Journal of Research in Personality 51 (2014) 54–61

Contents lists available at ScienceDirect

Journal of Research in Personality

journal homepage: www.elsevier.com/locate/jrp

Stability and change in generative concern: Evidence from a longitudinal survey

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ARTICLE INFO

Article history:
Available online 22 April 2014

Keywords:
Generativity
Life course
Loyola Generativity Scale
Marriage
Childbearing

ABSTRACT

Longitudinal data taken at a ten-year interval from a large, nationally representative sample were used to examine stability and change in generative concern, as measured by a reduced form of the Loyola Generativity Scale (LGS). Rank-order stability over a ten year period was high ($r > .6$) among those respondents 30 or older at the time of first measurement. Mean scores on the LGS increased for men aged 24–29 and decreased for men and women aged 60–69, but the size of these changes was small. First marriage and childbearing were not associated with an increase in LGS scores. The evidence suggests both life-long stability and a small mid-life peak in generative concern.

1. Introduction

While Erikson's (1963) life stage theory predicts that generativity should peak in mid-life, no prior research has directly tested this theory using longitudinal measures of the LGS. This paper uses a reduced version of the Loyola Generativity Scale (LGS), which measures "generative concern," that was given to respondents in the 1995 and 2005 waves of the nationally representative Midlife in the United States (MIDUS) survey. It tests rank-order stability in the LGS by correlating individuals' 1995 and 2005 scores. It tests whether scores on the LGS peak in midlife, as measured both by chronological age and by the life course transitions of marriage and children. It also tests whether rank-order stability and life course peaks in generative concern vary by gender.

2. Generativity and the Loyola Generativity Scale

2.1. Generativity

Erikson (1963) originated the concept of generativity when he stated that the crisis of generativity versus stagnation was the seventh of eight life stages, and one that occupies much of the adult life course. During this stage, individuals are challenged to become less focused on their individual success and happiness and more focused on giving back to society and leaving a legacy for others. Erikson (1963) saw the desire for generativity as both an innate drive and a culturally influenced social norm. Later scholars (Kotre, 1984; McAdams, Hart, & Maruna, 1998) connected generative motivation within the increasing awareness of one's own mortality that comes with age.

Cultural norms affect the timing of generativity (McAdams & de St. Aubin, 1992) and "cultural demand" in the United States "urges adults to assume generative roles as they move into their 30s and 40s" (McAdams et al., 1998, p. 17). Erikson (1963) did not state exactly when the generative stage was supposed to end, but cross-sectional surveys have found that people in their sixties and early seventies score lower on measures of generative concern than people in their late thirties, forties, and fifties (Keyes & Ryff, 1998; McAdams, de St. Aubin, & Logan, 1993).

Stewart and Vandewater (1998) further elaborated the theory of the life course development of generativity by dividing the concept into generative motivation, generative capacity, and generative achievement. They argue that generative motivation develops completely in early adulthood and then declines; felt capacity for generative action begins to occur in early adulthood, peaks in mid-adulthood, and then decreases; and generative achievement increases through adulthood and peaks late in life. They supported this theory with quantitative coding of narrative data taken from two longitudinal studies of female college graduates.

2.2. The Loyola Generativity Scale

Scholars have used a number of strategies to measure generativity (Kotre, 1984; McAdams, Diamond, de St. Aubin, & Mansfield, 1997; Peterson, 1998; Stewart & Vandewater, 1998), but one of the most commonly used is the Loyola Generativity Scale (LGS), a measure of "generative concern" (McAdams & de St. Aubin, 1992). The LGS asks respondents to evaluate how well

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http://dx.doi.org/10.1016/j.jrp.2014.04.003
0092-6566/

twenty statements describe them, on a scale of one to four. These statements include "I think I would like the work of a teacher," "I think I will be remembered a long time after I die," and "Other people say that I am a very productive person," along with some reverse-coded negative items such as "I do not feel that other people need me," and "I feel that I have done nothing that will survive after I die." The LGS has high internal validity and test–retest reliability and correlates with measurements of generativity that use life narrative data and other qualitative methods (McAdams et al., 1998). The LGS appears to be a unidimensional scale; exploratory factor analysis found that the LGS loaded on two factors, but these were distinguished only by question wording, as one factor included positively worded items and another included negative, reverse-coded items (McAdams et al., 1998). The LGS was developed using American subjects but has been used successfully in Australia (McKeering & Pakenham, 2000), Japan (Marushima & Arimitsu, 2007), Korea (Kim & Youn, 2002), and Cameroon, Costa Rica, and Germany (Hofer, Busch, Chasiotis, Kärtner, & Campos, 2007). The latter study found that some items of the LGS had to be dropped to make it cross-culturally applicable, but the reduced scale had measurement equivalence across the three cultures (Hofer et al., 2007). There appear to be no studies of the measurement invariance of the LGS by gender or across age groups.

Scores on the LGS correlate positively with the "big five" personality traits of agreeableness, conscientiousness, extraversion, and openness to experience and negatively with the big five personality trait of neuroticism (de St. Aubin & McAdams, 1995; Marushima & Arimitsu, 2007; Van Hiel, Mervielde, & De Fruyt, 2006). The LGS correlates positively with measures of agency and communion (de St. Aubin & McAdams, 1995; Peterson & Stewart, 1993, 1996; Rossi, 2001), moral obligation (Keyes & Ryff, 1998; Rossi, 2001), and religiosity (Dillon & Wink, 2004; Wink & Dillon, 2003). Many studies have found a connection between generative concern and generative and prosocial behaviors (Hart, McAdams, Hirsch, & Bauer, 2001; Keyes & Ryff, 1998; Peterson, 2002, 2006; Rossi, 2001; Thiele & Whelan, 2008).

3. Review of the literature

3.1. Life course change and stability in the LGS

While there has been much research on the correlates of generative concern, there has been little research on whether scores on the Loyola Generativity Scale actually change over the life course. In testing stability and change in generative concern, one must distinguish between rank-order changes and mean-level changes. Most personality traits show strong rank-order stability over time, meaning that a person high in a personality trait in their 20s will probably continue to be relatively high in that trait throughout their life, compared to other people the same age. This rank-order stability can exist simultaneously with mean-level change, meaning that the average score for a group of people born around the same time can increase or decrease as they get older. A recent study using a large, nationally representative German sample found high levels of stability in the Big Five personality traits of agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience, found high rank-order stability over a four year period with Pearson's r correlations between .64 and .74 (Specht, Egloff, & Schmukle, 2011). The same study found mean-level change in these variables, as all five decreased significantly over time. A similar study using the 1995 and 2005 MIDUS data found correlations across the ten year period of $r = .64$ for agreeableness, $r = .61$ for conscientiousness, $r = .70$ for extraversion, $r = .64$ for neuroticism, and $r = .69$ for openness to experience (Graham & Lachman, 2012).

Change with age and stability over time can interact, and personality psychologists differ on how stability in personality traits changes over the life course (Specht et al., 2011). Some scholars argue that personality forms in young adulthood and is largely stable after age 30 (Costa & McCrae, 1988; Srivastava, John, Gosling, & Potter, 2003). Others find that stability increases slowly, at least until age 50 (Roberts & DelVecchio, 2000; Srivastava et al., 2003). The largest study to date on the stability of the Big Five personality traits over time found that conscientiousness scores became increasingly stable throughout adult life, but scores on agreeableness, extraversion, neuroticism, and openness to experience followed a U-shaped curve, peaking in stability between the ages of 40 and 60 and decreasing in old age (Specht et al., 2011).

Two cross-sectional studies have examined whether generative concern scores vary by age. McAdams et al. (1993) tested the timing of generativity among a sample of 152 adults, randomly selected from the population of Evanston, Illinois. They found that people in mid-adulthood (aged 37–42) scored higher on the LGS than young adults (age 22–27) and older adults (age 67–72). Using cross-sectional data from the 1995 wave of the Midlife in the United States study, Keyes and Ryff (1998) also found statistically significant differences in generative concern by age, with 40–59 year olds scoring higher than those aged 24–39 or those aged 60 and older. As both of these studies were cross-sectional, cohort differences instead of life course development may explain the differences found.

There have been only two longitudinal studies using the LGS. One found no significant changes in the LGS among young adults measured first at age 19 and then at age 23 (Lawford, Pratt, Hunsberger, & Pancer, 2005). Another used longitudinal data from MIDUS to find correlations among family of origin factors, education, generative concern, religiosity, and volunteering, but did not test whether generative concern peaked in midlife (Son & Wilson, 2011).

While generative concern may vary with chronological age, it may be that life course events, not aging, cause changes in generative concern. The generativity stage follows a stage of seeking intimacy, and Erikson (1963) theorized that individuals must successfully resolve one stage before moving effectively to the next. Since most people resolve the intimacy stage by getting married or forming a long-term romantic partnership, we might expect to see people who get married begin to focus less on intimacy needs and more on generative concerns. This hypothesis has not been extensively tested, although one cross-sectional study found no significant difference in generativity between single and married adults (McAdams & de St. Aubin, 1992).

Most people express generative concern through having and raising children, and therefore one might expect that scores on generative concern would go up among adults who become parents. Snarey (1993) proposed that parenthood first involved biological generativity, or conceiving and bearing a child, then parental generativity, which involves raising the child, and finally societal generativity, which involves contributing to members of the next generation other than one's own children. A study of parents in the U.S. found a correlation between LGS scores and viewing themselves as a role model and source of wisdom for their children (Hart et al., 2001).

3.2. Gender differences

Girls become aware of biological generativity earlier than boys "with the onset of menses in puberty, and then are regularly reminded of the potential for motherhood throughout the very earliest phases of adulthood" (Miller-McLemore, 1998, p. 180). For this reason, women may develop generative concern at a younger

age than men. There may also be gender differences in how age, marriage, and parenthood affect the life course development of generative concern. In regards to aging, early awareness of biological generativity and cultural norms that women should be more nurturing may cause women to develop high levels of generative concern at an earlier age than men. No study has examined gender differences in the effect of marriage on generativity, but numerous studies have found that marriage has larger and more positive effects on the happiness (Williams, 2003), health (Williams, 2003), religious participation (Nock, 1998) and social networks (Nock, 1998) of men than of women. Marriage may have a similarly more positive effect on men's generativity.

Children also appear to have a stronger effect on fathers' generativity than mothers'. McKeering and Pakenham (2000) used Snarey's (1993) model of biological, parental, and societal generativity to test correlations between parents' scores on the LGS and their participation in childcare activities. They found a positive correlation among fathers but not mothers. In a cross-sectional study, McAdams and de St. Aubin (1992) found that men who had children scored higher on measures of generativity than men who did not have children, while there were no similar differences among women. Again, cultural expectations may cause women to develop generative concern in young adulthood, whereas men may need the event of fatherhood to prompt generative development.

No study to date has used longitudinal measures of the Loyola Generativity Scale to test the rank-order stability of LGS scores over time and whether the rank-order stability of the LGS varies with age. No study has used longitudinal measures to examine whether mean scores on the LGS peak in mid-life, as measured either by age or by life course events, and no study has measured whether the effects of age and life course events vary by gender. This study examines all three issues, and has three sets of hypotheses.

4. Theory and hypotheses

First, Erikson's (1963) theory of generativity, as elaborated by subsequent researchers (McAdams et al., 1998), predicts that generative concern is in some ways a stable personality trait – individuals relatively high in generativity in their 20s will still be relatively high compared to other individuals in their age group as they grow older. Accordingly, one would expect the rank-order stability of generative concern to be high, just as the rank-order stability of the big five traits is high (Specht et al., 2011). Hypothesizing that generative concern will follow the same pattern as the big five personality traits (Specht et al., 2011), one would expect rank-order stability in generative concern to increase until ages 40 through 60, and then decrease afterward. Alternatively, rank order stability may peak at age 30 (Costa & McCrae, 1988; Srivastava et al., 2003) or age 50 (Roberts & DelVecchio, 2000; Srivastava et al., 2003) and remain high afterward.

H1a. Generative concern will be relatively stable over time, with rank-order stability similar to that of other personality measures (Pearson's r between .4 and .7).

H1b. Rank-order stability in generative concern will peak at ages 40 through 60.

Erikson's (1963) theory, as elaborated by later authors (McAdams et al., 1998), also predicts that individuals are most focused on generativity in mid-adulthood, and this implies that generative concern scores would peak in mid-life. Measuring mid-life by age, one expects the mean generativity score of an age cohort to rise as individuals reach their 30s, 40s, and 50s, when cultural norms in the United States expect generativity to be at its highest (McAdams et al., 1998), and then decline as people age into their 60s and 70s.

H2a. Mean scores on generative concern will increase for respondents who age from their 20s in 1995 to their 30s in 2005.

H2b. Mean scores on generative concern will remain stable for those who age from their 30s, 40s, and 50s in 1995 to their 40s, 50s, and 60s in 2005.

H2c. Mean scores on generative concern will decrease for those who age from their 60s and 70s in 1995 to their 70s and 80s in 2005.

I also test whether there are gender differences in how mean levels of generative concern change over time in each age group. Earlier research suggests that generativity develops earlier in women, meaning that we may find more of an increase in generativity among young men than among young women.

H2d. Mean scores on generative concern in 2005 will increase more for men aged 24–29 in 1995 than for women aged 24–29 in 1995.

Erikson (1963) believed that the generativity stage followed a stage concerned with achieving intimacy and that most people resolve intimacy concerns by getting married. Erikson's (1963) stage theory implies that successful resolution of one stage is necessary before moving on to another (McAdams & de St. Aubin, 1998), so the resolution of the intimacy stage through marriage may enable the beginning of a focus on generativity. Furthermore, parents in general (Hart et al., 2001) and fathers in particular (McAdams & de St. Aubin, 1992; McKeering & Pakenham, 2000) may become more generative as a result of having children. Thus, one would expect increases in generativity after marriage and having children and that the effect will be larger for men. As generative individuals may be more likely to marry and have children, this article tests whether high scores on the LGS predict the occurrence of these life course events. If so, it then tests whether any increase in LGS scores after marriage and children remains significant when these selection effects are controlled.

H3a. Mean scores on generative concern will increase for respondents who marry and/or have a child for the first time between 1995 and 2005.

H3b. Marriage and children will have a larger effect on men's generativity than women's.

H3c. Scores on generative concern will predict marriage and childbearing between 1995 and 2005.

5. Material and methods

5.1. Subjects

This article uses data from the 1995 and 2005 waves of the MacArthur Foundation's Midlife in the United States (MIDUS) study. The MIDUS study surveyed a nationally representative random-digit dialing sample of non-institutionalized, English-speaking adults, born between 1920 and 1970. Both telephone and written survey questionnaires were used, and the estimated overall response rate to the first wave was 60.8%. The MIDUS survey was also administered to an oversample of urban residents, a sample

of siblings, and a sample of twin pairs, but this study only uses respondents to the random-digit dial (RDD) sample, as this is the only nationally representative sample. The RDD dataset contains weights to account for differences between the sample and the population on age, race, gender, and region of residence, and these weights were used in the calculations for this paper. Full information about the sample, response rate, weighting, and survey design are contained in the MIDUS codebook, available from the MIDUS website at midmac.med.harvard.edu/research.html.

The main wave of the 1995 MIDUS survey had a sample size of 3032 respondents to both the phone and written survey, but only 1490 respondents to the original survey responded to both the telephone and written questionnaire in 2005. Eight of these respondents were missing data on the generativity measures, so 1482 respondents formed the sample used in this study. Three hundred and fifty-five respondents completed only the phone survey in 2005, 212 respondents died between 1995 and 2005, and 735 either could not be located or refused to participate. Those who responded to both the survey and the telephone questionnaire in the second wave differed from non-responders in several ways. Responders were slightly older than non-responders, had higher incomes and more education, and were more likely to be white and female. Respondents who died between 1995 and 2005 were older than the rest of the sample, had lower education and incomes, and were more likely to be male (Radler & Ryff, 2010). There was not, however, a significant difference between responders and non-responders on their scores on the 1995 Loyola Generativity Scale, so the rate of attrition, while high, should not affect the validity of this study.

5.2. Measures

Both the 1995 and 2005 panels of MIDUS used the same six-item reduction of the Loyola Generativity Scale. Each item on the scale was a statement, and respondents were asked to rate how much each statement described them on a scale of one (“not at all”) to four (“a lot”). The statements were “Others would say you have made unique contributions to society,” “You have important skills you can pass along to others,” “Many people come to you for advice,” “You feel that other people need you,” “You have had a good influence on the lives of many people,” and “You like to teach things to other people.” For 1995, the mean score was 2.80, and the standard deviation was 0.62. For 2005, the mean score was 2.78, and the standard deviation was 0.64.

Principal components analysis showed that all six questions loaded on only one component, which explained 55.3% of the variance in the 1995 panel and 56.5% in the 2005 panel. The Cronbach’s alpha score for reliability was .836 in the 1995 panel and .843 in the 2005 panel. Component loadings were .60 for “you have made unique contributions,” .68 for “you have important skills,” .74 for “advice,” .63 for “other people need you,” .79 for “influence,” and .69 for “you like to teach.”

To track changes in generative concern through the life course, I examined whether generative concern changed with age and with the life course events of marriage and parenthood. In regards to age, the MIDUS survey was given to adults aged twenty-five to seventy-four in 1995. The average age in 1995 was 44.2 with a standard deviation of 12.5. I divided respondents into three age groups: early adulthood, for those aged 24–29 in 1995 (142 respondents); mid-adulthood, for those aged 30–59 in 1995 (1092 respondents); and late adulthood, for those aged 60–74 in 1995 (249 respondents). I tested for further age distinctions by dividing the sample into six decade cohorts by age in 1995: those aged 24–29 (142 respondents), those aged 30–39 (344 respondents), those aged 40–49 (418 respondents), those aged 50–59 (330 respondents), those aged 60–69 (201 respondents), and those aged 70–74 (48 respondents).

Using the 1995 data, I tested for measurement invariance by gender and by age, examining equality in form and factor loadings (Brown, 2006) (see Table 3). As expected, the single factor model was statistically significant for all gender and age groups. The factor loadings for men and women were similar, but the model in which men’s and women’s factor loadings were constrained to be identical was significantly different ($\Delta\chi^2 = 14.7$; $\Delta df = 5$; $p < .05$) from the model in which they were allowed to vary freely. The constrained model for gender also had a slight increase in goodness of fit (RMSEA = .057) over the non-constrained model (RMSEA = .064). Only two of the items loaded differently by gender, as “others would say you have made unique contributions to society” had a higher factor loading for women (.60) than men (.56), and “you feel that other people need you” had a higher factor loading for men (.70) than women (.63). As the sample size was greater than 3000, even these substantively small differences were statistically significant. The different factor loadings seem to have little practical importance for the analysis, but this small degree of measurement variance does support the value of testing hypotheses separately on male and female subsamples.

With age groups, the model in which each decade cohort’s factor loadings were constrained to be identical was not significantly different ($\Delta\chi^2 = 35.4$; $\Delta df = 25$; $p > .05$) from the model in which they were allowed to vary freely. Since the factor structure and loadings were not significantly different across age groups, it is valid to compare change in means by age groups over time.

Each wave of the MIDUS survey asked respondents for their marital status, with possible responses including single, married, separated, divorced, and widowed. As Erikson’s theory envisions life stages as sequential events, the first marriage should be the key event that brings people past the intimacy stage and helps them proceed to a focus on generativity. Accordingly, I focused only on those respondents who married for the first time between 1995 and 2005, of whom there were 42, or 2.8% of the total sample. Each wave of the MIDUS survey asked respondents how many children they had, and I focused on respondents who did not report having children in the first wave, but did report having children in 2005. There were 80 such respondents, or 5.4% of the total sample.

In testing whether generative concern in 1995 predicted first marriage or having children between 1995 and 2005, I first used a bivariate logistic regression, and then controlled for age (measured in years), income (measured in thousands of dollars), education (measured on a 12-point ordinal scale), and race and ethnicity (dummy variables for African–American, Hispanic, Asian, and Other race).

5.3. Methods

To measure the rank-order stability of generative concern, I used Pearson’s r to correlate 1995 scores with 2005 scores, first for the entire sample and then for the sample broken into ten-year age cohorts; I then repeated these tests after dividing the sample by gender. To test whether mean scores on generative concern changed by age and family events, I used paired-samples t-tests, dividing the sample into decade cohorts and groups corresponding to change or stability in family status. To test whether 1995 scores on generative concern predicted first marriage or having children between 1995 and 2005, I used logistic regression, first bivariate and then with controls for age, income, education, race and ethnicity, and religious services attendance.

6. Results

The results supported the hypothesis (H1a) that rank-order stability in generative concern would be high, as the Pearson’s r

Table 1
Change in generative concern by age cohort.

	Total sample					Men					Women				
	N	1995 LGS score (SD)	2005 LGS score (SD)	Difference (ES)	Test–retest correlation	*N*	1995 LGS score (SD)	2005 LGS score (SD)	Difference (ES)	Test–retest correlation	*N*	1995 LGS score (SD)	2005 LGS score (SD)	Difference (ES)	Test–retest correlation
By decade															
24–29	141	2.77 (.572)	2.82 (.625)	0.04 (.068)	0.466	58	2.64 (.568)	2.81 (.593)	0.17* (.284)	0.468	84	2.87 (.561)	2.82 (.649)	−0.05 (.074)	0.477
30–39	344	2.76 (.579)	2.75 (.640)	−0.01 (.018)	0.624	153	2.75 (.576)	2.77 (.606)	0.02 (.035)	0.596	191	2.77 (.584)	2.73 (.667)	−0.04 (.061)	0.645
40–49	418	2.87 (.622)	2.87 (.661)	0.001 (.014)	0.649	203	2.85 (.590)	2.83 (.621)	−0.02 (.042)	0.596	215	2.90 (.652)	2.90 (.696)	0.01 (.013)	0.688
50–59	330	2.92 (.624)	2.90 (.587)	−0.02 (.042)	0.600	148	2.93 (.583)	2.92 (.569)	−0.01 (.012)	0.490	182	2.91 (.658)	2.87 (.601)	−0.04 (.070)	0.675
60–69	201	2.78 (.660)	2.66 (.676)	−0.12*** (.239)	0.705	101	2.82 (.684)	2.70 (.647)	−0.12^(.192)	0.591	100	2.75 (.637)	2.62 (.704)	−0.13** (.317)	0.821
70–74	48	2.66 (.589)	2.63 (.592)	−0.03 (.053)	0.445	31	2.65 (.529)	2.61 (.565)	−0.03 (.054)	0.286	17	2.69 (.702)	2.66 (.657)	−0.03 (.051)	0.636
By age group															
24–29	142	2.78 (.572)	2.82 (.625)	0.04 (.072)	0.466	58	2.64 (.568)	2.81 (.593)	0.17* (.284)	0.468	83	2.87 (.561)	2.82 (.649)	−0.05 (.074)	0.478
30–59	1092	2.85 (.613)	2.84 (.632)	−0.01 (.024)	0.630	504	2.84 (.587)	2.84 (.601)	−0.01 (.010)	0.571	588	2.86 (.635)	2.84 (.658)	−0.02 (.036)	0.672
60–74	249	2.79 (.648)	2.65 (.660)	−0.11** (.196)	0.664	132	2.78 (.653)	2.68 (.627)	−0.10* (0.163)	0.542	117	2.74 (.644)	2.62 (.697)	−0.11** (.264)	0.792

Note: Significance levels are for two-tailed *t*-tests. Effect sizes (ES) are calculated using the standard deviation (SD) of the distribution of the differences of means.
^ $p \leqslant .10$.
* $p \leqslant .05$.
** $p \leqslant .01$.
*** $p \leqslant .001$.

Table 2
Change in generative concern by life course events.

	Total sample				Men				Women			
	N	1995 LGS score (SD)	2005 LGS score (SD)	Difference (ES)	*N*	1995 LGS score (SD)	2005 LGS score (SD)	Difference (ES)	*N*	1995 LGS score (SD)	2005 LGS score (SD)	Difference (ES)
First marriage	42	2.85 (.639)	2.82 (.680)	−0.032 (.068)	21	2.78 (.517)	2.81 (.580)	0.032 (.074)	21	3.03 (.629)	2.94 (.529)	−0.095 (.145)
Married both waves	882	2.90 (.602)	2.87 (.616)	−0.023 (.042)	466	2.82 (.587)	2.82 (.590)	−0.003 (.005)	416	2.81^ (.620)	2.76 (.643)	−0.045 (.085)
Other	559	2.81 (.583)	2.79 (.571)	−0.023 (.042)	207	2.80 (.639)	2.78 (.651)	−0.024 (.041)	352	2.87 (.638)	2.85 (.697)	−0.021 (.042)
New parent	80	2.76 (.570)	2.77 (.622)	0.008 (.018)	43	2.58 (.554)	2.63 (.622)	0.047 (.097)	37	2.96 (.525)	2.92 (.591)	−0.036 (.077)
Childless both waves	188	2.80 (.648)	2.83 (.679)	0.036 (.067)	103	2.67 (.674)^	2.76^ (.678)	0.090 (.178)	85	2.95 (.583)	2.92 (.676)	−0.029 (.053)
Partent both waves	1215	2.84* (.614)	2.80 (.635)	−0.034 (.062)	548	2.86 (.581)	2.83 (.591)	−0.031 (.053)	667	2.82^ (.639)	2.78 (.668)	−0.037 (.070)

Note: Significance levels are for two-tailed *t*-tests. Effect sizes (ES) are calculated using the standard deviation (SD) of the distribution of the differences of means.
** $p \leqslant .01$.
*** $p \leqslant .001$.
^ $p \leqslant .10$.
* $p \leqslant .05$.

correlation between 1995 and 2005 was .607 ($p < .001$). Rank-order stability was relatively low among adults 24–29 in 1995 ($r = .465$), but was relatively stable among those in their 30s in 1995 ($r = .624$), 40s ($r = .649$), 50s ($r = .600$), 60s ($r = .705$), and those aged 70–74 ($r = .649$).

Erikson's (1963) theory, as elaborated by McAdams et al. (1998), would predict that generative concern would increase as respondents aged from their 20s to their 30s (H2a), and this hypothesis received support, but only for men. Looking at the entire sample, LGS scores increased from a mean of 2.78 in 1995 to a mean of 2.82 in 2005 for respondents aged 24–29 in 1995 (Cohen's *d* for effect size = .068), a difference that was not statistically significant. However, dividing the sample by gender (H2d) shows that men aged 24–29 significantly ($p < .05$) increased their LGS scores from 2.64 to 2.81 ($d = .284$), while women aged 24–29 experienced a slight, non-significant decrease from 2.87 to 2.82 ($d = .074$).

As predicted, there were no significant changes in the mean levels of generative concern for those who aged from their 30s, 40s, and 50s in 1995 to their 40s, 50s, and 60s in 2005 (H2b), whether one looks at the entire group or the group divided into three decades. There were also no differences evident when the sample was divided by gender.

It was expected that generative concern would decrease among those 60 and over (H2c). While there were no significant changes in generative concern when looking at all respondents 60 and over,

Table 3
Analysis of measurement invariance by gender and age (1995 LGS data).

Sample	*N*	Chi square	*df*	RMSEA	(90% CI)	CFI	TLI	Advice	Contribution	Influence	Need	Skills	Teach
By gender													
Women only	1646	156.1	9	0.094	(.082–.107)	0.955	0.896	0.74	0.6	0.79	0.63	0.67	0.68
Men only	1278	130	9	0.085	(.073–.099)	0.961	0.909	0.75	0.56	0.78	0.7	0.67	0.68
Men and women, no constraints	2924	286.1	18	0.064	(.057–.070)	0.958	0.902	0.74	0.6	0.79	0.63	0.68	0.69
Men and women, constrained	2924	300.8	23	0.057	(.052–.063)	0.956	0.921	0.74	0.58	0.8	0.66	0.66	0.68
By age													
20s, no constraints	345	55.9	9	0.12	(.091–.151)	0.92	0.813	0.75	0.64	0.73	0.67	0.65	0.64
30s, no constraints	846	66.2	9	0.086	(.067–.106)	0.957	0.9	0.73	0.58	0.78	0.63	0.67	0.61
40s, no constraints	695	92.7	9	0.102	(.083–.121)	0.951	0.886	0.76	0.59	0.81	0.67	0.68	0.69
50s, no constraints	474	77.9	9	0.101	(.081–.123)	0.951	0.887	0.78	0.61	0.82	0.7	0.63	0.68
60s, no constraints	374	40.8	9	0.08	(.056–.106)	0.967	0.922	0.7	0.62	0.8	0.65	0.68	0.76
70s, no constraints	165	42.2	9	0.086	(.046–.129)	0.952	0.889	0.73	0.54	0.74	0.63	0.62	0.75
All ages, no constraints	2899	357.7	54	0.039	(.035–.043)	0.952	0.888	0.75	0.64	0.73	0.67	0.65	0.64
All ages, constrained	2899	389.1	79	0.033	(.030–.036)	0.951	0.922	0.74	0.59	0.77	0.64	0.64	0.66

Note: Change in Chi square = 14.7; change in $df = 5$; significant at $p < .05$.
Change in Chi square = 35.4; change in $df = 25$; not significant at $p < .05$.

when the group was divided into decade cohorts there was a significant ($p < .001$) decline from 2.78 to 2.66 ($d = .239$) for respondents aged 60–69. For respondents aged 70–74, scores declined only from 2.66 to 2.63 ($d = .053$), a non-significant difference. The decline in those aged 60–69 and the lack of significant change among those 70–74 was found among both men and women, although the decline among men aged 60–69 was significant only at $p < .10$ (Table 1).

There was no significant change in generative concern due to marriage or having children (H3a), and dividing the sample by gender did not reveal any significant effects (H3b) (Table 2). People high in generative concern in 1995 were not significantly more likely to marry or have children by 2005 (H3c); these results are not shown, but are available upon request. There were only 42 respondents who married for the first time between 1995 and 2005 and only 80 who became parents for the first time between waves, so the statistical power of the analysis was low. Even so, the substantive change in LGS scores was very small. For men, marriage brought an increase in LGS scores from 2.78 to 2.81 ($d = .074$), and children increased LGS scores from 2.58 to 2.63 ($d = .097$). For women, marriage brought a decrease in LGS scores from 3.03 to 2.94 ($d = .145$), and children brought a decrease from 2.96 to 2.92 ($d = .077$). A larger sample with more newly married people and more new parents might find significant effects where this study did not, but the results from this study suggest that even if significant effects are found, the substantive effect of marriage and children would likely be small (see Table 2).

7. Conclusion

The data provided strong support for the rank-order stability of generative concern, and partial support for the hypothesis that generative concern peaks in mid-life. Despite the ten years that passed between tests, the correlation between the two scores in the entire sample ($r = .607$) was only slightly smaller than the three week test–retest reliability of $r = .73$ found in McAdams and de St. Aubin's (1992) original validation study. The correlation was actually higher than the six-month test–retest score of $r = .55$ found in a follow-up study (McAdams et al., 1993), although that study was affected by the fact that the first and second administrations of the test used different formats. Rank-order stability was similar to that found in studies of the big five personality traits, which correlated at values from $r = .64$ to $r = .74$ across a four-year period in German data (Specht et al., 2011) and at values of $r = .61$ to $r = .70$ across a ten-year period in the MIDUS data (Graham & Lachman, 2012). Rank-order stability did not peak among those aged 40 through 60 in 1995, but was high (r values between .600 and .705) for all age groups except those under 30 ($r = .465$), supporting the theory that personality forms in young adulthood and remains stable after age 30 (Costa & McCrae, 1988; Srivastava et al., 2003).

Generative concern significantly increased among men who aged from 24–29 to 35–39 and decreased for people who aged from 60–69 to 70–79. These changes, while statistically significant, were substantively small, with effect sizes ranging from .192 to .316. This partially replicates earlier cross-sectional studies that found a peak in generative concern among those aged 37–42 (McAdams et al., 1993) and those aged 40–59 (Keyes & Ryff, 1998). There were only 31 men and 17 women aged 70–74 in 1995, so the sample size may have been too small to detect a statistically significant result. While the decline in LGS scores among this age group was small in substantive terms, a future study with a larger sample of people over 70 might find a significant effect.

Marriage and having children had no significant effect on generative concern among either men or women, and generativity in 1995 did not predict marriage or childbearing between 1995 and 2005. This result replicates McAdams and de St. Aubin's (1992) finding of no difference between single and married adults in cross-sectional data, but goes against their finding that fathers scored higher on generative concern than men without children. While the overall sample size was large, getting married or having children for the first time are rare events, meaning that only 42 respondents got married between 1995 and 2005 and only 80 had their first child during that time. A longitudinal study with a larger sample of young adults might include enough newly married individuals and first-time parents to find a significant effect. However, the small substantive differences in LGS scores among newly married individuals and first-time parents found in this study suggest that any statistically significant differences would probably be substantively small.

Following Snarey's (1993) model, it may be that generative concern does not correlate with merely "biological" generativity, or having children, but does correlate with "parental generativity," or putting energy into being a parent. A meta-analysis of studies of the relationship between personality traits and social investment into roles such as spouse or parent found these relationships to be "more robust when individuals are psychologically committed rather than simply demographically associated with the investment role" (Lodi-Smith & Roberts, 2007, p. 68). Other studies have found that generative concern does not correlate with the mere presence of children but does correlate with measures of the amount of time spent with children (McKeering & Pakenham, 2000) or the extent to which parents view themselves as role models and sources of wisdom (Hart et al., 2001). A third study found

that LGS scores correlated with the quality of parents' relationships with their adult children (An & Cooney, 2006). Future studies should examine whether aspects of the parent–child relationship correlate with generative concern and the causal direction of any such correlations.

Overall, this study supports the theory that the Loyola Generativity Scale measures a trait-like characteristic, which is largely stable across the life course, but the study also supports the theory that generative concern peaks in mid-life. There is a statistically significant peak in generative concern for men, which occurs between their 30s and 60s, but it is small in magnitude. Women showed a statistically significant decline in their 60s, but no significant increase in their 20s. As the youngest women in the study were 24, there may be a rise in generative concern among women that occurs earlier than it does for men. However, a longitudinal study of young adults who aged from 19 to 23 found no significant changes in the LGS among either men or women (Lawford et al., 2005), indicating that women's scores on generative concern may have already reached their peak by the age of 19.

While the longitudinal nature of the study and the large, representative sample are strengths, there are weaknesses in the research instrument that limit the applicability of the study's findings. While the MIDUS study drew upon a nationally representative sampling frame and had over 3000 initial respondents, only an estimated 60% of those contacted responded to the first wave of MIDUS, and half of these did not participate fully in the second wave. It is possible that those who responded to both waves of the survey differ from the general population in some way that explains the stability of their generative concern and action. This seems unlikely, however, as it is difficult to imagine some characteristic that would correlate both with willingness to participate in a panel survey and stability in generative concern. Furthermore, there were no significant differences in generative concern measured in 1995 between responders and non-responders in 2005.

A more substantive problem lies with how the MIDUS survey reduced the LGS. The six items used in MIDUS all ask about the extent to which the respondent likes to help "others," without specifying whether these "others" are members of the next generation. The MIDUS scale did not include any of the items in the original LGS that had to do with leaving a legacy, such as "I feel as though my contributions will exist after I die." Perhaps the LGS contains more than one subscale, one of which measures the desire to help and teach others in general and another which measures concern with the next generation in particular. McAdams and de St. Aubin's (1992) factor analysis of the 20-item LGS did not find that the legacy items made up a separate factor. However, if future researchers discover that the legacy items on the LGS do form a separate dimension, this may explain why individuals' scores on the reduced LGS used on MIDUS did not change much over time.

While there were some problems with the sample and the measurements, this study nonetheless represents the best attempt to date to measure changes in generative concern over time. The results of this study both support and cast doubt on the assertion that generativity is a particularly important concern of midadulthood, as there does seem to be a midlife peak in generative concern, but the magnitude of this peak is small. One way of reconciling these findings with Erikson's (1963) theory is to interpret them in regards to the multi-faceted nature of generativity (McAdams et al., 1998). It may be that generative concern remains largely stable through the life course, while generative motivation and action change more dramatically over time (Stewart & Vandewater, 1998).

While the midlife peak in generative concern supports the predictions of stage theory, the small magnitude of this peak and the high rank-order stability in generative concern imply that generative concern can also be seen as a largely stable personality trait. Evidence in favor of this view includes the fact that generative concern correlates with personality traits such as agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience (de St. Aubin & McAdams, 1995; Marushima & Arimitsu, 2007; Van Hiel et al., 2006), and with agency and communion (de St. Aubin & McAdams, 1995; Peterson & Stewart, 1993, 1996; Rossi, 2001). Mean scores on generative concern do change over the life course, but mean scores on the big five personality traits change over the life course as well (McAdams & Olson, 2010). McAdams, one of the developers of the LGS, has argued for a multifaceted approach to personality, focusing not only on traits but also on strivings and narration (McAdams & Olson, 2010). The evidence of both stability and change in the LGS argues in favor of a multifaceted view of generativity. In this view, generative concern resembles a personality trait with only a small peak in midlife, while other aspects of generativity manifest as strivings and narrative that may change more dramatically across the life course, with a more substantial peak in midlife.

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