial stages described by Erikson (1963). An expanded IPD, measuring all eight stages, was constructed in 1976 and administered at that time. The scales measuring the final two stages are reported in more detail by Walaskay, Whitbourne, and Nehrke (1983–1984).

The current article expands on Whitbourne and Waterman's (1979) previous study in the following ways: (a) the maximum age has been extended beyond age 31 to age 42, to include cross-sectional and longitudinal analysis of a period of personality development often considered to be highly stable; (b) longitudinal data are present for two cohorts between the ages of 20 and 31, allowing greater internal validity through application of sequential methodology to this age interval as tested over three measurement periods; and (c) contemporary statistical packages allow the data to be submitted to multivariate analyses of variance (MANOVAs) to gain power, control for family-wise error rate, provide a more robust repeated-measures analysis, and determine more efficiently the interplay of the IPD scales.

Three questions were explored: (a) Does intraindividual adult personality change occur on variables theoretically expected to be sensitive to developmental changes in adulthood? (b) Given that such changes are found, to what extent to they reflect age-related developmental processes and to what extent do they reflect the effects of acculturation or environmental influences? and (c) Given that personality changes or differences are found, whatever the apparent cause, to what degree are the results consistent with Erikson's (1963) theory of personality? Specifically, the Eriksonian stages theorized to have greatest relevance for each cohort should be most sensitive to age and time effects, with intimacy issues being of most concern to individuals in their 20s and generativity being more salient to individuals in their 30s and early 40s. Short of such specific age-stage trends, a more general finding of greater movement in the latter four stages compared with the earlier four stages also was predicted, in keeping with the previous follow-up's results.

Guiding the analyses presented in this study is the notion that the interpretation of general aging effects is more plausible for some patterns of results than others (Costa & McCrae, 1982). If personality change is entirely the product of aging rather than historical or cultural changes, then the examination of sequential data should reveal that general pattern, with adults from any cohort or tested at any time of measurement receiving the same personality score for any given age and showing a similar degree of change between ages.

Method

Design

The design of the present study is shown in Figure 1 and the accompanying Table 1, which describe in detail the variables used in each of the multivariate designs conducted on the IPD scores. Because the expanded IPD had not been developed for use in the first testing of Cohort 1, analyses including Stages 7 and 8 could be conducted only on the analyses involving 1977 and 1988 times of testing. Gender was used as a between-subjects variable in all analyses.

Given the inherent confounding of age, time, and cohort, the effects

analyzed from this design are as follows: age–time of measurement for longitudinal comparisons, age–cohort for comparisons involving cross-sectional effects, and cohort–time of measurement for time-lag–based comparisons. The two cohort-sequential main effects are age–time and cohort–time. Compared with a longitudinal design, this design permits the relatively clear separation of developmental aging processes from environmental influences for the age period of 20 to 31, as longitudinal data are available from two cohorts tested at two time periods. Any age–time effects observed for Cohort 1 between the ages of 31 and 42 must be regarded as potentially confounded with cohort–time of measurement influences.

For the purposes of clarity in presentation, the times of testing were rounded off to 1966, 1977, and 1988. The ages were rounded off to 20, 31, and 42 years although, as is shown later, the actual mean ages of those who participated in follow-ups varied somewhat around these ages.

Sample

The University of Rochester alumni and current students who comprised the sample were classified into three cohorts on the basis of when they were first tested as undergraduates. Cohort 1 included students who were tested in the years 1966–68 (Constantinople's, 1969, original sample), Cohort 2 was made up of students first tested in 1976–77, and Cohort 3 consisted of students tested in 1988–89. At the time of the present testing, Cohort 1's mean age was 42.63, with a range of 40–44, members of Cohort 2 had an average age of 31.88, with a range of 29–34, and Cohort 3's average age was 20.37, with a range of 17–24.

Of the 155 respondents in Cohort 1 who were tested in 1977, 30 (19%) could not be located. Of the remaining 125, 99 (79.2%) returned questionnaires. Cohort 2 suffered the largest attrition because of difficulty obtaining current addresses (see Procedure section). Of the original group of 298, addresses could not be found for 113 (38%). Of those contacted, 83 (45%) completed the questionnaires. Cohort 3 consisted of 292 current undergraduates: 45 male and 27 female freshmen, 60 male and 37 female sophomores, 44 male and 22 female juniors, and 30 male and 27 female seniors. As the result of missing data because of incomplete questionnaires on several respondents, the numbers used in analyses differed slightly from the numbers of respondents counted as "returned" for the purpose of evaluating attrition effects. Analyses involving Cohort 1 in 1966 included only those respondents who were followed in 1977 ($n = 155$) as those were the data on which the previous report (Whitbourne & Waterman, 1979) was based.[1]

The gender and original college class distribution of the two cohorts who were retested in 1988 according to attrition status is as follows. Of the 99 members of Cohort 1 returning questionnaires in 1988, 41 (41%) were from the Class of 1968 (sophomores at the time of original testing), 27 (27%) from the Class of 1967, and 31 (31%) from the Class of 1966. The gender composition of the returning sample of Cohort 1 was 62 men and 37 women. Among the 83 members of Cohort 2 tested in 1988, 14 (17%) were members of the Class of 1980 (freshmen in 1977), 22 (27%) from the Class of 1979, 27 (33%) from the Class of 1978, and 20 (24%) from the Class of 1977. The Cohort 2 returning sample was composed of 43 men and 40 women. There was no difference in the attrition pattern by college class within either of Cohorts 1 and 2. However, there were differences in return status by gender. Among the members of both cohorts, women were more likely to have been lost from the sample. This occurred because of the inability to obtain a current address, $\chi^2(2, N = 155) = 17.67$, $p < .001$ for Cohort 1, $\chi^2(2, N = 298) = 19.44$, $p < .001$ for Cohort 2. In Cohort 2 only, men were also more likely to have dropped from the sample by not responding to the questionnaires sent to them.

No freshmen were included in the original sample of Cohort 1 respondents whose data were available for follow-up purposes. To minimize differences between Cohort 1 and the other cohorts because of this methodological artifact, respondents who were measured when they were freshmen in college were excluded from all analyses reported in this article (14 from Cohort 2 and 73 from Cohort 3).

Comparisons of the 1977 IPD scores of those who were followed in 1988 with those who were not (excluding freshmen) yielded neither a

Table 1
Designs of Multivariate Analyses Comparing Ages and Cohorts

Analysis	Independent variables	Dependent variables	Ages compared
Longitudinal of Cohort 1, 1966–1988	Age–time	Stages 1–6	20, 31, 42
Longitudinal of Cohort 1, 1977–1988	Age–time	Stages 1–8	31, 42
Longitudinal of Cohort 2, 1977–1988	Age–time	Stages 1–8	20, 31
Cross-sectional, 1988	Age–cohort	Stages 1–8	20, 31, 42
Cross-sectional, 1977	Age–cohort	Stages 1–8	20, 31
Cohort sequential	Age–Time × Cohort–Time	Stages 1–6	20, 31
Time lag, all cohorts	Cohort–time	Stages 1–6	20
Time lag, Cohorts 2 and 3	Cohort–time	Stages 1–8	20
Time lag, Cohorts 1 and 2	Cohort–time	Stages 1–8	31

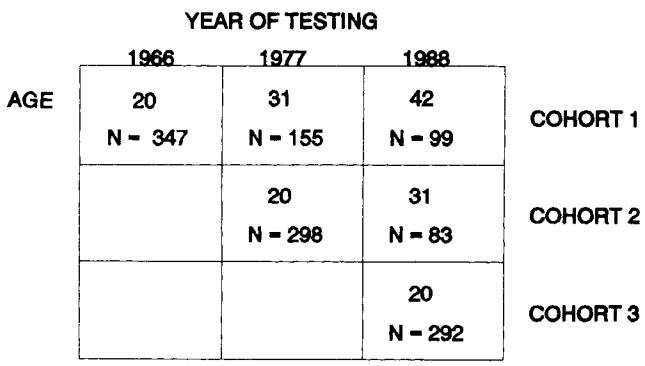

Figure 1. Design of the present study.

[1] A complete time-lag analysis of cross-sectional differences within the college years using all 300 of Constantinople's (1969) original sample tested in 1966 is in preparation. It should also be noted that the n of 155 reported here for Cohort 1 in 1966 and 1977 differs from the n of 147 used for the longitudinal analyses in Whitbourne and Waterman (1979) as it was possible to recover previously unusable data from 8 subjects.

multivariate main effect of dropout nor interactions between attrition status and the other independent variables of gender and cohort. The smallest Wilks's lambda was for the cohort by dropout interaction with 3.2% of the variance accounted for ($U = .968$, $p = .164$). None of the univariate tests of this interaction or any other interaction were significant. The only significant univariate test with attrition status as an independent variable was for the Industry scale, $F(1, 370) = 6.53$, $p = .011$; the multivariate main effect of attrition status was $U = .975$, $p = .32$. Respondents who dropped out of the study in 1988 tended to have lower Industry scores in 1977 ($M = 9.57$) than respondents who participated in the 1988 testing ($M = 12.78$).

As reported in Whitbourne and Waterman (1979), students at the University of Rochester tend to be raised in middle-class and upper-middle-class families. At the time of the present follow-up, and on the basis of social class of the head of household, almost all members of Cohort 1 were in Social Classes I (46.4%) or II (49.5%) on Hollingshead's (1957) two-factor index. Comparing the social class index of the followed members of Cohort 1 between 1977 and 1988 revealed that more were in Social Class II in 1988 and fewer were in Social Classes I, III, and IV than would be expected based on 1977 data, $\chi^2(3, N = 292) = 11.62$, $p < .001$ (based on Social Classes I–IV).

In 1988, the social class of head of household for the members of Cohort 2 at follow-up was comparable to that of Cohort 1's when they were 31 years of age, $\chi^2(3, N = 207) = 4.77$, $p > .05$, with nearly half (48.5%) in Social Class I, another 27.3% in Social Class II, 18.2% in Social Class III, and the remainder (6.1%) in Social Class IV. The parents of students in Cohort 3 were nearly evenly distributed among Social Classes I–III (I = 29.8%, II = 38.3%, and III = 23.85%). This distribution represented a significant difference from the distribution of the parents of Cohort 2 members when they were in college, $\chi^2(3, N = 440) = 23.9$, $p < .001$, as more parents of Cohort 3 respondents were in Social Class II compared with parents of Cohort 2 in 1977 (21.2%), and fewer parents of Cohort 3 members were in Social Class I than was true for Cohort 2's parents (45.95%).

Procedure

In the early spring of 1988, we contacted the University of Rochester alumni office for updated information on the members of the sample who had been tested in 1976–77. At that time, it was discovered that the university's computer records of student identification numbers had been totally revised and as a result, graduates in the late 1970s could not be identified by the code numbers available to the present group of researchers. Because more complete name and address information was available to the study authors on Cohort 1, fewer respondents from this group were lost at the time of this follow-up.

Using the available names and addresses provided by the alumni office, questionnaires with an explanatory cover letter were sent to members of Cohorts 1 and 2 in October 1988. A consent form was also included with this material, to be returned in a sealed envelope along with the questionnaire packet. In December 1988, follow-up letters and questionnaire packets were sent to those who had not returned the materials up to that point.

In the spring semester of 1988, an initial attempt was made to recruit current undergraduates from the University of Rochester. However, because the senior author was no longer a faculty member at the institution, it was difficult to obtain access to a sufficient number of undergraduates to meet the design requirements of the study for 300 students. It was decided to recruit respondents by offering a tangible incentive for their participation. Students were offered a $5 gift certificate to a local restaurant in return for completing the questionnaires. This reward was considered comparable to the food provided to the Cohort 2 students, who, in 1977, had been offered snacks while they completed the questionnaires. After turning in their questionnaires, Cohort 3 students were given the gift certificate and a short debriefing form explaining the goals of the study in which they had just participated. They were also informed that they might be contacted by the researchers at a future point after their graduation from college.

Measures

The IPD is a questionnaire measure based on Erikson's (1963) theory, developed by Constantinople (1969) and extensively validated in subsequent research (summarized in Waterman & Whitbourne, 1981). It has a total of 60 items and yields scores that indicate the extent to which each of the first six Eriksonian psychosocial crises have been successfully resolved. Items testing resolution of the last two stages were added from scales described in Walaskay et al. (1983–1984). The IPD includes five items representing the positive resolution and five items representing the negative resolution of each stage. Each item is rated on a 7-point scale ranging from 1 (*definitely most uncharacteristic of you*) to 7 (*definitely most characteristic of you*). Scores used in the analyses presented in this article were based on a composite, or difference score, obtained by subtracting the summed score on the negative items from the summed score on the positive items. Thus, the range for each scale is from −30 to 30. The total number of items was 80.

Respondents in Cohorts 1 and 2 were also asked to complete a biographical data questionnaire, identical to the one administered to alumni in the previous follow-up. This questionnaire covered present and past educational, occupational, and family history. Cohort 3 respondents completed a demographic questionnaire identical to the one administered to Cohort 2 when they were in college. This included information on the student's status in college (year and major), family background, and 10-year goals.

Results

To facilitate the presentation of results, scores from the separate IPD scales will be referred to in terms of the psychosocial crisis stage they represent: Stage 1: trust versus mistrust; Stage 2: autonomy versus shame and doubt; Stage 3: initiative versus guilt; Stage 4: industry versus inferiority; Stage 5: identity versus identity diffusion; Stage 6: intimacy versus isolation; Stage 7: generativity versus stagnation; and Stage 8: ego integrity versus despair.

The means and standard deviations of all eight IPD stage scores pooled for all respondents (except freshmen) available at each testing occasion are shown in Table 2. Before conducting MANOVAs, we calculated correlations among the IPD scales. The eight scales of the IPD were all significantly positively correlated with each other for all ages. Average interscale correlation coefficients depended on heterogeneity of the sample, ranging from .468 for age 20 (Cohorts 1–3) to .569 for age 42 (Cohort 1 only). Only three of the correlation coefficients calculated were below .30: Stage 4 with Stage 2 at age 20 ($r = .138$), Stage 7 with Stage 2 at age 20 ($r = .196$), and Stage 6 with Stage 2 at age 42 ($r = .274$). Four correlations were over .70, all for age 42 and all with Stage 8: Stage 1 ($r = .763$), Stage 5 ($r = .708$), and Stage 7 ($r = .746$). Such interscale correlations are expectable on the basis of the theory of epigenesis, given that the successful resolution of the crises of early stages is said to provide the foundation for the successful resolution of later crises. Simi-

Table 2
Composite Expanded Inventory of Psychosocial Development Scale Scores by Cohort and Year Tested

	Cohort 1			Cohort 2		Cohort 3
Scale	1966	1977	1988	1977	1988	1988
Stage 1						
M	10.05	10.94	11.49	10.09	11.23	9.88
SD	8.36	8.30	8.13	7.38	7.04	8.20
Stage 2						
M	8.28	8.16	8.95	7.54	7.77	7.20
SD	5.18	5.85	5.01	5.80	4.70	5.38
Stage 3						
M	10.83	11.02	12.64	11.00	12.33	10.81
SD	6.99	7.10	7.04	7.49	7.64	7.90
Stage 4						
M	6.54	13.58	16.52	9.19	14.32	9.86
SD	8.23	7.78	7.01	8.81	7.41	9.12
Stage 5						
M	7.56	9.71	10.39	7.51	9.91	7.52
SD	6.87	6.22	6.59	7.10	6.68	7.11
Stage 6						
M	11.17	13.12	13.33	11.98	14.25	11.77
SD	6.92	7.02	7.06	7.83	7.95	8.24
Stage 7						
M	—	8.90	9.58	7.30	8.77	7.00
SD	—	5.68	5.91	5.71	5.53	5.77
Stage 8						
M	—	7.74	3.85	5.64	1.99	2.72
SD	—	7.83	8.12	7.46	7.47	8.45
N	155	155	99	223	69	219

Note. The samples on which these data were calculated were those used in the cross-sectional analyses. Dashes indicate no data were available.

larly, unsuccessful resolutions of early stage crises reduce the likelihood of future successful resolutions.

Correlations across test intervals were also conducted to determine the extent of intraindividual change over the ages of 20–42 and 31–42 for Cohort 1 and the ages 20–31 for Cohorts 1 and 2 combined. These correlations are presented in Table 3.

MANOVAs

As shown in Table 4, all MANOVAs comparing cohorts, years, or ages on the IPD were significant, including the Cohort–Year × Age–Time interaction of the cohort-sequential analysis, the only significant interaction in any MANOVA. With the exception of the time-lag analysis for 31-year-olds, the strongest associations were between age and the IPD, whether the MANOVA was conducted longitudinally, cross-sectionally, or sequentially. The strongest effect was for the longitudinal MANOVA of Cohort 1 from 1977 to 1988 (age 31–42), with 52% of the variance accounted for by the age–time variable.

Main effects of gender were observed in the cross-sectional MANOVA of 1988 data for all three cohorts, $U = .920$, $p < .0005$; in both time-lag MANOVAs for college-aged respondents, $U = .961$, $p = .0009$ for Stages 1–6 for all three cohorts, $U = .906$, $p < .0005$ for Stages 1–8 for Cohorts 2 and 3 at college age; and in the time-lag MANOVA for age 30 respondents, $U = .926$, $p = .035$. However, all these multivariate effects were weak, with less than 10% of the variance being accounted for in any case. All gender differences favored women.

Table 3
Correlations Across Ages Tested for Cohorts 1 and 2

Stage	Cohort 1 (20–42 years)	Cohort 1 (31–42 years)	Cohort 1 (20–31 years)	Cohort 2 (20–31 years)
Stage 1	.53	.66	.62	.57
Stage 2	.32	.34	.52	.26
Stage 3	.52	.44	.49	.40
Stage 4	.36	.48	.42	.54
Stage 5	.49	.48	.46	.55
Stage 6	.52	.66	.48	.67
Stage 7	—	.55	—	.54
Stage 8	—	.64	—	.36

Note. Dashes indicate no data were available.

Table 4
Results of Multivariate Analyses Comparing Ages and Cohorts

Analysis	*n*	Wilks's lambda	*p*
Longitudinal of Cohort 1, 1966–1988	98	.526	<.0005
Longitudinal of Cohort 1, 1977–1988	98	.483	<.0005
Longitudinal of Cohort 2, 1977–1988	69	.518	<.0005
Cross-sectional, 1988	383	.831	<.0005
Cross-sectional, 1977	378	.900	<.0005
Cohort sequential			
Effect of age–time	224	.672	<.0005
Effect of cohort–time	224	.936	.025
Effect of Age–Time × Cohort–Time	224	.932	.019
Time lag, all cohorts, age 20	595	.955	.008
Time lag, Cohorts 2 and 3, age 20	439	.929	<.0005
Time lag, Cohorts 1 and 2, age 31	224	.742	<.0005

Univariate Analyses of Age and Cohort

The univariate inferential statistics for each multivariate effect for each of the IPD scales are shown in Table 5. The means for each IPD scale based on the longitudinal and sequential comparisons are plotted in Figures 2–9. The results are summarized in the following order: (a) age–time effects based on the longitudinal analyses of Cohort 1 between the ages of 20 and 40, Cohort 1 between the ages of 30 and 40, and Cohort 2 between the ages of 20 and 31, and the age–time effect in the cohort-sequential analysis comparing Cohorts 1 and 2 between the ages of 20 and 31; (b) age–cohort effects as determined by the two cross-sectional analyses conducted in 1977 and 1988; (c) cohort–time effects based on the two time-lag analyses on age 20 scores (Cohorts 1, 2, and 3) and age 31 scores (Cohorts 2 and 3) and the cohort–time effect of the cohort-sequential analysis; and (d) Age–Time × Cohort–Time interaction effects, based on the cohort-sequential analysis. Only significant effects are reported in this summary.

Table 5
Univariate Fs and Significance of Cohort and Age Comparisons

Analysis	Stage 1	2	3	4	5	6	7	8
Longitudinal of Cohort 1, 1966–1988								
$F(2, 192)$	.98	2.32	4.42	60.57	5.67	8.77	—	—
p	.38	.10	.01	<.001	.004	<.001	—	—
Longitudinal of Cohort 1, 1977–1988								
$F(1, 96)$	.47	4.15	5.20	11.40	1.24	1.53	.76	35.75
p	.50	.04	.03	.001	.27	.22	.39	<.001
Longitudinal of Cohort 2, 1977–1988								
$F(1, 67)$	4.92	.18	.32	13.85	7.05	5.07	1.86	8.92
p	.03	.68	.58	<.001	.01	.03	.18	.01
Cross-sectional, 1988								
$F(2, 377)$	1.59	2.61	1.20	19.10	5.20	2.07	6.12	1.32
p	.21	.08	.30	<.001	.01	.13	.01	.27
Cross-sectional, 1977								
$F(1, 375)$	1.24	1.06	.01	26.37	10.35	2.54	7.89	7.19
p	.27	.30	.92	<.001	.01	.11	.01	.01
Cohort-sequential effect of age–time								
$F(1, 220)$	6.98	.28	.46	73.96	18.71	13.94	—	—
p	.01	.60	.50	<.001	<.001	<.001	—	—
Effect of cohort–time								
$F(1, 220)$	.02	.16	1.78	8.06	.15	2.00	—	—
p	.90	.69	.18	.01	.70	.16	—	—
Effect of Age–Time × Cohort–Time								
$F(1, 220)$	.82	.07	.11	10.25	.02	.04	—	—
p	.37	.79	.74	.01	.90	.85	—	—
Time lag, all cohorts								
$F(2, 589)$	.01	1.43	.08	9.52	.18	.88	—	—
p	.99	.24	.93	<.001	.84	.42	—	—
Time lag, Cohorts 2 and 3								
$F(1, 435)$	.01	.05	.22	3.59	.51	.44	.04	10.39
p	.94	.82	.64	.06	.48	.51	.84	.01
Time lag, Cohorts 1 and 2								
$F(1, 220)$	.08	.23	1.66	.55	.08	1.36	.01	26.25
p	.77	.64	.20	.46	.78	.24	.91	<.001

Note. Dashes indicate no data were available.

Stage 1 Age–Time Effects

The significant effects on this IPD scale involved the longitudinal analysis of Cohort 2 between the ages of 20 and 31 and a significant effect of age–time in the cohort-sequential analysis. As can be seen from Figure 2, scores on Stage 1 increased slightly between these two age–times.

Stage 2 Age–Time Effects

Scores on Stage 2 increased significantly between the ages of 31 and 42 for Cohort 1, as indicated by the significant longitudinal effect for this measure. Inspection of Figure 3 reveals that this increase was preceded by a smaller, nonsignificant decrease, a pattern also seen in Cohort 2's scores.

Stage 3 Age–Time Effects

Cohort 1 respondents showed a significant increase on Stage 3 scores between the ages of 20 and 42 as revealed in the 1966 to 1988 longitudinal analysis. A comparison of the cells involved in this analysis show that scores at age 20 ($M = 10.60$) were not significantly different from age 31 ($M = 10.91$), $t(97) = .42$, but scores at age 42 ($M = 12.64$) were significantly higher than the scores of either age 20, $t(97) = 2.99$, $p = .004$, or 31, $t(97) = 2.32$,

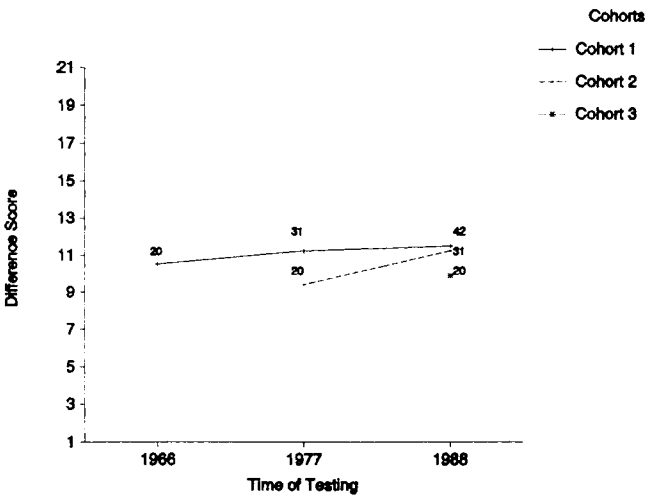

Figure 2. Means of Inventory of Psychosocial Development Stage 1 by year tested and cohort. Age at time of testing indicated on figure.

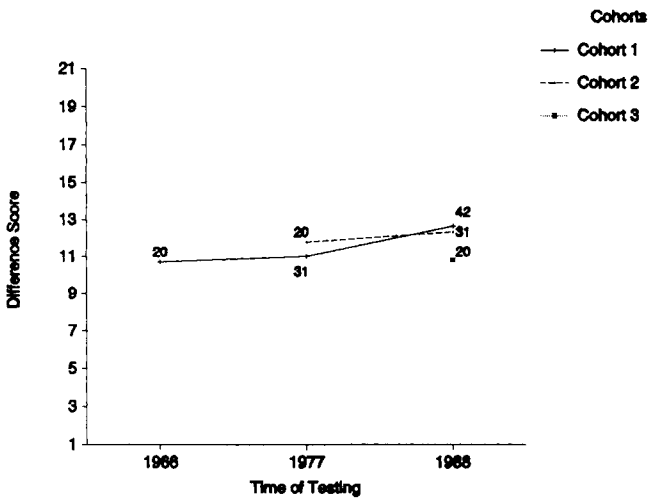

Figure 4. Means of Inventory of Psychosocial Development Stage 3 by year tested and cohort. Age at time of testing indicated on figure.

$p = .023$. These findings are consistent with the significant longitudinal effect shown for Cohort 1 between 1977 and 1988.

Stage 4

Age–time effects. All analyses with age–time as independent variables produced significant effects on Stage 4 scores. As revealed by planned comparisons in the longitudinal analysis of Cohort 1, Stage 4 scores increased significantly from 1966 (age 20, $M = 7.53$) to 1977 (age 31, $M = 13.96$, $t[97] = 7.53$, $p < .001$), and again from 1977 (age 31) to 1988 (age 42, $M = 16.52$, $t[97] = 3.30$, $p = .001$). The cohort-sequential analysis also produced a significant age–time effect with the means in the same direction for the years between ages 20 and 31.

Age–cohort effects. In the cross-sectional analysis of the 1977 data, Cohort 1's (age 31) mean Stage 4 score was significantly higher than Cohort 2's (age 20). Planned comparisons for the cross-sectional analysis for the 1988 data revealed that the difference between Cohorts 1 and 2 (Cohort 1 $M = 16.52$, Cohort 2 $M = 14.32$) was not significant, $F(1, 377) = 3.10$, $p = .079$. The scores of Cohort 1 and 2 combined were significantly higher than Cohort 3's ($M = 9.86$), $F(1, 377) = 43.36$, $p < 0001$.

Cohort–time effects. A significant cohort–time effect was observed in the time-lag analyses of all cohorts at college age and in the cohort-sequential analysis. It appears that these effects are accounted for by the relative depression of Cohort 1's Stage 4 scores when they were of college age. In contrasts of the cohorts in the time-lag analysis of all three cohorts in college, Cohort 2

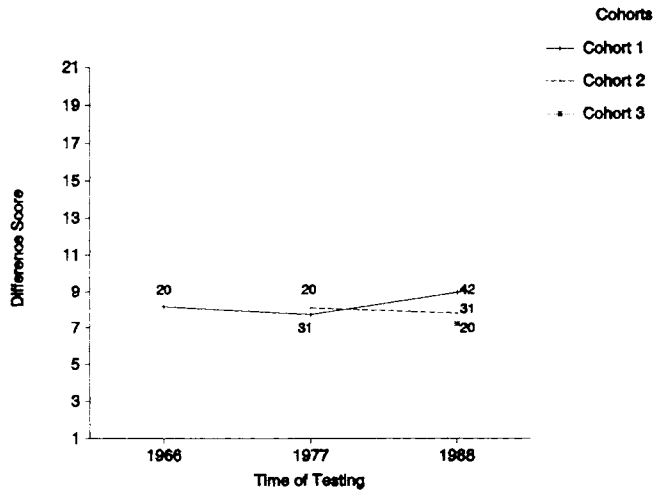

Figure 3. Means of Inventory of Psychosocial Development Stage 2 by year tested and cohort. Age at time of testing indicated on figure.

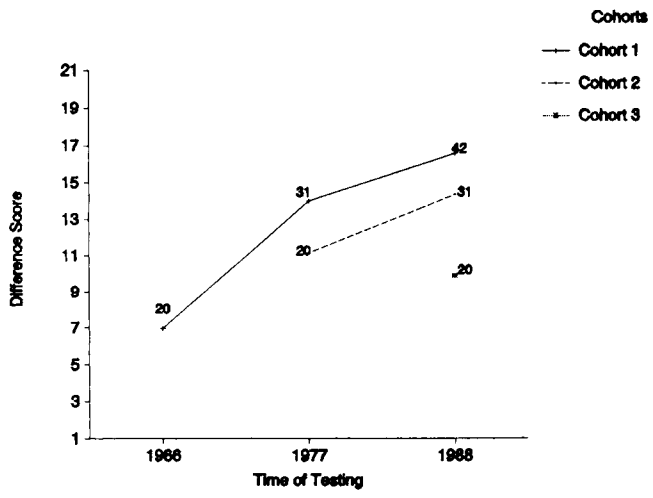

Figure 5. Means of Inventory of Psychosocial Development Stage 4 by year tested and cohort. Age at time of testing indicated on figure.

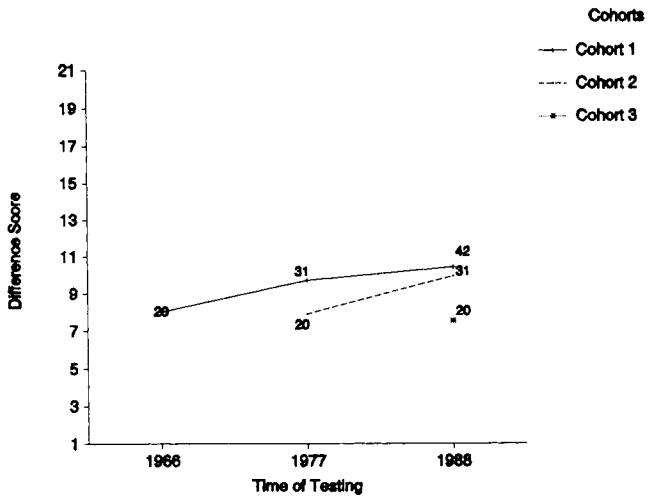

Figure 6. Means of Inventory of Psychosocial Development Stage 5 by year tested and cohort. Age at time of testing indicated on figure.

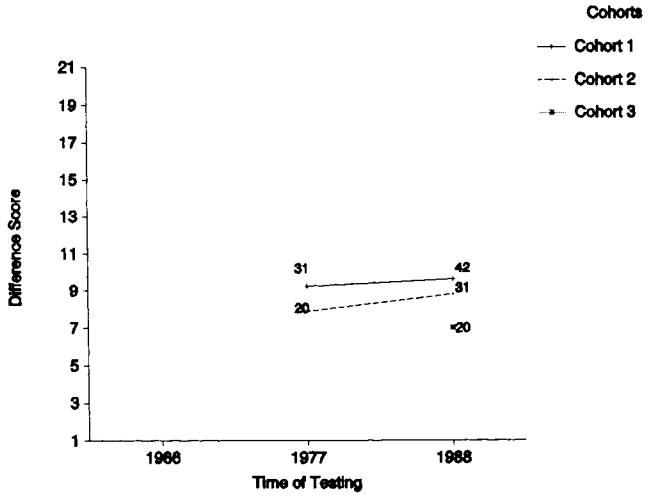

Figure 8. Means of Inventory of Psychosocial Development Stage 7 by year tested and cohort. Age at time of testing indicated on figure.

(M = 9.19) was not significantly different from Cohort 3 (M = 9.86), $F(1, 589) = .66$, $p = .42$, but Cohort 1's scores (M = 6.54) were significantly lower than those of Cohorts 2 and 3, $F(1, 589) = 13.85$, $p < .001$.

Age-Time × Cohort-Time effects. The cohort-sequential analysis revealed a significant Age-Time × Cohort-Time interaction for Stage 4 in addition to the significant main effects of age-time and cohort-time. Contrasts of the cells in this design revealed that the Stage 4 scores of both Cohorts 1 and 2 increased significantly from college age to 31 years old, $t(154) = 10.14$, $p < .001$, and $t(68) = 3.72$, $p < .001$, respectively. In these contrasts, the Stage 4 scores for Cohort 1 at age 31 (M = 13.58) were not significantly different from the Stage 4 scores of Cohort 2 at age 31 (M = 14.32), $t(222) = .67$, $p = .507$, but the Stage 4 scores of Cohort 1 at college age (M = 6.54) were significantly lower than the Stage 4 scores of Cohort 2 at college age (M = 11.12), $t(222) = 3.96$, $p < .001$.

Stage 5

Age-time effects. There was a significant age-time effect observed in Stage 5 scores in the longitudinal analysis of variance (ANOVA) of Cohort 1 between the years of 1966 and 1988, an effect accounted for by the significant increase between the ages of 20 and 31 (M for 20 years old = 8.03, M for 31 years old = 9.67), $t(98) = 2.23$, $p = .028$. The increase from 1977 (31 years old, M = 9.67) to 1988 (42 years old, M = 10.39) for Cohort 1 is not significant in either the longitudinal ANOVA of Cohort 1

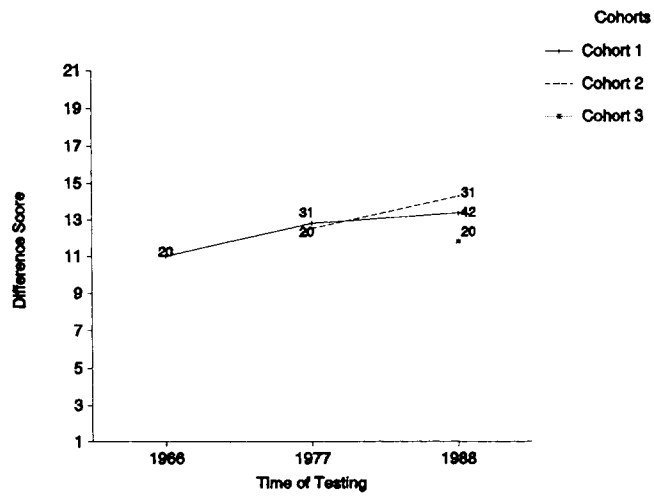

Figure 7. Means of Inventory of Psychosocial Development Stage 6 by year tested and cohort. Age at time of testing indicated on figure.

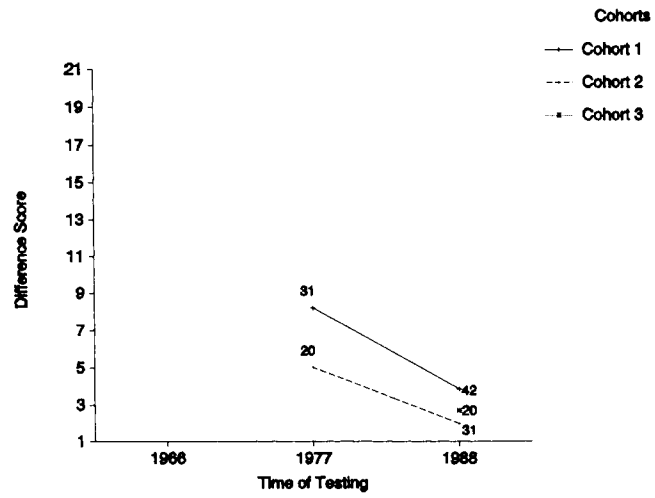

Figure 9. Means of Inventory of Psychosocial Development Stage 8 by year tested and cohort. Age at time of testing indicated on figure.

from 1977 to 1988, or in contrasts of the 1966 to 1988 longitudinal ANOVA, $t(98) = 1.06$, $p = .29$. The longitudinal analysis of Cohort 2 between the ages of 20 and 31 also produced a significant effect of age–time. These findings from Cohorts 1 and 2 analyzed independently were replicated in the cohort-sequential analysis, which yielded a significant age–time effect between the ages of 20 and 31 years.

Age–cohort effects. The higher scores of 31-year-olds compared with 20-year-olds observed in the longitudinal analyses also appeared in the significant contrasts of Cohort 2 (31 years old, $M = 9.91$) with Cohort 3 (20 years old, $M = 7.52$), $F(1, 377) = 6.14$, $p < .001$, in the cross-sectional analysis of the 1988 data. There was no significant difference in Stage 5 scores between Cohort 2 in 1988 (31 years old, $M = 9.91$) and Cohort 1 in 1988 (42 years old, $M = 10.39$), $F(1, 377) = .20$, $p = .66$.

Stage 6 Age–Time Effects

There was a significant age–time effect in the longitudinal analysis of Cohort 1's Stage 6 scores between 1966 and 1988 because of the significant difference between the scores of Cohort 1 in 1966 (age 20, $M = 11.00$) compared with their scores in 1977 (age 31, $M = 12.80$), $t(98) = 2.56$, $p = .012$. This difference was replicated in the significant main effect of age–time in the cohort-sequential analysis, which indicated that Stage 6 scores increased for both Cohorts 1 and 2 as they aged from 20 to 31 years. Cohort 1's Stage 6 scores in 1988 (at age 42, $M = 13.33$) were not significantly different from 1977 scores (age 31, $M = 12.80$), $t(98) = .91$, $p = .37$.

Stage 7

Age–time effects. Unfortunately, no longitudinal data for ages 20–42 of one cohort are available for this scale, as it was introduced in the 1977 testing when Cohort 1 was 31 years old. The longitudinal analyses available fail to reveal significant change in Stage 7 over time, although for both Cohort 1 and Cohort 2, average Stage 7 scores did tend to increase between the ages of 20 and 31 as shown in Figure 8.

Age–cohort effects. As indicated in the 1977 cross-sectional analysis, the average Stage 7 score of Cohort 1 (age 31 $M = 8.90$) was significantly higher than the average of Cohort 2 (age 20 $M = 7.30$). In 1988, Cohort 1's scores at age 42 ($M = 9.58$) were not significantly different from Cohort 2's scores at age 31 (age 31 $M = 8.77$). Cohort 3's scores ($M = 7.00$) were significantly lower than the combined scores of Cohorts 1 and 2, $F(1, 377) = 13.41$, $p < .0001$.

Stage 8

Age–time effects. From 1977 to 1988, Stage 8 averages for both Cohorts 1 and 2 show sharp and significant declines, as indicated by the longitudinal analyses.

Age–cohort effects. In the cross-sectional comparison of 1977 data, Cohort 1 (at age 31) had a significantly higher Stage 8 average than Cohort 2 (at age 20). This difference was not maintained in the 1988 cross-sectional analysis.

Cohort–time effects. Significant cohort–time effects were observed in both the time-lag analysis of college-age respondents and the time-lag analysis of 31-year-old respondents, with earlier cohorts on both occasions having higher scores than later cohorts.

Summary of Significant Effects Across Stages

Age–time effects. Varying patterns of significant age–time effects were observed in the sequential longitudinal components of the present research. Significant age–time effects were observed for the longitudinal analysis of Stage 1 scores for Cohort 2 between the ages of 20 and 31, with a slight increase in scores between these measurement points. Scores on Stages 2 and 3 showed a significant increase between ages 31 and 42 for Cohort 1. Stage 4 scores, which increased between the ages of 20 and 31 for Cohort 1, also increased up to the age of 42 for this cohort. An increase in Stage 5 scores for both Cohorts 1 and 2 occurred between the ages of 20 and 31, as did an increase in Stage 6 scores for Cohort 1 only. No age–time effects were observed on Stage 7 scores. There was a drop in Stage 8 scores for Cohorts 1 and 2, corresponding to decreases between the ages of 20–31 and 31–42 years.

Age–cohort effects. Age–cohort effects, reflecting cross-sectional differences, were found for Stage 4 scores in the 1977 and 1988 data, with college students at both times receiving the lowest scores. Cross-sectional differences were also found in 1988 between 20- and 31-year-olds in Stage 5 scores, with the younger age–cohort group receiving lower scores. College students also received lower scores on Stage 7, both in 1977 and 1988. A similar age–cohort effect was observed on Stage 8 in 1977 alone.

Cohort–time and Age–Time × Cohort–Time effects. Evidence for social-historical effects was obtained from the cohort–time element of the present sequential design for Stages 4 and 8. On Stage 4 scores, Cohort 1 received much lower scores in college in 1966 than did younger cohorts at college age in later years. Higher scores on Stage 8 were obtained in 1977 than in 1988 both for respondents in college and at age 31 years.

Discussion

Overall Analysis

The analyses reported in this study involving scores on repeated testings with the expanded IPD provided an unequivocal affirmative response to the first question posed by the present study. Consistent patterns of personality change were evident on a measure theoretically expected to be sensitive to developmental changes in adulthood. The results of this study therefore join those of other research (Haan, Millsap, & Hartka, 1986; Helson & Moane, 1987; Stevens & Truss, 1985) in a growing body of evidence indicating the existence of adult personality changes on a variety of theoretically derived variables even during the supposedly placid decade of the 30s. The extent of intraindividual change observed in this study exceeded patterns of stability reported in longitudinal research involving the use of trait-based personality measures on adults over the age of 30 years (McCrae & Costa, 1990). As reported in

Table 3, although correlations as high as .67 were observed in the present study, the majority of values ranged in the .3–.5 range for the 31–42 year age interval.

The second question addressed in the present research concerns the degree to which adult personality changes reflect developmental processes that are independent of historical and cultural influences. Answers to this question can be offered only for the age period of 20–31, and although cultural factors cannot be ruled out, the replication of changes within two cohorts provides strong evidence for the effects of development. Whether this will hold true for the patterns of increases shown in the 11-year period following age 31 is a question that only further replication can address.

Within the 20–31 age span, there were clear age-related developmental trends for scores on the stages of trust versus mistrust (Stage 1), identity versus identity diffusion (Stage 5), and intimacy versus isolation (Stage 6). Both Cohorts 1 and 2 received increasingly favorable scores on these stage scales, even though they were tested over nonoverlapping time periods. The trends observed between the ages of 31 and 42 years toward increasing scores on autonomy versus shame and doubt (Stage 2), increasing scores on initiative versus guilt (Stage 3), and decreasing scores on ego integrity versus despair (Stage 8) need further replication.

The findings for industry versus inferiority (Stage 4), although suggestive of aging effects for the full age range of the study, also appear to reflect complex interactions with environmental influences, as was the case in the previous study (Whitbourne & Waterman, 1979). In particular, Cohort 1's very low Stage 4 scores in 1966 stand as an anomaly from the general patterns shown for college-aged subjects and may reflect specific environmental influences operating on this cohort at the time of its testing in 1966. At that time, the student body of the University of Rochester may have reflected the shifting trends in the 1960s toward disenchantment with the work ethic of the 1950s and into the period of protest that characterized the late 1960s and early 1970s. Once out of college, Cohort 1 experienced the need to achieve in the work world, a pressure that may have stimulated them to "catch up" by age 31 to reach the same level in their Stage 4 scores as did Cohort 2 by that age.

One important consideration that must be examined in the present data concerns the results of the attrition analysis indicating slightly lower industry versus inferiority scores for those members of the sample who dropped out of the study between 1977 and 1988. However, the impact of this finding on the overall interpretations made from the present study seems to be minimal. There was no significant multivariate effect of attrition, and the effect for industry versus inferiority was the only univariate effect found out of many tests for a main effect of attrition or interaction involving attrition. Therefore, this effect of attrition on this scale may very well be a Type I error.

Any explanations that can be offered for the pattern of findings for scale scores of autonomy versus shame and doubt, initiative versus guilt, and generativity versus stagnation would involve considerable speculation, given that none of the effects in these analyses were replicated across cohorts tested at the same age. Inspection of Figure 3 suggests a slight decrease for both Cohorts 1 and 2 during their 20s, followed by an increase (which was significant) for Cohort 1 between the ages of 31 and 42. Such a pattern may reflect a movement toward a greater sense of personal control during the 30s, as individuals are able to move to positions of greater power and authority than they held in their 20s. Such movement may have been augmented by the economic growth occurring in the 1980s. Regarding initiative versus guilt, the gains shown by Cohort 1 between the ages of 31 and 42 may reflect increased sexual awareness and a more relaxed attitude toward sexual expression in the context of long-term intimate relationships, feelings that had not yet developed by the age of 31 (several items on this scale tap sexual openness and awareness). The quality of initiative also reflects the ability to "play" without hindrance or inhibition and the members of Cohort 1 may rediscover this quality through their interactions with growing children.

All of the analyses described thus far reflect a pattern of increasing psychosocial resolution with age. A striking exception is the pattern shown on Stage 8 scores, ego integrity versus despair. Both cohorts tested over the 1977–88 period showed a precipitous decline on these scores. One interpretation of this decline incorporates the findings regarding the industry versus inferiority scale (Stage 4), the other stage to reflect large effects of aging and also, to a lesser extent, cohort. Items on the ego integrity versus despair scale relate to the constructs of wholeness, honesty, and meaning in life and to having a sense of connection with humanity and the welfare of others (Walaskay et al., 1983–1984). The general decline over time for both Cohorts 1 and 2, coupled with the low scores of Cohort 3, may be symptomatic of the rise of materialism in the 1980s, a materialism that has led to reduced social welfare programs and an emphasis on yuppies and their corresponding notoriously empty life-style focused on wealth and possessions. Cohort 1 in particular is experiencing a dramatic increase in the sense of industry along with its associated focus on work and material success and thus may be suffering in terms of its resolution of issues revolving around ego integrity. Such a process is reminiscent of the "midlife crisis," but closer inspection reveals this not to be a viable explanation. Looking at the data from all three cohorts, the low Stage 8 scores may be seen as reflecting a more general societywide crisis of morality and purpose affecting adults of all ages. Indeed, these data show a striking correspondence to the results of nationwide surveys of college freshmen between the years of 1970 and 1988 showing a drop of from 76% to 51% in the life objective of "developing a meaningful philosophy of life" (U.S. House of Representatives, 1989). It is likely that the consistent drop in ego integrity scores for the cohorts tested in the present study reflects a similar erosion of philosophical values.

Erikson's Theory as Applied to Adulthood: Support and Clarification

The present investigation represents the first large-scale study of men and women tested over the 20 years of early to middle adulthood with a quantitative measure based on Erikson's (1963) theory. The sequential design of the study made it further possible to test Erikson's proposition that psychosocial development proceeds in an orderly sequence of stages, in-

fluenced by a combination of inner psychological processes and external social and cultural forces. The findings that emerged from the analyses reported here provided considerable support for Erikson's theory, as well as clarification regarding the timing of the psychosocial crises throughout the early to middle adult years.

Support for Erikson's (1963) psychosocial theory emerged from several sources. First, as in the previous study based on the 1976 follow-up, it was clear that changes over time in the stage scores reflected relatively pure "aging" effects (i.e., inner psychological changes) as well as the effects of exposure to a particular historical, social, and cultural reality of the external environment. Thus, in addition to replicated effects of age–time across cohorts, several stage scores reflected the influence of age–cohort and cohort–time, both factors regarded as sensitive to environmental influences. Second, Erikson's theory was supported in terms of the proposition that favorable resolution of one psychosocial crisis stage is dependent on successful resolution of previous stages and, in turn, influences the resolution of subsequent stages. The intercorrelations among the Eriksonian stage scores were all high and consistently positive in direction. A third basis for support of Erikson's theory concerned the timing of the two psychosocial stages studied over the age ranges during which they are theorized to attain ascendancy, namely intimacy versus isolation and generativity versus stagnation. With regard to generativity, further testing will indicate whether this trend represents a cohort effect or a developmental change that will continue through this stage's proposed time of further evolution into the decade of the 50s.

Clarification of Erikson's (1963) principle of movement through his proposed developmental matrix of age period by psychosocial stage also emerged from the present findings. In addition to evidence for continued development on stages theorized to be of maximum ascendancy, there appeared to be movement on the scales tapping the early stages of development well into the years of middle adulthood, and particularly between the period of 20–31 years when data from two cohorts were available. One possible explanation of this finding is that as the individual begins to confront the issues of a new stage, a process of reorganization begins that stimulates the individual to address past and future psychosocial concerns. If this explanation were correct, age-related changes ought to be found for every scale at every age. However, given that there is a central stage-specific issue for each stage, the greatest developmental movement should be found for the component then undergoing its time of special ascendancy. The present findings do not support this explanation, however. Although evidence was found for developmental progressions during the stages of intimacy versus isolation and generativity versus stagnation, the patterns of change for these stages were not as strong as for stages that were "off-diagonal" in their proposed sequence. Thus, a further explanation was sought.

The most likely alternative explanation is the proposition that the sequencing of Erikson's (1963) stages is not unidirectional and that there is not an epigenetic unfolding of developmental issues. Rather, all psychosocial issues can reach ascendancy at any particular time in the individual's life, depending on unique factors specific to that individual's biological, psychological, or social trajectories. The issues identified with any prior (and possibly future) stage of development may take priority over the stage concerns nominally identified with the individual's current developmental stage. If this alternative is operating, then proportionately greater changes could occur for scales tapping prior or future stage components than those changes found for the current stage scale. Thus, as observed in the present study, the most dramatic changes observed were gains in industry versus inferiority between the ages of 20 and 42, whereas there was a dramatic age/time decrease for integrity versus despair across cohorts. Both changes are out of the expected time frame, and both seem most plausibly interpreted in terms of the impact of cultural and historical events.

Although it is interesting to develop a speculative account for the relative strengths of changes occurring with respect to various stage components, it should be recognized that the available instrumentation does not allow for a high degree of precision in this regard. The various stage scales of the IPD, although possessing a common possible range, are, like personality scales in general, ordinal in nature. Mean change scores of differing magnitudes for various IPD scales do not necessarily warrant the conclusion that different developmental gains have been achieved.

The interpretation of a developmental trajectory that deviates from the much-publicized timetable of regular progress from Stages 1–8 further emphasizes the point so clearly made by Erikson (1963); namely, that the psychosocial stages not be regarded as prescriptions for development. Added by our findings is the possibility of movement through the psychosocial issues in a way that departs in a specified manner from the diagonal progress through the epigenetic matrix.

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