
Lifelong Pathways to Longevity: Personality, Relationships, Flourishing, and Health

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Abstract

Building upon decades of research with the lifelong (nine-decade) Terman Life Cycle Study, we present a life pathway model for understanding human thriving that accounts for long-term individual difference in health and longevity, with a particular focus on child personality and adult social relationships. Developing data derived and supplemented from the Terman study ($N = 570$ males, 451 females), we employed regression and survival analyses to test models of childhood personality predicting adult psychosocial factors (subjective well-being, family relationships, community involvement, subjective achievement, hardships) and subsequent longevity. Child personality differentially related to midlife social relationships, well-being, and hardships. Conscientiousness and good social relationships predicted longer life, whereas subjective well-being was unrelated to mortality risk. Examining multiple life factors across long time periods uncovers important pathways through which personality relates to premature mortality or longevity. Typical stress-and-illness models are untenable and should be replaced with life span trajectory approaches.

Individuals follow different pathways through life. One individual flourishes—cultivating strong social relationships, living a meaningful life, achieving a high level of occupational or personal success, and staying healthy into old age. A seemingly similar individual (of the same birth cohort, sex, ethnicity, intelligence, and childhood social status) languishes—struggling with chronic psychological distress, anomie, poor social relationships, career failures—and ultimately faces chronic disease or premature death. Why does one individual thrive while another flounders? Over the past two decades, our research has uncovered numerous factors that relate to a healthy, long life across the decades (for an overview, see Friedman & Martin, 2011). Our findings reveal that long-term outcomes may differ from what might be expected based upon cross-sectional or short-term studies (Kern & Friedman, 2011b). In particular, personality, social relationships, and health behaviors play a significant and interdependent role in life pathways. Here, we illustrate a life span model for understanding human thriving within the context of developmental trajectories, focusing on child conscientiousness and emotional stability, adult social relationships, and longevity.

Flourishing, Longevity, and Social Relationships

A growing body of literature from positive psychology illustrates the relevance of psychological well-being to life outcomes, including physical health (e.g., Chida & Steptoe, 2008; Diener & Chan, 2011; Howell, Kern, & Lyubomirsky, 2007; Lyubomirsky, King, & Diener, 2005; Pressman & Cohen, 2005; Veenhoven, 2008). Yet such findings have resulted in a popular overemphasis on measuring and increasing levels of “happiness,” often conceptualized as high positive emotion, optimistic thinking, or peaceful relaxation. In line with recent advances from positive psychology, markers of thriving are not simply positive emotions, but can and should be evaluated across multiple domains. A broad conception of flourishing is needed that encompasses multiple dimensions, such as good family and social relationships, efficacious self-image, emotional balance, a successful career or societal role, engagement

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in life, a sense of purpose, and physical vitality (Forgeard, Jayawickreme, Kern, & Seligman, 2011; Huppert & So, 2013; Ryff & Keyes, 1995; Seligman, 2011).

From this perspective, subjective well-being—characterized by high positive affect, low negative affect, and high life satisfaction—is but one domain of the flourishing life. Social relationships are a core but distinct component of the flourishing life. In the Terman Life Cycle Study, social competence, but not subjective well-being, predicted lower mortality risk (Friedman, Kern, & Reynolds, 2010). Chronic loneliness and isolation impair cognition, emotion, behaviors, and physical health for a variety of reasons (Hawkey & Cacioppo, 2010), whereas good social relationships are a sign, a predictor, and a likely cause of good health (Taylor, 2011). Analogously, achievement is a distinct component of flourishing. Accomplishment and success are valued parts of Western culture, and societal ideas about the role and effects of challenge, hard work, productivity, and relaxation are highly relevant to discussions of flourishing. In the current investigation, we examine the role that midlife family relationships and community involvement play, separate from positive emotion and subjective achievement, in relation to lifelong mortality risk.

In psychology, health itself is often defined too narrowly in terms of subjective feelings (e.g., “in general, how is your health?”) rather than as an objective outcome. Full causal models of pathways to health are rarely specified and almost never tested. Our research, with a life span perspective, suggests that it is not positive emotion per se that directly promotes health; instead, several core areas of life combine to promote physical health, subjective well-being, social relationships, and related factors that together represent the flourishing life.

Life expectancy is one of the key measures of public health used worldwide, and it is the core component of the World Health Organization’s (2013) prime health measure: “healthy life expectancy” (years lived without significant impairment). Those who live longest are generally those who stay healthiest, as it is usually not those fighting diabetes, lung disease, cancer, or heart disease who live into old age. Longevity also has considerable methodological advantages as a measure: It is highly reliable, highly valid (death marks the poorest health; Kaplan, 2002), and not confounded by self-report biases, in which individuals who report psychological distress also report not feeling well. Study of a flourishing life should include evaluation of the chances of a long life, with reduced health care costs and increased productive contributions to society.

Personality and Life Pathways

What is the role of personality in flourishing and health? Extensive research over the past two decades, following up on our initial finding that childhood conscientiousness predicts long life (Friedman et al., 1993), has revealed that conscientiousness is a very strong and reliable predictor of healthy

pathways and of health and longevity (Friedman, Kern, Hampson, & Duckworth, 2013; Shanahan, Hill, Roberts, Eccles, & Friedman, 2013). In a paradox, extraversion and sociability show mixed associations with health, but this is probably because social networks and social integration are generally healthy, whereas highly sociable drinkers, partiers, and thrill seekers may falter (Kern & Friedman, 2011a). Neuroticism too shows mixed associations with thriving and health, as excessive moodiness and anxiety can inhibit career advances, disrupt social ties, and interfere with sleep, exercise, and healthy eating; but caution and problem-focused worrying can be beneficial (Friedman & Martin, 2011; Kern & Friedman, 2010). For example, neurotic widowers live longer than emotionally stable widowers (Taga, Friedman, & Martin, 2009), and wary older adults have lower risks of disability and death (Lang, Weiss, Gerstorf, & Wagner, 2013; Weiss & Costa, 2005). In the current study, we bring together these various elements and examine the role of personality in midlife social relationships, subjective well-being, and achievement satisfaction, with subsequent links to mortality risk.

Personality, Stress, and Health

It is almost a truism to state that severely stressful life events are associated with negative health outcomes. Many researchers also go much further and assume that challenge in one’s life *causes* poor health, unless the proper coping mechanisms are brought to bear by the individual. Such traditional models might even test stress and health relations experimentally (e.g., participants place hand in cold water and physiological changes are tracked; Steptoe, Hamer, & Chida, 2007), but the fact that environmental challenge can produce a short-term physiological disruption is not proof that random psychosocial challenges (i.e., hassles, work challenges, life changes) are a primary cause of illness and premature mortality. Indeed, the autonomic nervous system is constantly adjusting to internal and external stressors. Alternatively, psychosocial challenges are sometimes studied by comparing differences in stressful event occurrence (usually self-reported) between healthy and unhealthy people, treating stress as an uncontrollable, random external event. Yet the implicit causal assumptions here are shaky. Disease, even in early pre-diagnosis stages or when symptoms are ambiguous and undiagnosed, can be extremely stressful, reversing the causal arrow between stress and disease. Further, naturally observed associations of stress in diseased populations give little indication of confounders relevant to *both* stress and disease. That is, the traditional life-change model limits our ability to understand *how and why some individuals experience greater amounts of stressful challenge across the life span*.

Some events are certainly random—simply being in the wrong place at the wrong time. But many key life stressors, such as marriage/divorce, career failures, and even widowhood, are not fully random but are influenced by early and later personality (Caspi & Roberts, 1999; Caspi, Roberts, & Shiner,

2005; Magnus, Deiner, Fujita, & Pavot, 1993; Sbarra, Law, & Portley, 2011; Vollrath, 2001). For example, criminologists have shown that approximately 30–40% of all crimes are committed against repeat victims, suggesting that key individual differences, beyond household and neighborhood characteristics, make particular individuals more likely to be targeted by criminals (Tseloni & Pease, 2003). A revealing study by Bollmer, Harris, and Milich (2006) found that children high on neuroticism and low in conscientiousness are more likely to be victimized by bullies. This combination of high neuroticism and low conscientiousness is exactly the pattern that recent personality research suggests is a significant health risk (Chapman, Duberstein, & Lyness, 2007; Chapman, Fiscella, Kawachi, & Duberstein, 2009; Terracciano & Costa, 2004; Vollrath & Torgersen, 2002). We believe it is important to examine the extent to which languishing individuals display a pattern of relationship failures, low self-esteem, chronic psychological distress, unemployment, and a greater number of adverse life experiences across time. Because personality-relevant life patterns are often established at a young age, unfold across the years, and interact with situations, more complex life span models are needed.

The Current Investigation

Personality predicts both important life experiences and health outcomes (Friedman & Kern, 2010; Kern & Friedman, 2010; Ozer & Benet-Martinez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007), but the interplay among personality variables and environmental variables in producing different life trajectories is complex, with many relationships being bidirectional and multiply caused (Friedman, 2007; Friedman et al., 2013; Hampson & Friedman, 2008; Kern & Friedman, 2011b; Neyer & Lehnart, 2007). Personality, behavior, and environmental factors work together to place the individual on a life path that often becomes self-reinforcing. Personality characteristics influence the situations individuals experience and how they behave in these situations, and personality influences the relationships that people develop and the reactions from others. In turn, the situations and relationships influence the seeking of new situations and personality development, such that people tend to develop relatively stable levels of personality traits, situational attributes, and behaviors over time (Friedman, 2000; Headey & Wearing, 1989; Lehnart & Neyer, 2006; Neyer & Lehnart, 2007; Sherman, Nave, & Funder, 2010; Suh, Diener, & Fujita, 1996). The resulting lifestyles may be more or less health promoting. Such trajectories can only be studied in a longitudinal framework.

One important way to address life span questions is to leverage and expand existing archival data. In the current study, we focus on the Terman Life Cycle Study. Over 1,500 men and women were first studied as children in 1921 and were followed by various researchers across their lives. Over the past two decades, we have gathered mortality information, supplemented and refined the data, and created and validated

personality and psychosocial measures. Our findings have highlighted the complexities and contingencies of associations among childhood personality, life experiences, and health outcomes that could not be detected in short-term or narrow studies of personality and health. For example, although an early study found that child conscientiousness predicted lower risk of dying at any given age (Friedman et al., 1993)—a finding that has been confirmed across diverse samples (Kern & Friedman, 2008)—it was also the case that children low on conscientiousness who managed to get on a positive career trajectory and achieve career success were protected against the increased mortality risk associated with low conscientiousness (Kern, Friedman, Martin, Reynolds, & Luong, 2009).

In the current study, we integrated many of the measures that we have developed over the past two decades to examine personality, multiple psychosocial domains of flourishing, and longevity. Rather than investigating each of these domains separately, we present a new set of analyses that bring together findings from our prior studies in a full life span perspective of childhood personality, thriving, negative events, and mortality risk, with a particular focus on childhood conscientiousness and neuroticism and midlife social relationships. That is, incorporating advancing theory on human flourishing that defines well-being in terms of functioning well across multiple life domains, we present a new way to think about and understand the many things that we have already learned from the Terman study. We include various key health-relevant areas of adult life: social relationships, subjective well-being, subjective achievement, and negative life events. And we include longevity—an objective, long-term health outcome—to create a full life span analysis.

Due to their importance in prior research by ourselves and others, we focus on conscientiousness and neuroticism. For completeness, we also include other child personality traits (i.e., sociability, cheerfulness, energy, motivation/self-esteem) but do not make predictions for these traits. We expected childhood conscientiousness and neuroticism to differentially predict each of these midlife outcomes, with conscientiousness predictive of good relationships, greater achievement, and fewer negative events; and neuroticism predictive of poor social relationships, more negative events, lower subjective well-being, and less subjective achievement (but not necessarily worse health). We expected both direct and indirect associations between conscientiousness and longevity, and no direct effect for neuroticism. However, we expected an interaction between conscientiousness and neuroticism to emerge, such that those high in both neuroticism and conscientiousness might report fewer stressful life events and longer life.

METHOD

Participants

Beginning in 1921, California schoolteachers were asked to identify intelligent children in their classrooms. Students were

included in the study if their best estimated IQ was 135 and above; thus, this sample of children was cognitively equipped to thrive in life. Additional participants were added through 1928, yielding a total sample of 1,528 (856 males, 672 females). On average, participants were born in 1910. The sample, mostly White and middle class, can be regarded as capturing an important segment of 20th century U.S. society (Subotnik, Karp, & Morgan, 1989). Past research with this sample has proved very replicable and heuristic, but care should be taken in generalizing results to the full population. Participants completed questionnaire assessments every 5 to 10 years until 1999. We report mortality data we collected through 2008.

In the current investigation, 90 individuals were excluded because they were missing child personality information. An additional 417 individuals were excluded because they were missing all or most of the 1950 assessment (when adult outcomes were assessed), leaving a final sample of 1,021 individuals (570 males, 451 females).

Child Personality

In the baseline assessment (1921–22), parents and teachers rated the child participants on 25 trait dimensions. An additional five items asked parents and the child participants to rate the child's preferences for different activities. Six childhood personality factors were derived (Friedman et al., 1993): conscientiousness-social dependability (four items, $\alpha = 0.76$), motivation-self-esteem (five items, $\alpha = 0.71$), cheerfulness-humor (two items, $\alpha = 0.52$), sociability (five items, $\alpha = 0.65$), high energy-activity (three items, $\alpha = 0.43$), and permanency of moods (single item representing emotional stability/low neuroticism).

Adult Flourishing

As noted above, we define flourishing in terms of functioning well across multiple life domains. Based on the variables and measures that we have derived in our prior studies, we focused here on three specific domains of flourishing: social relationships, subjective well-being, and subjective achievement, assessed in the midlife (average age 40) 1950 assessment. Rather than assigning variables to outcome categories, we used factor analysis to define which measures and items could be used as markers of these domains.

Mental Adjustment. Mental adjustment previously was found to be a primary predictor of longevity (Martin et al., 1995). Terman and his colleagues rated the participants' mental adjustment, based on self-reported items on emotional difficulties and years of personal correspondence with the participants and families. Maladjusted individuals showed marked signs of anxiety, depression, personality maladjustment, psychopathic personality problems, or suffered a nervous break-

down. Individuals who experienced feelings of inferiority, inadequacy, anxiety, or emotional conflict but who were still able to function were categorized as having some maladjustment. The remaining participants were classified as well adjusted.

Life Satisfaction. Two of our studies included life satisfaction as a mediator between parental divorce and mortality risk. In a first study, life satisfaction was defined as the summed indicator of satisfaction across nine domains (work, marriage, children, accomplishments, income, hobbies, religion, social contacts, community service) and did not mediate the parental divorce-mortality risk relation (Tucker et al., 1997). In a second study, life satisfaction was defined by two variables: feelings of living up to one's intellectual potential and feelings about one's present occupation (Martin, Friedman, Clark, & Tucker, 2005). In the current study, we included the nine life satisfaction domains as well as the two single items (living up to potential, feelings for occupation) as separate indicators.

Trait Ratings (Adult). Several of our studies have included self-ratings on six traits as markers of psychological adjustment (happiness of temperament, moodiness, self-confidence, easy to get along with, feelings of inferiority, sensitive feelings; Martin et al., 1995; Martin et al., 2002; Tucker et al., 1997). Five additional trait ratings were also available (impulsivity, emotionality, dislike of social contact, persistence, and driven toward a particular purpose).

Social Relationships. Participants self-reported marital status, number of living siblings, number of living children, number of club or organizational memberships, and number of service activities. In a study of social ties and mortality risk, a greater number of children and organization memberships were protective from mortality risk (Tucker, Schwartz, Clark, & Friedman, 1999), but the number of service activities was previously included as a control variable.

Honors and Awards. Although not included in our prior studies, we added a variable that indicated the number of honors and awards received by 1950. At each assessment, participants freely reported honors, awards, and significant accomplishments since the last assessment; from these reports, we computed a total honors/awards score.

Education. At each assessment, participants indicated the highest level of education completed and any additional schooling accomplished. Based on these responses, a total educational attainment score was constructed, ranging from 10 years (i.e., two years of high school or equivalent) to 22 years (i.e., obtained PhD and completed additional coursework).

Constructing the Flourishing Components. The items assessing mental adjustment, life satisfaction, adult traits, social relationships, honors and awards, and education were

factor analyzed using principal axis factoring with varimax rotation. Inter-item correlations and reliabilities were examined. The final factor structure was tested in a confirmatory factor analysis using the lavaan package (version 2.15.2; Rosseel, 2012) in R. The root mean square error of approximation (RMSEA) and the standardized root mean residual (SRMR) were examined to assess model fit.¹

An initial factor analysis suggested four factors: subjective well-being, subjective achievement, family relationships, and community relationships. Three items (adult impulsiveness, satisfaction with hobbies, and number of living siblings) did not load on any factor and were removed. The final model included four factors, with 27 items accounting for 95% of the variance. The final factor structure was confirmed in R and demonstrated acceptable fit (RMSEA = .073, 90% CI [.070, .076]; SRMR = .065). Table 1 summarizes the final items included in each factor.

Items were standardized and averaged to create composite measures of each factor (subjective well-being: eight items, $\alpha = .74$; family relationships: four items, $\alpha = .79$; subjective achievement: nine items, $\alpha = .69$; community relationships: six items, $\alpha = .62$).

In addition to constructing the four flourishing domains, we tested a higher-order factor model. Although the lower-order model provided closer fit, $\Delta\chi^2(2) = 47.87, p < .001$, the higher-order model did provide adequate fit (RMSEA = .074, CI [.071, .071]; SRMR = .071), providing evidence that these four factors might be indicative of a broader flourishing construct ($\alpha = .75$). Social relationships were the strongest factors (family relationships: standardized $\lambda = .56$, community relationships: $\lambda = .53$), followed by subjective well-being ($\lambda = .41$) and achievement ($\lambda = .22$).

Adult Challenges (Negative Life Aspects)

We included three variables as separate markers of negative life aspects. The variables were weakly correlated ($r_s = -.07$ to $.11$) and do not form a single factor ($\alpha = .13$); thus, we treated these as separate midlife measures.

Hardships. A “life’s hardships” variable was created based upon misfortunes experienced by the participant’s spouse, father, mother, or siblings, coded from open-ended questions,

Table 1 Adult (1950, Average Age 40) Flourishing Factor Model

Variable	Subjective Well-Being	Family Relations	Subjective Achievement	Community Relations
Moodiness (r)	0.62	0.03	0.03	0.05
Self-confidence	0.56	0.08	0.29	0.04
Happy temperament	0.56	0.04	0.07	0.21
Feelings of inferiority (r)	0.55	0.07	-0.07	0.04
Sensitive feelings (r)	0.55	0.04	0.13	0.03
Easy to get along with	0.44	0.02	-0.01	0.09
Emotionality (r)	0.38	0.04	-0.01	-0.17
Mental adjustment	0.32	0.15	0.08	0.06
Number of children	0.04	0.76	-0.02	0.13
Satisfaction with children	0.09	0.75	-0.01	0.16
Married	0.11	0.67	0.01	-0.02
Satisfaction with marriage	0.16	0.57	0.07	0.06
Work satisfaction	0.08	-0.10	0.59	-0.03
Purpose driven	0.13	0.04	0.55	0.04
Liking for occupation	0.19	0.03	0.49	0.19
Persistence	0.06	0.02	0.47	-0.07
Live up to potential	0.22	0.04	0.45	0.07
Educational attainment	-0.06	0.04	0.39	0.01
Satisfaction with accomplishments	-0.08	-0.01	0.38	0.08
Number of honors received	-0.04	0.04	0.37	-0.05
Satisfaction with income	0.04	0.00	0.33	0.01
Number of service activities	-0.01	0.22	-0.05	0.60
Satisfaction with community service	0.00	0.14	0.02	0.53
Satisfaction with social contacts	0.08	-0.08	-0.02	0.47
Dislike of social contacts (r)	0.22	0.01	-0.03	0.44
Number of organizations	-0.11	0.20	0.20	0.41
Satisfaction with religion	0.07	0.00	0.06	0.33
Cronbach's alpha	0.74	0.79	0.69	0.62

Note. $N = 1,021$. (r) indicates items that were reversed scored for analyses. Principal axes factoring with varimax rotation, extracting four factors. Cronbach's alpha calculated from boldfaced items.

plus deaths of offspring or other family members (see Martin et al., 2002).

Alcohol Abuse. In 1950, participants indicated their typical alcohol use. Throughout our studies, we have included alcohol abuse as a marker of poor psychological adjustment and associated poor behavioral coping, consistent with strong findings in the Harvard Study of Adult Development (Vaillant, 2012). This variable serves as a marker of poor coping and risky health behavior (e.g., drinking was highly correlated with smoking).

History of Divorce. Divorce is a major negative event and previously predicted increased mortality risk (Tucker, Friedman, Wingard, & Schwartz, 1996). At each assessment, participants reported their current marital status (married, widowed, separated, divorced, or unmarried) and changes in status since the last assessment. Information was compiled to indicate history of divorce or separation through 1950 (0 = no divorce, 1 = at least one occurrence of divorce or separation).

Longevity

We have collected death certificates through 2008 on most (91%) of the sample, allowing verification of vital status and age of death. In some cases ($N = 77$), death certificates were unavailable, but family members reported and confirmed mortality information. For the remaining 9% of those still potentially alive, the average age would be 99 years; some are indeed known to be alive (as of 2013).

Data Analytic Strategy

Data analyses were performed using SAS (version 9.3) and R (www.r-project.com) software. We examined the life span model of child personality, midlife positive and negative life domains, and lifelong mortality risk through a series of linear regression, logistic regression (for divorce), and survival (Cox proportional regression) analyses: (a) child personality predicting the midlife adult factors, (b) child personality and the midlife factors predicting mortality risk, and (c) including an interaction term between conscientiousness and neuroticism (permanency of moods). All models controlled for age and sex. In the survival analyses, individuals who potentially are still alive were treated as censored at the age of last contact.

As a final confirmation, we focused on very long-lived individuals by creating a dichotomous variable based on age of death that indicated whether the participant lived to at least age 85 (typically referred to as “oldest-old” age). We estimated a structural equation model (SEM) in R, using the lavaan program, including the child personality variables and languishing variables as manifest variables, the adult flourishing factors as latent variables, and the dichotomous (alive/dead) outcome. For binary outcomes, the program uses a robust

weighted least squares estimator. In this approach, model parameters are estimated using diagonally weighted least squares, and then the full matrix is used to compute robust test statistics and variances (Rosseel, 2012).

RESULTS

Childhood Personality and Adult Outcomes

Results for midlife adult factors regressed on child personality are summarized in Table 2. Each of the four positive factors was predicted by at least one childhood personality variable. Childhood permanency (stability) of mood and sociability positively predicted adult subjective well-being. Childhood sociability and energy predicted better family relationships. Childhood motivation predicted greater subjective achievement, but lower subjective well-being. Childhood sociability predicted better community relationships. Childhood conscientiousness predicted less alcohol use and lower likelihood of divorce. Child sociability significantly predicted the overall flourishing factor. Although the correlations are generally modest, they are impressive for associations across several decades using measures of limited reliability. Both overall flourishing and specific aspects of adult thriving are indeed somewhat predictable from child personality.

We also tested the interaction between conscientiousness and mood permanency (low neuroticism). There was a significant interaction for subjective well-being. For children high in conscientiousness, there were no differences between children low or high in mood permanency. However, for children low in conscientiousness, subjective well-being depended upon mood permanency, such that children low in mood permanency reported particularly low levels of well-being in adulthood, whereas children high in mood permanency reported high levels of well-being. There were no significant interactions between conscientiousness and mood permanency for the remaining midlife variables.

Mortality Risk

Table 3 summarizes the final survival analysis models.² Mirroring our prior findings with this sample (previously with death information available through 1986, Friedman et al., 1993; now extended through 2008), childhood conscientiousness predicted lowered mortality risk. Childhood motivation related to increased mortality risk. In terms of the adult flourishing factors, the overall flourishing factor related to lowered mortality risk (*Relative Hazard* = .91, 95% CI [.83, .99], $p = .04$); more specifically, better family relationships and greater subjective achievement predicted lower mortality risk. In addition, divorce and alcohol increased risk, whereas the number of hardships was not significantly related. There was no significant interaction between child conscientiousness and mood permanency. Notably, conscientiousness independently predicted lower risk, after including the midlife variables.

Table 2 Regression Analyses Predicting Adult (1950, Average Age 40) Flourishing and Languishing From Child Personality

Model	<i>b</i>	SE	β	<i>t</i>	<i>p</i>
Flourishing					
Overall flourishing					
Conscientiousness	0.004	0.003	0.052	1.40	0.161
Mood permanency	0.014	0.009	0.060	1.69	0.091
Sociability	0.014	0.003	0.159	4.33	<.0001
Energy	0.007	0.005	0.045	1.32	0.188
Cheerfulness	-0.009	0.005	-0.060	-1.66	0.098
Motivation/esteem	0.000	0.003	0.000	0.00	0.998
Sex	-0.111	0.024	-0.151	-4.70	<.0001
Age	0.005	0.003	0.051	1.60	0.110
Subjective well-being					
Conscientiousness	0.008	0.005	0.065	1.72	0.086
Mood permanency	0.028	0.014	0.073	2.03	0.043
Sociability	0.012	0.005	0.081	2.19	0.029
Energy	0.012	0.009	0.048	1.41	0.159
Cheerfulness	0.006	0.009	0.024	0.67	0.506
Motivation/esteem	-0.009	0.004	-0.076	-2.06	0.040
Sex	-0.127	0.039	-0.106	-3.28	0.001
Age	0.007	0.006	0.039	1.22	0.223
Family relationships					
Conscientiousness	-0.004	0.006	-0.024	-0.63	0.527
Mood permanency	0.008	0.019	0.016	0.45	0.656
Sociability	0.020	0.007	0.102	2.73	0.007
Energy	0.029	0.012	0.085	2.45	0.015
Cheerfulness	-0.016	0.011	-0.052	-1.42	0.157
Motivation/esteem	-0.006	0.006	-0.040	-1.08	0.282
Sex	-0.114	0.051	-0.072	-2.21	0.027
Age	-0.011	0.007	-0.049	-1.51	0.131
Subjective achievement					
Conscientiousness	0.006	0.004	0.054	1.48	0.140
Mood permanency	0.016	0.012	0.045	1.32	0.188
Sociability	0.009	0.005	0.067	1.87	0.062
Energy	-0.004	0.008	-0.018	-0.55	0.584
Cheerfulness	-0.021	0.007	-0.097	-2.76	0.006
Motivation/esteem	0.010	0.004	0.100	2.81	0.005
Sex	-0.315	0.034	-0.291	-9.33	<.0001
Age	0.010	0.005	0.062	1.99	0.047
Community relationships					
Conscientiousness	0.001	0.004	0.010	0.26	0.792
Mood permanency	-0.002	0.014	-0.006	-0.18	0.855
Sociability	0.022	0.005	0.154	4.22	<.0001
Energy	0.002	0.009	0.009	0.27	0.784
Cheerfulness	-0.005	0.008	-0.021	-0.59	0.555
Motivation/esteem	0.000	0.004	-0.001	-0.03	0.978
Sex	0.217	0.038	0.183	5.75	<.0001
Age	0.008	0.005	0.049	1.55	0.122
Negative Life Aspects					
Hardships					
Conscientiousness	-0.001	0.008	-0.005	-0.13	0.896
Mood permanency	-0.011	0.024	-0.017	-0.47	0.641
Sociability	-0.006	0.009	-0.025	-0.67	0.504
Energy	-0.004	0.015	-0.010	-0.28	0.779
Cheerfulness	0.018	0.015	0.045	1.23	0.218
Motivation/esteem	0.008	0.007	0.038	1.03	0.304
Sex	0.270	0.067	0.132	4.04	<.0001
Age	0.009	0.010	0.029	0.89	0.376

(Continued)

Table 2 (Cont.)

Model	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
Alcohol use					
Conscientiousness	-0.022	0.006	-0.134	-3.67	0.000
Mood permanency	-0.018	0.018	-0.034	-0.98	0.327
Sociability	0.027	0.007	0.136	3.78	0.000
Energy	-0.019	0.012	-0.056	-1.67	0.095
Cheerfulness	0.021	0.011	0.066	1.85	0.065
Motivation/esteem	0.000	0.006	-0.002	-0.07	0.944
Sex	-0.428	0.051	-0.265	-8.46	<.0001
Age	-0.008	0.007	-0.034	-1.10	0.272
Divorce					
	<i>b</i>	<i>SE</i>	<i>OR</i>	χ^2	<i>p</i>
Conscientiousness	-0.060	0.020	0.941	8.919	0.003
Mood permanency	-0.094	0.063	0.911	2.214	0.137
Sociability	0.009	0.025	1.009	0.140	0.709
Energy	-0.008	0.040	0.992	0.044	0.834
Cheerfulness	0.029	0.039	1.030	0.569	0.451
Motivation/esteem	0.057	0.019	1.059	8.668	0.003
Sex	0.068	0.176	1.071	0.150	0.698
Age	0.007	0.025	1.007	0.067	0.795

Note. *b* = raw estimate; *SE* = standard error; β = standardized estimate; *t* = *t* test of significance; *OR* = odds ratio; χ^2 = Wald chi-square test of significance. For sex, 0 = male, 1 = female. Predictors were simultaneously entered into the regression models. Flourishing, hardships, and alcohol were estimated using linear regression. Risk for divorce was estimated using logistic regression, modeling the probability that divorce occurred. For the flourishing factors, items in each factor (see Table 1) were standardized and averaged to create a composite measure. Overall flourishing combined the four factors.

Table 3 Survival Analyses Predicting Mortality Risk From Child Personality (Model 1) and Personality and Adult Flourishing and Languishing (Model 2)

Predictor	Model 1				Model 2			
	<i>b</i>	<i>SE</i>	<i>RH</i>	95% <i>CI</i>	<i>b</i>	<i>SE</i>	<i>RH</i>	95% <i>CI</i>
Demographic controls								
Sex	-.21	.07	0.81	[0.71, 0.93]	-.20	.08	0.82	[0.70, 0.96]
Age	-.04	.01	0.96	[0.94, 0.98]	-.04	.01	0.96	[0.94, 0.98]
Child personality								
Conscientiousness	-.21	.01	0.81	[0.72, 0.91]	-.17	.01	0.84	[0.75, 0.95]
Mood permanency	.02	.03	1.02	[0.93, 1.13]	.02	.03	1.02	[0.93, 1.13]
Sociability	-.08	.01	0.93	[0.84, 1.02]	-.09	.01	0.92	[0.83, 1.01]
Energy	.00	.02	1.00	[0.94, 1.06]	.01	.02	1.01	[0.95, 1.08]
Cheerfulness	.09	.02	1.09	[0.97, 1.23]	.07	.02	1.07	[0.95, 1.21]
Motivation/esteem	.14	.01	1.15	[1.02, 1.31]	.15	.01	1.16	[1.02, 1.32]
Adult flourishing								
Subjective well-being					.02	.06	1.02	[0.93, 1.12]
Family relationships					-.10	.04	0.90	[0.82, 0.99]
Subjective achievement					-.10	.07	0.91	[0.82, 1.00]
Community relationships					-.01	.06	0.99	[0.90, 1.09]
Adult negative domains								
Hardships					.05	.03	1.05	[0.98, 1.12]
Divorce					.21	.09	1.23	[1.03, 1.48]
Alcohol abuse					.15	.05	1.16	[1.06, 1.27]

Note. *b* = raw estimate; *SE* = standard error; *RH* = hazard ratio; *CI* = 95% confidence interval around the hazard ratio. For sex, 0 = male, 1 = female. Analyses were conducted using Cox proportional regression analysis in SAS. For the flourishing factors, items in each factor (see Table 1) were standardized and averaged to create a composite measure. For personality and flourishing variables, interquartile hazards are presented, such that the betas, hazards, and confidence intervals compare those at the 75th percentile with those at the 25th percentile; higher numbers indicate higher scores on that trait. Significant predictors are boldfaced.

Table 4 Standardized Regression Coefficients and Standard Errors in the Final SEM, With Personality Predicting Flourishing and Languishing, and Personality, Flourishing, and Languishing Factors Predicting Living Through Age 85

	β	SE		β	SE
Subjective well-being			Family relationships		
Conscientiousness	0.057	0.012	Conscientiousness	-0.014	0.006
Mood permanency	0.068	0.035	Mood permanency	0.006	0.018
Sociability	0.087*	0.014	Sociability	0.130**	0.007
Energy	0.064	0.022	Energy	0.075*	0.011
Cheerfulness	0.024	0.021	Cheerfulness	-0.069	0.011
Motivation/esteem	-0.069	0.011	Motivation/esteem	-0.038	0.006
Subjective achievement			Community relationships		
Conscientiousness	0.078	0.003	Conscientiousness	0.014	0.009
Mood permanency	0.064	0.008	Mood permanency	0.004	0.027
Sociability	0.088	0.003	Sociability	0.205**	0.010
Energy	0.013	0.005	Energy	-0.029	0.017
Cheerfulness	-0.159*	0.006	Cheerfulness	-0.040	0.016
Motivation/esteem	0.109*	0.003	Motivation/esteem	-0.004	0.008
Hardships			Divorce		
Conscientiousness	0.004	0.008	Conscientiousness	-0.108*	0.003
Mood permanency	-0.022	0.024	Mood permanency	-0.070	0.010
Sociability	-0.014	0.009	Sociability	0.008	0.003
Energy	-0.018	0.015	Energy	0.001	0.006
Cheerfulness	0.044	0.015	Cheerfulness	0.033	0.006
Motivation/esteem	0.034	0.008	Motivation/esteem	0.106*	0.003
Alcohol abuse					
Conscientiousness	-0.146**	0.006			
Mood permanency	-0.038	0.019			
Sociability	0.132**	0.007			
Energy	-0.055	0.010			
Cheerfulness	0.074	0.010			
Motivation/esteem	-0.002	0.005			
Alive through age 85					
Conscientiousness	0.137**	0.011	Subjective well-being	-0.005	0.040
Mood permanency	-0.034	0.033	Family relationships	0.169**	0.088
Sociability	0.075	0.013	Subjective achievement	0.025	0.231
Energy	-0.050	0.021	Community relationships	0.019	0.052
Cheerfulness	0.033	0.020	Hardships	-0.045	0.042
Motivation/esteem	-0.074	0.010	Divorce	-0.088*	0.113
			Alcohol abuse	-0.118**	0.058

Note. β = standardized estimate; SE = standard error. Analyses were conducted using the lavaan program in R, using a robust weighted least squares estimator. Factors were modeled as latent factors, and age and sex were included as covariates (not shown). * $p < .05$. ** $p < .01$.

Finally, we estimated the full structural model in R, with a dichotomous variable indicating living to at least age 85. The final model demonstrated adequate fit (robust estimated RMSEA = .036, 90% CI [.034, .039]), and results confirmed the regression and survival analyses. Standardized regression coefficients and standard errors are summarized in Table 4. Childhood sociability predicted midlife subjective well-being, positive family relationships, community relationships, and greater alcohol use. Energy level predicted positive family relationships. Cheerfulness predicted lower subjective achievement and greater alcohol use. Motivation predicted greater subjective achievement, but also more divorce. Conscientiousness predicted less divorce and alcohol use. Childhood conscientiousness, adult positive family relationships, no history of divorce, and less alcohol use independently predicted greater likelihood of living beyond age 85.

Although the data are limited by being from a single cohort born around 1910, and by variable unreliabilities, the results show a remarkable confirmation of life span models of personality, social relations, and long-term mortality risk. Any long-term, longitudinal study must, by definition, be limited to a particular group of individuals born in and growing up in a particular era, and so precise parameter estimates are less important than is the understanding of how a healthy life unfolds.

DISCUSSION

Common models of personality and health postulate that individuals encounter random “stressful” events and then employ personality-based coping mechanisms to good or ill effect. For example, an impulsive, emotional individual loses her job and

turns to avoidant coping measures like drinking, drug abuse, or binging on chocolate cake. Given modern understanding of personality across the life span, more sophisticated models are needed. Early character affects situation selections, evocative reactions, social relations, and careers, which in turn relate to a host of health-relevant behaviors and reactions, and ultimately to health and longevity. (Early family, social, and biological influences are also important in analogous ways, but their contributions are not the subject of the present analysis.) Using a prospective longitudinal design, childhood personality predicted flourishing in midlife. Conscientiousness, positive relationships, and healthy behavior in turn related to longevity. The results illustrate the importance of taking a life span perspective when studying health and longevity. By examining multiple relationships across time, we begin to understand the flourishing life trajectory—whether someone prospers or staggers through life (Friedman & Martin, 2011).

Recent theories on human flourishing have suggested that flourishing is a multidimensional construct that represents functioning well across multiple life domains (e.g., Huppert & So, 2013; Ryff & Keyes, 1995; Seligman, 2011). However, little empirical research has tested such a multidimensional structure, and flourishing remains an ill-defined construct. By integrating our work from the past two decades, we found that the four positive factors did indeed represent a higher-order flourishing construct, which was both predicted by child personality (sociability) and was prospectively related to lower mortality risk. Future research will benefit from additional empirical analyses to develop precise operational definitions and to determine the exact domains that should be included to represent the flourishing life.

Although the broad flourishing factor related to lower risk, additional value is gained by simultaneously investigating multiple subdomains. Contrary to recent speculation about the importance of positivity and stress for life outcomes, subjective well-being and life hardships were unrelated to mortality risk. Instead, positive relationships (i.e., positive family relationships and lack of divorce), healthy behaviors (captured by low alcohol use), and, to some extent, achievement predicted lower risk. That is, health behaviors and relationships were more important to physical health than emotions or stressors. Importantly, the present study is one of the first life span studies to empirically demonstrate that such a differentiated perspective is needed to fully understand psychosocial well-being and health relations.

Although the factors overlap and none is a perfect measure, these patterns of results allow us to begin to see how personality is linked across time to markers of positive and negative life domains, and how such pathways might relate to longevity. All variables and relationships of interest were entered simultaneously into the models, and the longitudinal design allows us to take a life span perspective when interpreting observed relations. The midlife factors were differentially predicted by the childhood personality traits, and conscientiousness remained a significant predictor of longevity, even after

accounting for these life domains, suggesting that conscientiousness has additional ties to longevity. This approach is superior to examining only one or two of these relationships at a time because it accounts and controls for various factors working together. It allows us to model a complex and dynamic phenomenon that unfolds over time, while also examining essential components and associations.

Childhood sociability was predictive of three of the positive factors as well as alcohol abuse. While this may be perplexing at first, it might help us understand some mixed results in the past research regarding sociability (and extraversion) and health outcomes (Cohen, 1991; Friedman, 2000; Friedman et al., 1993). If sociability promotes better social relationships, yet also relates to unhealthy behaviors (extraversion is a known predictor of alcoholism), it is exerting opposing forces on health. This example also demonstrates why we do not need any more simple studies of correlations between personality and health; instead, studies that reveal mechanisms across time are sorely needed.

This research also reveals the importance of simultaneously examining the combined influence of *multiple* personality traits and their ensuing situations as a person grows and develops. For example, much more research is needed to distinguish when sociability might lead to good health, and when it might lead to poor health. Similarly, the models tested in the current study hint that someone low on both conscientiousness and permanency of mood is more likely to wind up in situations that promote languishing rather than flourishing in midlife.

Future work should further examine such life span causal models, as interventions are tested. Understanding the pathways of flourishing may enable us to better *foster* those things that facilitate human health and potential. Conversely, identifying modifiable factors leading to languishing could enable us to accurately target the individuals most at risk for adverse outcomes *prior to* chronic problems of divorce, social and work failures, and alcoholism.

The present study employed rich life span data from a particular sample in a particular era and so is most useful for demonstrating the utility of this complex manner of thinking about stress and adjustment, and for generating new hypotheses. Ideally, we would examine the trajectory of these variables over two or more assessments to fully capture life patterns, but data were unavailable to directly examine change and stability in most of these variables over time. We expect that the details of the components of flourishing may differ somewhat in different samples, but that informative long-term patterns of health can be identified.

In conclusion, we suggest that a life span personality psychology perspective offers a useful framework for understanding the life well lived. Although chance happenings certainly occur, most life events are far from random. Lightning seemingly randomly strikes a person, and yet people are not equally at risk because some types of individuals are more likely to stay inside during a lightning storm. Our results, along with prior research and theory in life span personality psychology,

document that life experiences and events are partially endogenous; that is, their causation may be related to the individual. People follow particular trajectories throughout life, and aspects of the individual partially influence these pathways. Notably, health behaviors and relationships were more important to long life than feelings or stressors. Although most people do not purposely choose situations that put them at risk, they are drawn toward or away from health-promoting or risky relationships, activities, and situations (Friedman, 2000). Personality encapsulates important and stable individual differences influencing many aspects of one's life, and it offers a framework for predicting and understanding key life-path differences in health.

Notes

1. The RMSEA is a population-based measure not affected by sample size, with a minimum sample size of 200 (Curran, Bollen, Chen, Paxton, & Kirby, 2003). Values closer to 0 indicate better fit; more recent consensus indicates an RMSEA of .07 is the upper limit for good model fit (Steiger, 2007). The SRMR is a standardized absolute fit index based on residuals; values less than .08 are considered acceptable fit (Hu & Bentler, 1999).
2. As the flourishing factors and personality scales lack natural metrics, and to be consistent with our prior reports, we rescaled the beta and hazard parameters to the interquartile range of the scale. This scaling makes the survival parameters estimate the difference in the log hazard ratio for individuals at the 25th and 75th percentiles, controlling for the effects of the other variables in the equation.

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