



Psychosocial Factors Promoting Personal Growth Throughout Adulthood

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Abstract

Personal growth is essential in the lives of adults of any age and is associated with a variety of well-being outcomes. Building on previous research on psychosocial factors associated with personal growth, the present study aimed to investigate whether and how psychosocial factors (including working, generativity, positive interpersonal relationships, and spirituality) could affect aging adults' personal growth longitudinally. Using three waves of Midlife in the United States data from adults with baseline ages of 20–75, two-level hierarchical linear modeling analyses were conducted to examine the effects of psychosocial factors as well as age and gender on levels and trajectories of personal growth over the span of nearly two decades. All the factors predicted levels of personal growth while positive relationships and generativity had larger effects relative to the others. In addition, some of the effects were moderated by baseline age or passage of time (i.e., aging). Particularly, the moderated effects involving positive relations were multifaceted. Among those with less positive relationships, older people's levels of personal growth remained lower than younger people over time. However, among those with more positive relationships, older people reported lower growth initially but the age difference was no longer confirmed two decades later. In other words, having positive relationships appeared to become increasingly important for aging adults to maintain higher personal growth. These findings suggest shifts in life priorities that could influence personal growth among aging adults, and the implications can be informative for future research and practice.

Keywords Personal growth · Adult development · Aging · Social relationships · Generativity

1 Introduction

Personal growth has been conceptualized as one dimension of psychological well-being which people of any age tend to emphasize as an important element for their lives (Bauer and Park 2010; Ryff 2014). Personal growth may be defined as a sense of experiencing

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continued development and realizing one's potential while being open to new experiences that potentially challenge one's views and continuing to seek self-improvement (Ryff 2014; Ryff and Singer 2008). Ryff and Singer (2008) suggested that personal growth is closest to Aristotle's conception of eudaimonia or "striving toward excellence based on one's unique potential" (p. 14). Personal growth has been found to be associated with a variety of well-being outcomes, such as resilience or ability to cope with difficult times (Bauer and Park 2010), life satisfaction (Meléndez et al. 2009), self-actualization (Bauer et al. 2015), and other aspects of psychological well-being including autonomy, environmental mastery, positive relations with others, purpose in life, and self-acceptance (Ryff 2014; Ryff and Keyes 1995).

Another fundamental conceptualization of growth has come from the literature on post-traumatic growth (Tedeschi and Calhoun 2004; Jayawickreme and Blackie 2014). Tedeschi and Calhoun (2004) defined posttraumatic growth as positive psychological change (i.e., growth) achieved after struggling to cope with highly stressful or threatening experiences. In this definition, posttraumatic growth is not a simple return or recovery to baseline psychological conditions before the traumatic experience, but rather an improvement or transformation beyond the baseline levels and can be manifested in multiple ways (e.g., increased appreciation of life, changed priorities, improved social relationships). The unique facet of posttraumatic growth as compared to other conceptualizations of growth (e.g., Ryff and Singer 2008) is that posttraumatic growth would require struggles with life crises (e.g., life-threatening diseases, losses of close family and friends, physical and sexual assaults, combat) that could shatter one's fundamental views of life and even involve high levels of psychological distress before such a transformation can be experienced (Tedeschi and Calhoun 2004). However, as the manifestation of posttraumatic growth overlaps with multiple dimensions of psychological well-being (e.g., purpose in life, positive relations with others; Ryff and Singer 2008), some other researchers such as Joseph and Linley (2005) suggested that similar positive outcomes or growth could be achieved without experiencing traumatic experiences (even though traumatic experiences may facilitate such growth) (Jayawickreme and Blackie 2014). While acknowledging the considerable contribution of the literature on posttraumatic growth to improving the understanding of growth for adults who have gone through highly stressful experiences, the present study adopted the conceptualization of personal growth (Ryff and Singer 2008) due to its focus on addressing growth for the general adult population.

Growth, which is often equated with gains, may be thought to only concern younger people as older people are expected to experience primarily loss (Bauer and Park 2010). In addition to cross-sectional research suggesting that younger people tended to report higher levels of personal growth than older people (Ryff and Singer 2008), a longitudinal study confirmed that personal growth as well as purpose in life declined with age (over approximately 10 years) (Springer et al. 2011). Related to this trend, Ebner et al. (2006) indicated that younger adults on average had a stronger goal orientation toward growth (i.e., striving for gains) while orientations toward maintenance and prevention of losses were more prevalent for middle-aged and older adults. Moreover, the authors showed that though goal orientation towards growth was not associated with subjective well-being for any age group, goal orientation toward maintaining abilities was associated with higher subjective well-being for older adults but not for younger adults. However, reviewing the findings from Ebner et al. (2006) and other cross-sectional studies with similar results, Bauer and Park (2010) suggested that these findings did not necessarily imply that gain or growth is not important for older adults as well. The authors emphasized that while older adults had fewer gain-oriented and more loss-oriented goals relative to younger people,

they still had at least as many gain-oriented as loss-oriented. Bauer and Park (2010) also noted that growth is not necessarily equivalent to gain as growth can involve not only acquiring and accumulating new experiences but also deepening one's psychosocial experiences (i.e. pursuing intrinsic meaning); thus, older adults might emphasize the latter type of goals to enrich their inner experiences. In addition, similar to studies on gain-oriented goals, previous research indicates that even though older adults had lower personal growth than younger people, their levels of personal growth appeared to remain relatively high compared to other aspects of eudaimonic or psychological well-being (Bauer and Park 2010; Ryff and Singer 2008). Taken together, personal growth seems to remain important through later life; yet, the factors leading to personal growth may differ between different age groups or change with age.

2 Factors that Potentially Influence Personal Growth During Adulthood

Previous research has suggested that during adulthood personal growth may be associated with a number of factors including working, generativity, personal relationships, and spirituality (Bauer and Park 2010; Ryff 2014; Villar 2012).

Work (which is defined in the present study as working for pay) potentially influences personal growth as well as other dimensions of psychological well-being (Lindfors et al. 2006). Using data from men and women aged between 32 and 58 years who were partnered and had at least one child, Lindfors et al. (2006) found that paid work was associated with higher personal growth for men and women; whereas, unpaid work was related to lower levels of self-acceptance and environmental mastery for women but not to personal growth for either gender. However, these results may need to be interpreted cautiously as the partnership and parenthood statuses of their participants might confound the results. In addition to its (apparent) importance for young and middle-aged adults, paid work may remain important for personal growth in late adulthood. Fasbender et al. (2014) indicated that retirees who perceived their own aging process as personal growth were more likely to work after their retirement, which suggested that the retirees appeared to view working as a potential source for personal growth. As a possible reason that personal growth and purpose in life could decline with age, Ryff and Singer (2008) emphasized the societal challenge of "structural lag" or mismatch between people's lives and social structure (Riley and Riley Jr. 1994): while older adults today have healthier and longer lives than those in previous times, they have not been provided with meaningful roles and opportunities during their extended lives in their society after ending their role as workers (i.e., retirement).

In addition, as suggested in Erikson's (1950) theory of psychosocial development, generativity (caring for and contributing to the next generation) may be crucial for personal development, particularly during middle adulthood. Generativity has been posited as a construct indicating psychosocial or personal growth for aging adults (Ardelt et al. 2010; Moore and Rosenthal 2015). Whereas relatively few studies (e.g., Grossbaum and Bates 2002) examined a direct relationship between generativity and personal growth, some studies such as An and Cooney (2006) and Rothrauff and Cooney (2008) showed that generativity was associated with a latent measure of psychological well-being, which consisted of multiple well-being measures including personal growth, among adults with or without children. Hill et al. (2011) also indicated that change in prosocial goals (which seemed to be precursors to generative goals) during college predicted levels of generativity as well as personal growth 17 years later.

In addition, Peterson and Duncan (2007) showed an association between midlife women's generativity and more positive feelings about life and aging a decade later. Villar (2012) suggested that generative activities could promote maturity and personal growth in older ages, though this area of research remains to be further developed. Taken together, these studies suggest generativity continues to be an important factor for personal growth through late adulthood.

Positive interpersonal relationships (i.e., satisfying and trusting relationships with other people) are another factor associated with personal growth (Ryff 2014; Ryff and Keyes 1995). Social ties may be one of the basic psychological needs necessary for personal growth and well-being (Ryan et al. 2008), and their importance for personal growth may increase later in life. As Socioemotional Selectivity Theory (Carstensen et al. 2003) suggests, aging adults tend to become more inclined to prioritize meaningful relationships and goals due to being aware of their limited time of life. Reviewing these previous studies, Bauer and Park (2010) anticipated that aging adults would focus more on intrinsically-motivated human concern such as cultivating one's meaningful relationships and experiences. Thus, fostering positive relationships with others can be a potential foundation or source for personal growth especially in later life. While positive relationships and personal growth have been found to be associated (and distinctive) constructs (Ryff 2014; Ryff and Keyes 1995), few studies have specifically addressed change with age in the links of positive relationships with personal growth. How positive interpersonal relationships can affect personal growth longitudinally is an area where more research is needed.

Spirituality is also associated with personal growth (Ryff 2014). Although spirituality (psychological experiences of religious or other activities seeking knowledge of the world or God) has been considered a similar construct to religiosity (the interpersonal and institutional aspect of religious activities or activities to gain an understanding of God and the world), spirituality has been found to be an independent, more consistent predictor for personal growth and related psychosocial constructs (Greenfield et al. 2009; Ivtzan et al. 2013). Wink and Dillon (2003) suggested that spirituality might become salient in the second half of adulthood due to maturational experiences. Their research found that spirituality in late middle adulthood was associated with personal growth in late adulthood as well as indicated a concurrent association between spirituality and personal growth within late adulthood. In contrast, Greenfield et al. (2009) found that spiritual perceptions predicted personal growth and other dimensions of psychological well-being regardless of the age of their adult sample. Thus, further research is warranted to better understand potential change or stability of associations between spirituality and personal growth with aging.

For each of these psychosocial factors, the literature lacks sufficient studies that investigate potential gender differences in their effects on personal growth. Despite some suggestion of similar trends of both older women and men having lower personal growth than their younger counterparts (Ryff and Singer 2008), explicit examination of potential gender effects is warranted. Although two such studies (Greenfield et al. 2009; Lindfors et al. 2006) conducted gender comparison analyses for the associations between psychosocial factors (i.e., spirituality and paid work, respectively) and personal growth (and did not find gender difference in their associations), evidence from longitudinal studies is needed to draw firm conclusions about those gender similarities or differences.

3 Study Objectives and Research Questions

While previous studies suggested multiple psychosocial factors potentially influencing personal growth, few studies if any have examined the effects of multiple factors together on personal growth and its trajectories (rather than simple change between two time points). The present study analyzed three waves of longitudinal data collected over the span of nearly two decades and aimed to investigate the trajectories of personal growth while comparing the effects of multiple psychosocial factors on personal growth over time. This study intends to contribute to integrating previous findings on potential factors that promote psychological well-being, specifically, personal growth among women and men of different ages.

The research questions of the present study were as follows:

Research Question 1 (RQ1): Does personal growth change over the span of two decades? And specifically, does it depend on the baseline age or gender of individuals?

Research Question 2 (RQ2): Do psychosocial factors including working, generativity, positive interpersonal relationships, and spirituality predict personal growth and its trajectories? If so, which predictors have larger effects on personal growth? Do time effects (i.e., aging) as well as the baseline age and gender of individuals moderate the effects of the predictors for personal growth?

For RQ1, based on previous findings, it was hypothesized that while younger people would have higher personal growth than older people, personal growth would continue to decline over time regardless of their baseline age and gender. For RQ2, all of the psychosocial predictors were expected to have significant effects on personal growth across ages. It was also hypothesized that the effects of generativity, positive relationships, and spirituality would be greater for personal growth among older people and increase over time among those of any age, due to the apparent intrinsic meaningfulness of these factors. Despite the scarcity of evidence on gender differences in associations between the psychosocial factors and personal growth, it was expected that findings would be similar for women and men in general as the role of these psychosocial factors for personal growth does not seem to be gender-specific.

4 Method

The publicly available datasets from three waves of the Midlife in the United States study (MIDUS; Brim et al. 2016; Ryff et al. 2012, 2017) were used for the present study. MIDUS aimed to examine psychosocial and behavioral factors and their role for health and well-being among a national adult sample of Americans of different ages (University of Wisconsin-Madison, Institute on Aging 2011). This research project collected responses from those aged 20–75 using a probability sampling method through a phone interview combined with a self-administered survey in 1995–1996 (MIDUS1; N = 7108, which included the main national sample and subsamples such a twin pairs sample and over-samples of select metropolitan areas) and conducted the second and third waves of

studies following up with the original respondents in 2004–2006 (MIDUS2; $N = 4963$) and in 2013–2014 (MIDUS3; $N = 3294$) respectively.

4.1 Data

For the analyses of the present study, data from respondents who responded to measures of interest at one or more waves were included so that all available data would be used with maximum likelihood (ML) estimation method (as discussed in detail later). The numbers of respondents included for this study were 6432 for MIDUS1, 4790 for MIDUS2, and 3240 for MIDUS3. The descriptive information for the selected respondents is shown in Table 1. Approximately 90% of the respondents identified their ethnicity as White, and 31.8% graduated from a 4-year college or earned a bachelor's or equivalent degree.

4.2 Measures

4.2.1 Personal Growth

As the outcome measure, the shorter 3-item version of the original scale of personal growth (Ryff 1989; Ryff and Keyes 1995) was used for MIDUS studies with consideration for the time and costs spent in the national surveys. Respondents were asked how much they agreed with three statements including “For me, life has been a continuous process of learning, changing, and growth”, “I think it is important to have new experiences that challenge how I think about myself and the world”, and “I gave up trying to make big improvements or changes in my life a long time ago.” Responses were given on a 7-point Likert-type scale ranging from ‘strongly agree’ (1) to ‘strongly disagree’ (7). Scores for the first and second items were reverse-coded so that higher scores indicated having higher levels of personal growth. The scores for the three items were summed to create an overall scale of personal growth. When an item was missing, the remaining items were averaged and the mean value was imputed to calculate the overall score. The scale alphas were .56 at MIDUS1, .55 at MIDUS2, and .54 at MIDUS3, which were low though such low alphas would be expected for short-item scales measuring a relatively broad construct (John and Benet-Martinez 2000).

4.2.2 Time Variables

As the period between each pair of successive waves was approximately 9 years, *wave* was used as a continuous time variable which was centered at the first wave (i.e., $wave = 0$ for MIDUS1). In addition to the linear time variable, its squared variable (*wave-squared*) was also included to examine whether there were quadratic effects of time for personal growth.

4.2.3 Demographic Characteristics

Baseline age (at MIDUS1), gender, relationship status (i.e., marital/partnership status), parenthood status, and educational level were included as predictors or covariates so that their effects would be controlled for in estimating the effects of the psychosocial predictors. The information at MIDUS1 was used for baseline age, gender, and educational level (i.e., time invariant), and responses at all three waves were used for relationship status and

Table 1 Descriptive statistics of MIDUS respondents included for the present study

Variables	Gender	MIDUS1	MIDUS2	MIDUS3	Gender differences
		(N = 6432)	(N = 4790)	(N = 3240)	
		Mean (SD)/%	Mean (SD)/%	Mean (SD)/%	
Age		46.8 (12.9)	55.6 (12.4)	63.7 (11.3)	No gender difference
Gender (female %)		52.4% ^a	53.8% ^{ab}	55.2% ^b	–
Relationship status (Married or living with partner)	Female	66.7% ^c	68.4% ^d	63.1% ^e	Gender differences at all three waves
Parenthood status (having any children)	Male	78.0% ^f	82.0% ^g	80.1% ^f	
	Female	83.8% ^h	87.9% ⁱ	88.5% ⁱ	Gender differences at all three waves
Work status (currently working)	Male	80.0% ^j	86.0% ^k	86.2% ^k	
	Female	68.8% ^l	58.3% ^m	49.1% ⁿ	Gender differences at all three waves
	Male	81.0% ^o	70.9% ^p	59.2% ^q	
Personal growth	Female	17.9 ^r (3.2)	17.4 ^s (3.2)	17.5 ^s (3.0)	Gender differences at MIDUS2 and MIDUS3
	Male	17.9 ^t (3.0)	16.9 ^u (3.2)	17.1 ^u (3.1)	
Generativity	Female	17.1 ^v (3.8)	17.1 ^v (4.0)	17.0 ^w (4.0)	Gender differences at MIDUS1 and MIDUS3
	Male	16.8 ^x (3.8)	16.9 ^y (3.7)	16.6 ^z (3.8)	
Positive relations	Female	16.6 ^{aa} (4.0)	17.1 ^{bb} (3.8)	17.2 ^{bb} (3.6)	Gender differences at all three waves
	Male	15.8 ^{cc} (4.1)	16.4 ^{dd} (3.8)	16.3 ^{cc} (3.8)	
Spirituality	Female	6.5 ^{ff} (1.5)	6.7 ^{gg} (1.4)	6.8 ^{gg} (1.4)	Gender differences at all three waves
	Male	5.8 ^{hh} (1.7)	6.1 ⁱⁱ (1.7)	6.1 ⁱⁱ (1.8)	

The above means and percentages are those of all participants at each wave; different superscripts next to the means indicate statistically significant differences across waves among only those who completed all three waves of measures. Thus, the means and percentages that were tested may differ from those in the table

parenthood status (i.e., time variant). For the analyses of the present study, baseline age (in years) was centered at 45 years old (i.e., median age at MIDUS1), after which the variable was rescaled by dividing it by 10 so that one unit would correspond to 10 years (aiming to make its coefficient more interpretable in addressing differences in effects by age). By recoding the original responses, dichotomous variables were created for the other variables: gender (male = 0 or female = 1); relationship status (married or living with partner = 1 or not = 0); parenthood status (having any biological or non-biological child(ren) = 1 or not = 0); educational level (graduating from a 4-year college (i.e., earning a bachelor's or equivalent degree) = 1 or not = 0).

4.2.4 Work Status

Respondents were asked about their current work status. A dichotomous variable was created indicating currently working (i.e., currently working for pay or self-employed) = 0 as the reference condition or currently not working = 1.

4.2.5 Generativity

The Loyola Generativity Scale (McAdams and de St. Aubin 1992) was employed in MIDUS. Respondents were asked how much they agreed with a set of six questions including "Others would say that 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 people." Responses were given on a 4-point Likert-type scale ranging from 'a lot' (1) to 'not at all' (4). These response scores were first reverse-coded and then summed to create an overall scale of generativity indicating that higher scores indicate higher levels of generativity. When an item was missing, the completed items were averaged and the mean value was imputed to calculate the overall score. The scale alphas were .84 at MIDUS1, .85 at MIDUS2, and .85 at MIDUS3.

4.2.6 Positive Relations with Others

The shorter 3-item version of the original scale of positive relations with others (Ryff 1989; Ryff and Keyes 1995) was used for MIDUS studies. Respondents were asked how much they agreed with three statements including "Maintaining close relationships has been difficult and frustrating for me", "People would describe me as a giving person, willing to share my time with others", and "I have not experienced many warm and trusting relationships with others." Responses were given on a 7-point Likert-type scale ranging from 'strongly agree' (1) to 'strongly disagree' (7). Scores for the second item were reverse-coded so that higher scores indicated having higher levels of positive relations. The scores for the three items were summed to create an overall scale of positive relations with others. When an item was missing, the remaining items were averaged and the mean value was imputed to calculate the overall score. The scale alphas were .59 at MIDUS1, .63 at MIDUS2, and .62 at MIDUS3, which were low, possibly due to the short scale for the relatively broad construct of positive relations with others.

4.2.7 Spirituality

The 2-item scale of spirituality was adopted in MIDUS2 and MIDUS3 (Ryff et al. 2012). However, as MIDUS1 included the same two items of spirituality used in the later two waves, the scale for MIDUS1 was created for the analysis of the present study following the procedure of the later waves for creating the scale. Respondents were asked how much they agreed with two questions: (1) “How spiritual are you?” and (2) “How important is spirituality in your life?”. Responses were given on a 4-point Likert-type scale ranging from ‘very’ (1) to ‘not at all’ (4). These response scores were first reverse-coded and then summed to create an overall scale of spirituality indicating that higher scores show having higher levels of spirituality. When one of the items was missing, the same score as the other item was imputed to calculate the overall score in the later two waves of MIDUS study (Ryff et al. 2012, 2017). This procedure was adopted in creating the scale for MIDUS1 for the present study. (Among those who completed any of these two items, this imputation of missing values was implemented for only fewer than 2% of participants at any of the three waves.) The scale alphas were .91 at MIDUS1, .92 at MIDUS2, and .92 at MIDUS3.

The descriptive statistics of these measures are summarized in Table 1. The scores of personal growth, generativity, positive relations with others, and spirituality were standardized in collective data from the three waves to be used for subsequent analyses aiming to make the results of estimated effects comparable and allowing for ease of interpretation.

4.3 Analytic Strategy

Using the measures described above, the main analysis was conducted. In addition, a secondary analysis was conducted in order to address the issue of lower internal consistency of the positive relations scale.

4.3.1 Main Analysis

A two-level hierarchical linear model was analyzed with maximum likelihood (ML) estimation method by using IBM SPSS version 25 (IBM 2018). In the model, three waves of measurements (Level 1) were nested within individual participants (Level 2). For the analyses, a “long” data file was created in which a set of the measures were aligned for each combination of participant ID and measurement point (i.e., wave). ML method allows all available data to be used to produce estimates for the two levels, which would be preferable to traditional approaches to dealing with missing data, such as listwise deletion (i.e., using data only from those who completed all three waves of measurements), that would produce more inflated standard errors or more biased parameter estimates (Heck et al. 2014).

The individual growth trajectories in the time-variant outcome of personal growth were fitted in the level-1 model. At level-1, in addition to the linear and quadratic time variables, time-variant predictors including work status, generativity, positive relations, and spirituality as well as the covariates of relationship status and parenthood status were entered. At level-2, time-invariant demographic measures (i.e., baseline age, female, educational level) were entered. The intercept indicated the average score in personal growth with reference conditions (i.e., age 45 at wave 0, male, currently working, not married or living with partner, not having any children, not graduating from college, average levels of other

predictors), and time slopes included linear and quadratic change rates over time in growth trajectories. The intercept and the linear time slope were allowed to vary among individuals (i.e., being treated as random effects).

In addition, the two-way interaction terms of wave, age, and female with each of the other level-1 predictors or level-2 control variables were entered into the model to examine these variables as potential moderators for the individual's rate of change or the effects of the other variables for personal growth. In the final model, only significant interaction terms (i.e., wave by age, wave by female, wave by positive relations, wave by spirituality, age by work status, and age by positive relations) were kept; non-significant terms including all other interactions of wave, age, and female were removed. For the significant interactions of wave, post hoc analyses were conducted by using alternative hierarchical linear models containing the linear and quadratic time variables re-centered at MIDUS3 (instead of the original ones centered at MIDUS1) as well as the other main effects and interaction terms in the final model. These analyses aimed to examine the effects of covariates or predictors with the specific value or condition used to re-center the variables (Hoffman 2015) or determine whether significant (or non-significant) differences observed at MIDUS1 (i.e., the main effects in the final model) remained significant (or non-significant) in the alternative models for the effects at MIDUS3 (i.e., the specific condition used to re-center the time variables).

4.3.2 Additional Analysis

Considering the lower internal consistency of the positive relations scale, an additional hierarchical linear model was constructed by including the three individual items of the positive relations scale described earlier as three independent predictors instead of the overall scale. This additional analysis aimed to confirm whether the results from the main analysis were affected by the use of the positive relations scale with lower internal consistency. Although the scale alphas of personal growth were also lower, three items of personal growth could not be analyzed as dependent variables simultaneously in the hierarchical linear model. As selecting one of the items as dependent variable would be arbitrary and shade the meaning of the analysis, the scale of personal growth was kept as the dependent variable, which is discussed later as a limitation of the present study.

5 Results

5.1 Main Analysis

For the main analysis (using the positive relations scale), the estimates produced in the final model of hierarchical linear modeling are summarized in Table 2. While the effects of relationship status and parenthood status were not significant, those of all the other demographic variables, psychosocial predictors, and interactions included in the final model were significant. As the outcome variable of personal growth as well as predictors (except the time variables, age, and the dichotomous variables of female, relationship status, parenthood status, educational level, and work status) were standardized, their effect size could be inferred relatively easily from the coefficients of the fixed effects.

Table 2 Two-level hierarchical linear model predicting personal growth (final model)

Effect	Coef.	S.E.	DF	<i>t</i> test
<i>Fixed effects</i>				
Intercept	0.193***	0.029	9206.826	6.703
Wave (MIDUS1 = 0)	-0.492***	0.029	5822.268	-17.125
Wave-squared	0.168***	0.014	4213.212	12.367
Age at MIDUS1 (10 year per unit)	-0.095***	0.011	8873.544	-8.975
Gender (female)	-0.050*	0.022	7135.920	-2.291
Education (college graduate)	0.158***	0.020	5633.576	7.955
Relationship status (married/living with partner)	-0.032	0.019	11,856.098	-1.677
Parenthood status (having any children)	-0.025	0.025	9731.660	-1.001
Non-working status	-0.080***	0.019	11,973.361	-4.101
Generativity	0.220***	0.009	11,816.067	25.571
Positive relations	0.291***	0.010	8037.665	28.455
Spirituality	0.094***	0.010	7946.009	8.989
Wave × age	0.029***	0.007	4622.315	3.940
Wave × gender	0.052**	0.017	3987.182	3.070
Wave × positive relations	0.045***	0.009	5225.602	5.126
Wave × spirituality	-0.024**	0.009	4850.878	-2.708
Age × non-working status	0.032*	0.014	12,061.705	2.202
Age × positive relations	0.027***	0.006	11,538.508	4.204
<i>Random effects (variances)</i>				
Intercept	0.256***	0.011	(Wald Z: 23.834)	
Wave	0.013†	0.007	(Wald Z: 1.952)	

*** $p < .001$ (two-tailed); ** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); † $p < .05$ (one-tailed); generativity, positive relations, and spirituality as well as personal growth were standardized; level-1 covariance structure: diagonal

5.1.1 Time and Age Effects

The main effects of both linear and quadratic time variables were significant ($p < .001$ for both). Whereas the effect of linear time variable was negative ($-.492$), that of quadratic time variable was positive (.168), which indicate that the trajectory in personal growth started out decreasing but was convex. The effect of age (per 10 years) was negative ($-.095$, $p < .001$), indicating that older people reported lower levels of personal growth. In addition, there was a significant two-way interaction of the linear time variable (i.e., wave) with age ($p < .001$) as well as other interactions of wave and of age discussed later. In order to contrast potential age differences, the trajectories for those of two specific baseline ages (i.e., age 35 and 55 at MIDUS1) are graphically depicted in Fig. 1a. The slopes over the two periods between the waves were more positive for the 55-year-old (who were in their 70 s at MIDUS3) than those of the 35-year-old (who were in their 50 s at MIDUS3), and the age difference in personal growth (with the younger reporting a higher level of personal growth) appeared to decrease over time. The post hoc analysis of this model, which contained the time variables re-centered at MIDUS3 as well as the other main effects and interactions included in the final model, indicated that the main effect of age was significant ($-.037$, $p < .05$; the detailed results are not reported here). Thus, the gap between

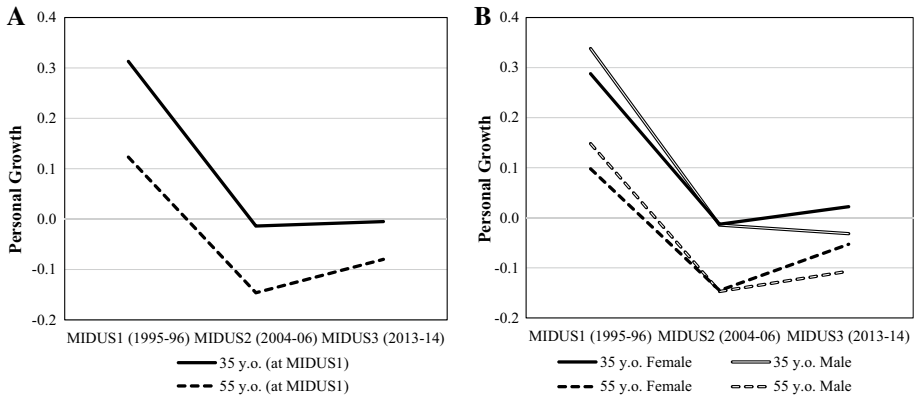


Fig. 1 Trajectories in personal growth for those of different ages (i.e., 35-year-old vs. 55-year-old) (a) and those of different ages and genders (b) with the reference conditions of the predictors: currently working, having average levels of generativity, positive relations with others, and spirituality; using the average scores of two conditions each for gender (for a), relationship status, parenthood status, and educational level

younger and older individuals (i.e., the effect of age by two units or 20 years) shrunk from .190 to .074 over the 18 years of the study.

5.1.2 Gender Effects

Whereas the main effect of gender was negative ($-.050, p < .05$), the interaction of wave and gender was positive ($.052, p < .01$). This indicates that although women initially had lower levels of personal growth (controlling for the other covariates and predictors), their levels became more positive over time compared to men. The trajectories for women and men (of different ages) are graphically depicted in Fig. 1b. For the pair of each age, over the 18 years, the women appeared to eventually exceed the men in personal growth. A post hoc hierarchical linear model, which contained the time variables centered at MIDUS3 as well as the other main effects and interactions included in the final model, indicated that the main effect of gender became positive but marginal ($.055, p = .064$; the detailed results are not reported here), which means that women had marginally higher levels of personal growth than men at MIDUS3.

No other interactions of gender were found, which suggested that the effects of the predictors for personal growth were not moderated by gender.

5.1.3 Effects of Predictors

As shown in Table 2, significant main effects were found for all of the predictors including work status, generativity, positive relations, and spirituality ($p < .001$ for all). Among the standardized predictors, positive relations and generativity showed relatively large effects, .291 and .220 respectively, for standardized levels of personal growth. In addition to the interactions of wave and age and of wave and gender discussed earlier, there were significant interactions of wave with positive relations ($p < .001$) and with spirituality ($p < .01$) and of age with work status ($p < .05$) and age with positive relations ($p < .001$).

5.1.4 Age Difference by Work Status

The main effect of non-working status was negative ($-.080, p < .001$), but the interaction of age and non-working status was positive ($.032, p < .05$). This suggests that those who were currently not working reported lower levels of personal growth, but the effect of work status was smaller for the older. A post hoc hierarchical linear model, which contained the age variable centered at 60 (which was then rescaled by dividing it by 10) as well as the other main effects and interactions included in the final model, indicated that the main effect of non-working became non-significant ($p = .183$; the detailed results are not reported here), which means that non-working status was not negatively associated with personal growth for those aged 60 (or older).

5.1.5 Age Difference by Positive Relations and Their Effect on Trajectories

The two interactions involving positive relations were significant: age by positive relations ($.027, p < .001$); wave by positive relations ($.045, p < .001$). The effect of age by positive relations was positive indicating that the effect of positive relations (at MIDUS1) was stronger for older people than younger adults. In addition, that of wave by positive relations was positive indicating that the effect of positive relations on personal growth increased over time. In order to examine this combination of interaction effects, the trajectories of younger and older people (i.e., baseline 35-year-old and 55-year-old respectively) with low and high levels (i.e., one standard deviation below and above the mean) of positive relations are graphically depicted in Fig. 2. At MIDUS1, whereas younger people had higher personal growth than their older counterparts with the same levels of positive relations, the age difference was smaller for those with the high level of positive relations (i.e., the effect of age by positive relations). In addition, the increasing effect of positive relations over time (i.e., wave by positive relations) appeared to help reduce the age difference in personal growth. For those with the low level of positive relations, the age difference (i.e., the younger having a higher level of personal growth) appeared to decrease but remain

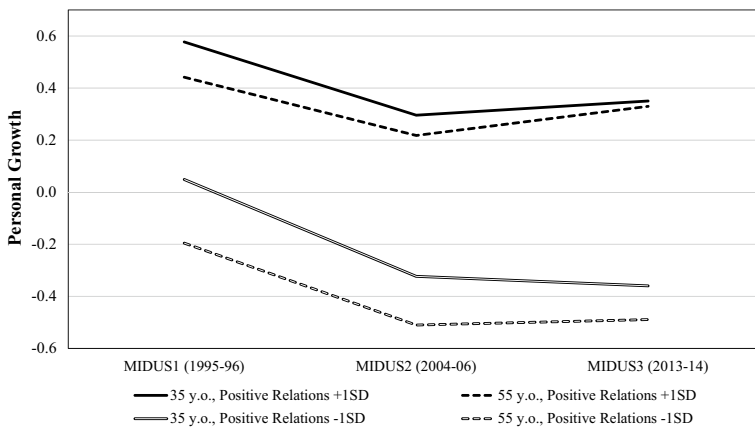


Fig. 2 Trajectories in personal growth for those of different ages with high and low levels of positive relations with others (with reference conditions: currently working and having average levels of generativity and spirituality); using the average scores of two conditions each for gender, relationship status, parenthood status, and educational level

over 18 years; whereas, for those with the high level of positive relations, the age difference appeared to eventually disappear over time. The results of the further post hoc analysis with hierarchical linear models confirmed this interpretation. Three post hoc models contained the time variables re-centered at MIDUS3, the variable centered at (1) low (i.e., one standard deviation below the mean), (2) average, or (3) high (i.e., one standard deviation above the mean) level of positive relations, and the other main effects and interactions included in the final model. Whereas the age effect was significant in the models with the variable centered at the average level ($p < .05$) or the low level of positive relations ($p < .001$), the effect of age was not significant for the high level of positive relations ($p = .553$) at MIDUS3. As another post hoc model with the variables centered at MIDUS1 and re-centered at the high level of positive relations indicated the negative age effect at MIDUS1 ($-.068, p < .001$), these results suggested that if the older individuals maintained the high level of positive relations, their level of personal growth was initially lower but became as high as the younger counterparts over 18 years.

5.1.6 Trajectories for Different Levels of Spirituality

The main effect of spirituality was positive ($.094, p < .001$), but the interaction of wave with spirituality was negative ($-.024, p < .01$), which indicates that those with higher levels of spirituality reported higher levels of personal growth. Yet, the effect of spirituality decreased over time. The post hoc analysis of this model, which contained the time variables re-centered at MIDUS3 as well as the other main effects and interactions included in the final model, indicated that the main effect of spirituality remained positive and significant ($.048, p < .001$; the detailed results are not reported here), which means that those with higher levels of spirituality still had higher levels of personal growth than those with lower levels of spirituality at MIDUS3.

5.2 Additional Analysis

The results of additional analysis using the three individual items of positive relations as independent predictors instead of the scale were similar to those of the main analysis with significant time, age, and gender effects, main effects of work status, generativity, spirituality, and interactions of wave by age, wave by gender, wave by spirituality, and age by work status (detailed results provided upon request). For the three items of positive relations (whose scores were standardized): “Maintaining close relationships has been difficult and frustrating for me” (item 1), “People would describe me as a giving person, willing to share my time with others” (item 2), and “I have not experienced many warm and trusting relationships with others” (item 3), the main effects were significant ($p < .001$) for item 1 ($-.104$), item 2 ($.176$), and item 3 ($-.146$). As higher scores of items 1 and 3 would indicate less positive relations, the directions of all three items were consistent with that of the positive relations scale in the main analysis. All interactions of wave by these three items were significant; however, the directions of the effects were inconsistent: whereas the effects became stronger over time for item 2 ($.020, p < .05$) and item 3 (in the negative direction; $-.056, p < .001$), the negative effect of item 1 became weaker or less negative over time ($.025, p < .05$). As the correlations among interaction terms of these three items with wave were small to moderate, lower than .6, multicollinearity did not seem to be the case for these inconsistent results. In addition, the interaction of age by item 1 was significant ($-.035, p < .001$, which means a more negative effect for older people) though the

interactions of age by item 2 or item 3 were not significant. Thus, although some inconsistent results among interaction effects were found for these three items, their overall effect seemed to be similar to the effect of the positive relations scale in the main analysis.

6 Discussion

The present study aimed to examine the longitudinal effects of multiple psychosocial factors on personal growth among aging women and men. As one of its strengths, this study jointly investigated the effects of multiple psychosocial factors on the trajectories of personal growth, using three waves of data collected over the span of two decades. The results of the present study partially supported the hypotheses.

6.1 Trajectories of Personal Growth for Women and Men of Different Ages

While trajectories in personal growth decreased during the first decade, personal growth declined more slowly or even started increasing during the second decade. As expected, older people had lower personal growth than younger people; however, the trajectories differed between genders. While women initially had lower levels of personal growth, the trajectories in personal growth among both younger and older women became more positive (i.e., decreasing less or increasing more) having (marginally) higher levels of personal growth two decades later as compared to their male counterparts. Consistent with previous findings (Ryff and Singer 2008; Springer et al. 2011), our findings indicated that personal growth appeared to decline overall over the span of two decades when simply comparing its levels at MIDUS1 and MIDUS3; yet, in contrast to previous findings, personal growth trajectories varied among different ages and genders while indicating general trends of more stability or even increase in the later decade.

The results also seemed to show cohort effects. In Fig. 1, while 35-year-olds at MIDUS1 approached nearly the same age as the baseline age of the older group (i.e., 55 years old) in the approximately two decades until MIDUS3, the level of personal growth of this younger group at MIDUS3 was lower than the older group at the same age at MIDUS1. A possible explanation for this cohort difference may be related to the relatively high levels of personal growth for people of any ages at MIDUS1 (in 1995–1996), specifically this could be speculated partly due to the economic prosperity in the 1990s. This atmosphere facilitating personal growth may have dissipated over two decades due to the economic recessions of 2001 and 2007–2009 (National Bureau of Economic Research 2018). If this was the case, the actual age effects on decline in personal growth may have been smaller than they appeared while there may still have been some cohort difference from MIDUS1 to MIDUS3. In addition, such a historical or economic impact may have been less severe for the personal growth of women (possibly due to having been less advantaged even at the time of the economic prosperity) considering their less steeply declining trajectories than men's. Additional studies are needed to investigate historical and other contextual influences.

6.2 Implications of Psychosocial Factors for Personal Growth

In terms of age implications, only the findings for positive interpersonal relationships fully supported the hypothesis of a greater effect on personal growth for older people and

increasing effects with age; however, those for work, generativity, and spirituality also suggest some interesting implications. As expected, gender did not moderate the effects of any of the psychosocial factors for personal growth, suggesting that women and men experience similar influences on personal growth.

6.2.1 Interpersonal Relationships

Positive interpersonal relationships appeared to affect personal growth in multiple ways. In addition to their relatively large overall effect, the effects of positive relationships on personal growth were greater for older people and increased over time as hypothesized. Whereas older people started with lower personal growth at baseline, their levels of personal growth became comparable to those of younger people over the span of two decades when they had high levels of positive interpersonal relationships. These results bolster the research on the longitudinal protective role of interpersonal relationships for personal growth among aging adults. The findings seem to correspond to Socioemotional Selectivity Theory (Carstensen et al. 2003), which highlights the importance of maintaining meaningful relationships for aging adults. The shift in life priorities with age (i.e., prioritizing meaningful relationships over other goals) may in turn lead to changing influences on personal growth (e.g., experiencing a sense of growth while cultivating personal relationships rather than while accomplishing some solitary or self-focused goals). In addition, having more positive relationships was associated with reduced decline or even increase in personal growth over time, implying that high quality of interpersonal relationships may counteract the general tendency of decline in personal growth with age. These findings highlight the potential benefits of enhancing the quality of interpersonal relationships for continued personal growth among aging adults.

6.2.2 Work

Though the effect of work on personal growth did not change over time, some differences among age cohorts were observed in this study. Work appeared to be more important for personal growth among younger people, and interestingly, work status did not seem to matter for people aged 60 or older at MIDUS1 (i.e., retirement age in the 1990s). However, as the negative effect of non-working status remained consistent over two decades for younger people (e.g., those aged 45 at MIDUS1, who were nearly 65 at MIDUS3) indicating a potential cohort difference. This raises the question of what other factors (possibly, historical and economic factors) led to the varying effects of working on personal growth among the participants of specific ages, highlighting an area for further exploration.

6.2.3 Generativity

Generativity also appeared to remain influential for personal growth throughout adulthood. In line with previous research, indicating potential short- and long-term benefits of prosocial orientations for the personal development and well-being of younger adults (Hill et al. 2010), these findings suggest that generativity involving prosocial orientations or behaviors may be particularly beneficial for personal growth from early adulthood through late adulthood. Serving others may lead to enhancing personal growth for adults of any age.

6.2.4 Spirituality

Spirituality appeared to become less influential for personal growth over time in contrast to the hypothesized effect. This also seems to contradict Wink and Dillon (2003) who suggested the potentially increased importance of spirituality for personal growth during middle and late adulthood. One possible explanation for the decreasing effects of spirituality on personal growth is reflected in the results for the effects of positive relationships. That is, engaging in solitary activities can become less influential for personal growth as people age. While spirituality can help aging adults better understand the world (Ivtzan et al. 2013), they may come to prioritize interpersonal activities over spiritual activities. In addition, considering the relatively large effects of positive interpersonal relationships and generativity, involving other people may be a key element that facilitates personal growth throughout adulthood.

6.3 Implications of Findings of the Present Study Beyond the General Adult Population

While the focus of the present study was on longitudinal associations between psychosocial factors and personal growth for the general adult population, an important question to be addressed is whether the psychosocial factors examined in this study also have positive implications for promoting psychological growth for clinical populations. The literature on posttraumatic growth seems to help address this question including adults with traumatic experiences such as life-threatening diseases (e.g., HIV/AIDS; Rzeszutek 2018), spinal cord injury (Kunz et al. 2018), and cancer (Bellizzi 2004; Husson et al. 2017). Major domains of posttraumatic growth conceptualized by Tedeschi and Calhoun (2004) actually overlap psychosocial factors addressed in the present study, particularly positive relationships and spirituality. While Tedeschi and Calhoun (2004) treated improved positive relationships and spiritual development as major domains or manifested outcomes of posttraumatic growth, it may also make sense to interpret these psychosocial factors as facilitators for experiencing psychological growth while undergoing traumatic experiences. Rzeszutek (2018) also highlighted the importance of receiving social support in interpersonal relationships for maintaining higher emotional well-being through posttraumatic growth for those with major diseases such as HIV/AIDS. As generativity and work-related experience (i.e., work satisfaction) are also associated with posttraumatic growth (Bellizzi 2004; Xu and Wu 2014), all the psychosocial factors assessed in this study seem to be beneficial for clinical populations who have had traumatic experiences as well as the general adult population.

On the other hand, the age differences found in the present study may not be generalizable to clinical populations. In particular, while this study suggests that interpersonal relationships may become more important for personal growth with age, interpersonal relationships may be similarly important as a key component of posttraumatic growth for adults of any age. One possible reason for the increasing importance of interpersonal relationships for personal growth with age is the changed priorities of aging adults, who put an increasing emphasis on meaningful relationships (Bauer and Park 2010; Carstensen et al. 2003). However, younger adults may experience change in their priorities within a relatively short period of time during their traumatic experience, which would possibly lead them to reevaluate and then appreciate the importance of meaningful relationships (Tedeschi and

Calhoun 2004). In fact, such possible changed priorities of younger adults with traumatic experiences may be explained by Socioemotional Selectivity Theory (Carstensen et al. 2003), which suggests that the perception of limited time in life, which older adults are more likely to have, would lead to prioritizing emotionally meaningful goals (e.g., cultivating meaningful relationships). Possibly, traumatic events could make people of any age change their priorities while recognizing the finite time of their lives, and thus, interpersonal relationships may remain important for posttraumatic growth regardless of age. As this remains speculation, the implications of interpersonal relationships along with such changed priorities for posttraumatic growth among adults of different ages should be examined in future research. Thus, further investigations are warranted to determine whether the findings of the present study are generalizable beyond the general adult population.

6.4 Limitations and Future Research

There were several limitations to the present study that can inform future research. One of the limitations concerned the reliability of the measures for personal growth and positive relations. The scale alphas of these measures at three waves with ranges from .54 to .63 were lower than the satisfactory levels (.7–.8) (Nunnally 1978) though given they address broad constructs, such short-item (i.e., 3-item) scales may still be considered reliable despite lower alphas (John and Benet-Martinez 2000). This issue was addressed for the positive relations scale by including additional analysis that examined the three individual items of positive relations as predictors and comparing the results with those of the main analysis including the positive relations scale. While no major differences were found through this additional analysis, we acknowledge that a more robust scale would be advantageous in future research. The 7-item versions of psychological well-being measures were added starting at MIDUS2, and the reported scale alphas for personal growth and positive relations were .75 and .78 respectively (Ryff et al. 2012). However, with these scales only present at two waves we would be unable to assess the nuanced trajectories of personal growth, rather than its simple change over time, as was the focus of the current paper. Indeed, the results indicated non-linear trajectories, which could not have been identified with analyses using only the measures of the later two waves with higher internal consistency, and these present findings serve as a foundation for future research. When MIDUS conducts the fourth wave of survey, it should be examined with hierarchical linear modeling analyses using three-wave datasets (i.e., MIDUS2, MIDUS3, and MIDUS4) whether the findings of the present study are supported while using the 7-item personal growth and positive relations.

Another limitation is related to the relatively broad, possibly multidimensional constructs of psychosocial factors examined in the present study. While all of the psychosocial factors predicted personal growth, some specific aspects of these factors may have been particularly influential. For instance, as Fiori et al. (2006) suggested that relationships with friends had different implications for mental health compared to those with family members among older adults. Positivity in specific types of relationships may be more beneficial for components of psychological well-being including personal growth. In addition, the scale of “positive relations” in MIDUS study actually consisted of items concerning positive and negative aspects of relationships. However, positivity and negativity of relationships may not be simply opposite but have varying implications for well-being (Antonucci et al. 2013). Thus, in future studies the effects of positive and negative aspects of relationships should be addressed separately. Also, as prosocial orientations predict personal

development and well-being among younger adults (Hill et al. 2010), prosocial orientations or behaviors associated with generativity may be the driving component that facilitate personal growth. Similarly, work and spirituality may have specific elements influential for personal growth, for example, job satisfaction and transcendent experience, respectively. Future studies should examine whether specific aspects of the psychosocial factors tested here may be stronger predictors of levels and trajectories of personal growth.

In addition, more research is needed on gender differences and similarities related to personal growth. Whereas no gender differences were found in the associations between the psychosocial factors and personal growth, the present study indicated different trajectories of personal growth between genders. This longitudinal difference warrants further exploration as the aging process or some historical events may have influenced personal growth differently for women and men. Moreover, it may be the case that there are additional psychosocial factors that vary by gender that warrant further exploration.

Furthermore, some main effects (e.g., those of work status, spirituality) and interaction effects remained small, which warrants replications of the findings. In addition, while MIDUS used a probability sampling method, approximately 90% of the respondents reported their race as White, which would not represent the general population in the United States. Future studies should support these findings using a variety of adult samples and also address potential differences among racial and ethnic groups. Moreover, international comparison of the psychosocial effects on personal growth may be another area of research to be considered.

7 Conclusion

The present study provided additional longitudinal evidence of the potential benefits of multiple psychosocial factors, particularly positive interpersonal relationships and generativity, for personal growth, while suggesting no apparent gender differences in the effects of these psychosocial factors. Future research should expand upon these findings while examining and identifying specific aspects of these protective factors that could influence personal growth and moreover, contribute to developing interventions to promote continued growth for diverse aging populations.

Compliance with Ethical Standards

Conflict of interest The authors have no conflict of interest to declare.

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