

Wisdom as a Resiliency Factor for Subjective Well-Being in Later Life

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Abstract

Objectives. Research has shown that wisdom tends to be positively associated with subjective well-being (SWB) in later life, especially if older adults encounter physical or social hardship. Yet, the role of resiliency in the wisdom and well-being relationship has not been investigated. We extended our earlier study that investigated the buffering effect of wisdom on the inverse relationship between adverse life events and SWB (Ardelt & Jeste, 2018) to analyze whether resiliency mediates the association between three-dimensional wisdom and SWB by reducing stress.

Method. A structural equation path model was employed, using data from the Successful AGing Evaluation (SAGE) study of 994 adults between the ages of 51 and 99 years ($M = 77$, $SD = 12$). Wisdom was assessed as an integration of cognitive, reflective, and compassionate (affective) dimensions, resiliency as resilience and a sense of mastery and control, and SWB as a latent variable with mental health, happiness, and life satisfaction as effect indicators.

Results. Resilience, mastery, and perceived stress fully mediated the positive association between wisdom and SWB.

Discussion. Wisdom seems to strengthen resilience, mastery, and equanimity during the later years of life, which helps older adults to maintain a sense of well-being despite aging-related losses. The study indicates that wisdom is a valuable psychological resource in old age.

Keywords: Three-dimensional wisdom, subjective well-being, resilience, mastery, perceived stress

1 Introduction

Wisdom has been found to be positively related to subjective well-being, including life satisfaction, happiness, and positive affect, and the absence of negative affect, depressive symptoms, and feelings of alienation (for an overview see Ardel, 2019). Wisdom might be particularly important for well-being in old age when physical and cognitive health declines and individuals are more likely to encounter the death of loved ones and close friends with negative consequences for their sense of well-being (Clemence et al., 2007; Kraaij et al., 2002). Wisdom appears to provide the resources, resilience, and expertise to cope with adversity, reduce suffering, and maintain well-being when confronted with crises and hardship (Aldwin & Igarashi, 2015; Ardel, 2005; Choi & Landeros, 2011; Randall & Kenyon, 2001; Walsh, 2015). In fact, research has shown that wisdom buffers the negative impact of adversity on well-being in old age. Whereas older adults who were diagnosed with a terminal illness or lived in a nursing home tended to report lower subjective well-being than relatively healthy older community residents, those with high wisdom scores were less negatively affected (Ardelt & Edwards, 2016). Simi-

larly, the experience of frequent and/or severe adverse life events during the past year had a negative impact on older adults' subjective well-being but not for those with high wisdom scores (Ardelt & Jeste, 2018). This also means that the positive association between wisdom and subjective well-being is particularly pronounced during times of adversity. Older adults with lower wisdom scores seem to depend on favorable external circumstances and physical health to maintain or enhance their well-being, while older adults with higher wisdom scores appear to possess the necessary coping skills and equanimity to be resilient against declines in well-being even in stressful circumstances (Aldwin & Igarashi, 2015; Ardel & Ferrari, 2014). Yet, only few studies have empirically explored the specific pathway from wisdom to well-being in old age. The purpose of the present study was to extend our earlier research on the ameliorating effect of wisdom on well-being during times of adversity (Ardelt & Jeste, 2018) to examine whether different aspects of resiliency might explain the association between wisdom and subjective well-being in later life.

1.1 Definition of Wisdom, Resiliency, and Well-Being

Although wisdom has been defined and operationalized in a variety of ways, ranging from general wisdom-related knowledge or expertise in life management, life planning, and life review to self-transcendence (for an overview of the diverse wisdom definitions see Sternberg & Glück, 2019), some common elements exist. Based on a review of the literature, Meeks and Jeste (2009) and Bangen et al. (2013) summarized the common components of wisdom definitions as general knowledge of life, good social decision-making skills, emotional homeostasis, insight, self-reflection, decisiveness in the face of uncertainty, tolerance of divergent value systems, and pro-social attitudes and behaviors, such as empathy, compassion, and altruism. Another overarching definition describes wisdom as morally grounded excellence in social-cognitive processing, which requires a balance of self- and other-oriented interests through reflection and perspective-taking with an orientation toward the common good and an awareness of the limitations of knowledge while pursuing a deeper truth (Grossmann et al., 2020).

In this study, we define and operationalize wisdom as an integration of cognitive, reflective, and compassionate (affective) dimensions based on the Three-Dimensional Wisdom Model (Ardelt, 1997, 2003, 2004). This wisdom definition, originally proposed by Clayton and Birren (1980), has the advantage of being relatively parsimonious and compatible with most expert and people's conceptions of wisdom (Ardelt et al., 2020; Ardel & Oh, 2010; Bluck & Glück, 2005; Jeste & Lee, 2019; Jeste et al., 2019; Weststrate et al., 2019). The *cognitive dimension of wisdom* relates to the desire to know the deeper truth about the intrapersonal and interpersonal aspects of life, which requires an understanding of the positive and negative aspects of human nature, the limitations of knowledge, and life's unpredictability and uncertainties (Ardelt, 2000; Brugman, 2000; Kekes, 1983; Osbeck & Robinson, 2005). Individuals can attain this knowledge and understanding through the *reflective dimension of wisdom*, which requires perceiving phenomena and events, including oneself, from multiple perspectives (Kekes, 1995; Kramer, 1990). Through (self-)reflective thinking, self-examination, and self-insight, individuals are able to gradually overcome their subjectivity and projections, which is the tendency to blame others or the environment for their own shortcomings (Bradley, 1978; Sherwood, 1981). Through a mindful awareness of their own and others' emotions without judgment, individuals learn to accept their emotions without reacting to them, resulting in better emotion regulation and a weakening of negative emotions, such as anger, resentment, and bitterness (Ardelt & Ferrari, 2014; Farb et al., 2010; Glück, 2011; Linden, 2014; Webster, 2003).

Reflection and self-reflection not only make it possible to perceive and understand reality more clearly but also lead to a decrease in self-centeredness and greater tolerance toward the imperfections of others. As a consequence, wise individuals develop sympathetic love and compassion for others and the motivation to alleviate suffering (Kekes, 1995; Levitt, 1999; Staudinger & Glück, 2011), which describes the *compassionate dimension of wisdom*.

Resiliency is conceptualized and operationalized in this study as consisting of two components: resilience and a sense of mastery and control. Resilience is defined as successful psychological and physical adaption, hardiness, and the ability to bounce back after adversity (Bonanno, 2004), whereas mastery refers to the control individuals believe they have over their environment, life, and future (Pearlin & Schooler, 1978). Resilience and mastery are intertwined, because bouncing back after adversity strengthens individuals' sense of mastery and control, and individuals with a sense of mastery will find ways to overcome adversity.

Subjective well-being (SWB) is affected by emotional states and a cognitive evaluation of the totality of one's life (Diener et al., 2002). In this study, SWB is defined and operationalized as a combination of mental health, expressed by relatively stable emotional states, happiness, a more transient emotional state, and life satisfaction, a cognitive global assessment of one's life (George, 2010).

1.2 Possible Pathways from Wisdom to Well-Being

According to Weststrate and Glück (2017b), the positive relation between wisdom and well-being might be due to three reasons: Wise individuals (1) possess the skills and expertise to cope with the vicissitudes of life, (2) have mastered the art of living to benefit themselves, others, and the greater community, and (3) can appreciate and savor what they have rather than crave for more or better things. These reasons have been partly supported by empirical research.

In a study of older adults, the association between wisdom and positive affect was fully mediated by problem-focused coping, a positive reinterpretation and growth-orientation during stressful life events, perceived mastery and control over the environment, and a sense of meaning in life, while the inverse association between wisdom and negative affect was fully mediated by perceived control and meaning in life (Etezadi & Pushkar, 2013). Similarly, in another study of older adults, the relation between wisdom and SWB was partially mediated by a sense of mastery and purpose in life (Ardelt & Edwards, 2016). This suggests that coping skills, focusing on silver linings during stressful events while trying to learn from the experience, feeling in control of one's life, and having found meaning and

purpose in life might be possible pathways from wisdom to well-being.

Another pathway from wisdom to subjective well-being is emotional intelligence, operationalized as a combination of one's own and others' emotions appraisal, emotion regulation, and use of emotions to motivate oneself. In samples of university students and online workers, emotional intelligence fully mediated the direct effect of wisdom on life satisfaction and positive affect and partially mediated the inverse effect of wisdom on negative affect (Zacher et al., 2013). Because wise persons can comprehend and accept their own and other people's emotions without projecting their negative emotions onto others, they might attain a more complete understanding of stressful intrapersonal and interpersonal situations, which helps them to regulate and use their emotions to minimize negative affect and preserve well-being in themselves and others. In older adults, wisdom may improve decision making, interpersonal functioning, and other everyday activities, despite age-associated cognitive impairment (Lindbergh et al., 2021).

Studies have also found positive associations between wisdom and gratitude (König & Glück, 2014) and wisdom and savoring (Beaumont, 2011), but gratitude and savoring were not examined as possible mediators of the wisdom and well-being relationship. Another mediator that has not been investigated yet is resiliency. Although qualitative studies suggest that wiser older adults possess greater resiliency in coping with the vicissitudes of life than those with less wisdom, which preserves their SWB (Ardelt, 2005; Choi & Landeros, 2011; Taranto, 1989; Wiles et al., 2012), this pathway has not been tested quantitatively.

1.3 The Present Study

The present study extends our earlier research, which showed that wisdom buffered the negative association between adverse life events and SWB among older adults (Ardelt & Jeste, 2018), to test whether resiliency and the accompanying reduction in stress might be another possible pathway from wisdom to SWB. While our earlier research demonstrated that the positive effect of wisdom on SWB was weaker for older adults with no reported adverse life events during the past year than for those who recounted adversity, the association was still statistically significant. The goal of the present study was to examine whether resiliency and perceived stress mediated the association between wisdom and SWB among older adults with average adverse life events during the past year.

Older adults who possess resiliency feel resilient and have a sense of mastery and control over their lives. Wise persons deeply understand life, self, and others, feel sympathy and compassion for others even if they have been wronged, and are able

to respond to the vicissitudes of life in skillful benevolent ways (Ardelt, 2005; Walsh, 2015). Hence, they are likely to be resilient by adjusting to life's circumstances and exert mastery over situations and events by either shaping or adapting to existing environments or selecting new environments (Sternberg, 1998). Those superior coping skills appear to preserve SWB during difficult times (Aldwin & Igashii, 2015; Linden, 2014). Even if they have no control over a situation, such as declining physical health and stamina, resilient individuals with a sense of mastery know that they can choose how to respond mentally (Ardelt, 2005; Holliday & Chandler, 1986; Plews-Ogan et al., 2012; Randall & Kenyon, 2001), a process that has been called "secondary control" (Heckhausen & Schulz, 1993, 1995; Rothbaum et al., 1982). Knowing that both primary and secondary control strategies are available to deal with difficult life events tends to reduce mental stress in older age (Haynes et al., 2009; Wrosch et al., 2000). Therefore, both resilience and mastery were predicted to lessen the perceptions of stress (Friborg et al., 2006) and enhance SWB. Perceived stress, in turn, was expected to be inversely related to SWB (Bergdahl & Bergdahl, 2002; Gillett & Crisp, 2017; Kwag et al., 2011).

Wise older adults who know how to cope with adversity are probably also more likely to cope successfully with daily hassles that are an integral part of life and inversely affect SWB in old age (Charles et al., 2010). Hence, one explanation for the positive relation between wisdom and SWB might be that wise older adults tend to be more resilient, have a greater sense of mastery over their life and future and, therefore, feel less stressed by adverse life events and daily hassles. The present study tested whether the association between wisdom and SWB was fully mediated by resilience, a sense of mastery and control, and perceived stress for older adults with average adverse life events during the past year. We predicted wisdom to be positively related to resilience and mastery and negatively to perceived stress (*Hypothesis 1*). Resilience and mastery, in turn, were expected to be positively related to SWB and inversely to perceived stress (*Hypothesis 2*), and perceived stress was assumed to be negatively related to SWB (*Hypothesis 3*). Yet, because the relationship between wisdom and well-being was found to be stronger for older adults with more frequent and/or more severe adverse life events (Ardelt & Jeste, 2018), we also hypothesized that resilience, mastery, and perceived stress only partially mediated the association between wisdom and well-being when older adults experienced greater hardship (*Hypothesis 4*). Under these circumstances, wise understanding, reflection, and compassion might be necessary direct resources to maintain well-being.

2 Method

2.1 Procedure

We utilized the University of California, San Diego (UC San Diego) Successful AGing Evaluation (SAGE) study to analyze the data (Jeste et al., 2013; Thomas et al., 2016). Data were collected through a structured multi-cohort design and list-assisted random digit dialing with the goal to recruit 1,300 community-dwelling residents of San Diego County in California (USA), aged 50-99 years, and an over-representation of adults over the age of 75. Study inclusion criteria were (1) having a telephone at home, (2) age over 50 years, (3) physical and mental ability to participate in a telephone interview and to complete a paper and pencil mail-in survey, (4) informed consent for study participation, and (5) conversational and written fluency in English. Exclusion criteria were (1) residence in a nursing home or requiring daily, skilled nursing care, (2) diagnosis of dementia, and (3) terminal diagnosis or requiring hospice care. An initial 25-minute telephone interview was followed by a mail-in survey questionnaire, which took about 90 minutes to complete and yielded a response rate of 77%. Compared to the 294 adults who responded only to the phone interview, the 1,006 study participants who completed the survey were on average two years older and more likely to be white (81.0% versus 72.8%). The study received ethics approval from the UC San Diego Human Research Protections Program. For their participation, older adults received \$10 for the phone interview and \$20 for completing the survey.

2.2 Sample

After an inspection of missing values, we decided to remove 12 survey respondents who had between six and 13 study variables missing. The age of the remaining 994 participants ranged from 51 to 99 years with a mean age of 77.3 ($SD=12.2$) and a median age of 81. Approximately half of the sample (48.8%) were women, 81.2% were white, 49.1% were married, 23.6% had not attended college, 32% had attended some college or had an associate degree, 25% had an undergraduate degree or some postgraduate or professional degree, 11.7% had a Master's degree, and 7.7% had a doctoral degree.

2.3 Measures

Subjective well-being (SWB) was measured as a latent variable with positive mental health, happiness, and life satisfaction as effect indicators. *Mental health* was assessed on 6-point scales (1=*all of the time* and 6=*none of the time*) by two positive mental states (feeling calm; feeling happy) and two negative mental states (feeling down; feeling down-

hearted) of the Mental Health Component of the SF-36 (Ware & Sherbourne, 1992). The scores for the positive mental states were reversed before the four items were averaged, resulting in a reliability coefficient Cronbach's α of .79. *Happiness* was the mean of the four positively worded items (e.g., I was happy) of the CES-D (Radloff, 1977) assessed on 4-point scales (0=*rarely or none of the time* and 3=*most or all of the time*). Cronbach's α was .80. Because the scale had a high kurtosis of 4.58, it was transformed by calculating the exponential of e , resulting in an acceptable kurtosis of -.37. To make the transformed scale more compatible with the other scales, the scores were divided by 4, which yielded a scale range from .25 to 5.02. *Life satisfaction* was the average of the 5-item Satisfaction with Life Scale (Pavot & Diener, 1993), with a Cronbach's α of .90. Respondents indicated how strongly they agreed on 7-point scales (1=*strongly disagree* and 7=*strongly agree*) with the five items (e.g., My life is close to ideal). The correlations between mental health, happiness, and life satisfaction were high enough (varying between .51 and .58) to be used as effect indicators of the latent variable SWB.

Wisdom was measured by the Three-Dimensional Wisdom Scale (3D-WS), consisting of cognitive, reflective, and compassionate (affective) dimensions (Ardelt, 2003). The *cognitive wisdom dimension* was the average of 14 items (Cronbach's $\alpha=.81$) that measure the ability or willingness to understand a situation or phenomenon thoroughly, knowledge of the positive and negative aspects of human nature, an acknowledgement of ambiguity and uncertainty in life, and the ability to make important decisions despite life's unpredictability and uncertainties (e.g., Ignorance is bliss – reversed). The *reflective wisdom dimension* was the average of 12 items (Cronbach's $\alpha=.75$) that gauge the ability and willingness to look at phenomena and events from different perspectives and the absence of bitterness, subjectivity, and projections (e.g., I always try to look at all sides of a problem). The *compassionate (affective) wisdom dimension* was the average of 13 items (Cronbach's $\alpha=.71$) that assess the presence of positive, caring, and nurturing emotions and behavior and the absence of indifferent or negative emotions and behavior toward others (e.g., Sometimes I feel a real compassion for everyone). Using 5-point scales, respondents were asked how strongly they agreed with the statements (1=*strongly agree* and 5=*strongly disagree*) or felt that the statements were true of themselves (1=*definitely true of myself* and 5=*not true of myself*). All items were scored in the direction of greater wisdom before averaging the item scores. The correlations between the three wisdom dimensions were .35 between the cognitive and compassionate dimensions, .41 between the cognitive and reflective dimensions, and .48 between the reflective and compassionate dimensions. Composite *Three-Dimensional Wisdom* was computed as the average of

the three wisdom dimensions to weigh the three dimensions equally, which yielded a Cronbach's α of .67 (Cronbach's α was .86 for the 39 items).

The *occurrence and severity of adverse life events* was assessed by the Life Events Scale (Michael et al., 2009), which asks respondents whether they had experienced 11 adverse life events during the previous year (e.g., Did your spouse die?). If respondents confirmed that a specific event had happened, they were asked how much the event had upset them (1=*not too much* and 3=*very much*). The average of all valid items was computed after combining the two questions into a 4-point scale (0=*event did not happen* and 3=*event happened and it upset me very much*) to account for both the reported number of adverse life events and the average stress level of the experienced events. Because the life events index had a large kurtosis of 10.12, a natural log transformation was performed after adding 1 to the index. The transformed index had a kurtosis of 1.68 and a range between 0 and 1.39.

To compute the *interaction between adverse life events and three-dimensional wisdom*, the transformed adverse life events index was multiplied with the 3D-WS after the two variables were mean-centered to reduce multicollinearity (Aiken & West, 1991; Dawson, 2014).

Resiliency was assessed by two variables: resilience and a sense of mastery and control. *Resilience* was the mean of the 10-item version of the Connor-Davidson Resilience Scale (Campbell-Sills & Stein, 2007). Respondents were asked how true the statements were (e.g., I tend to bounce back after illness or hardship) on 5-point scales (0=*not true at all* and 4=*true nearly all of the time*). Cronbach's α was .91. *Mastery* was measured as the average of Pearlin and Schooler's (1978) 7-item Mastery Scale after the scores of the negatively worded items were reversed. Respondents indicated how strongly they agreed with the statements (e.g., What happens to me in the future mostly depends on me) on 4-point scales (1=*strongly disagree* and 4=*strongly agree*). Cronbach's α was .78.

Perceived stress was assessed as the mean of five items of the original 10-item Perceived Stress Scale (Cohen et al., 1983). Five items were deleted to avoid overlap with resilience and mastery. Respondents were asked how often (0=*never* and 4=*very often*) they felt a certain way in the last month (nervous and stressed; upset because of something that happened unexpectedly; not able to cope with all the things they had to do; angered because of things that were outside of their control; felt difficulties were piling up so high that they could not overcome them). Cronbach's α was .81.

Control variables included age (in years), gender (0=*female* and 1=*male*), race (0=*non-white* and 1=*white*), current marital status (0=*not married* and 1=*married*), highest educational degree (1=*did not go to school* and 12=*doctoral degree*), and self-rated health. *Self-rated health* was the mean of three re-

versed items from the general health subscale of the SF-36 (Ware & Sherbourne, 1992) with a Cronbach's α of .83. Respondent were asked about their general health (1=*excellent* and 5=*poor*) and how true or false (1=*definitely true* and 5=*definitely false*) two health-related statements were (I am as healthy as anybody I know; My health is excellent).

The scales were computed by taking the average of all valid items to reduce the number of missing cases. Between 92% and 98% of participants responded to all scale items, and at least 98% answered half or more of the items.

3 Results

3.1 Bivariate Correlations

Table 1 shows the bivariate correlations between all study variables with valid values ranging from 975 to 994. The three well-being indicators were positively correlated with three-dimensional wisdom, resilience, mastery, self-rated health, and marital status, and negatively with adverse life events and perceived stress. Older adults, men, and higher educated adults tended to have higher scores on mental health and life satisfaction than middle-aged sample members, women, and lower educated adults, but there was no significant difference in happiness scores. Race was unrelated to the three indicators of subjective well-being.

Wisdom was positively correlated with resilience and mastery and negatively with perceived stress. Adverse life events had a negative association with resilience and a positive association with perceived stress. Resilience and mastery were positively correlated, and both had negative associations with perceived stress.

Among the control variables, self-rated health was positively related to wisdom, resilience, and mastery, and negatively to adverse life events and perceived stress. Age was negatively correlated with wisdom, adverse life events, and a sense of mastery. Men and white respondents tended to score lower on adverse life events and perceived stress than women and non-whites. In addition, women and white respondents tended to score higher on wisdom than men and non-whites. Men and married respondents tended to score higher on mastery than women and unmarried adults. Married respondents were also more likely to report fewer or less severe adverse life events than unmarried adults. Finally, educational degree was positively related to wisdom, resilience, and mastery, and negatively to adverse life events and perceived stress.

Table 1

Bivariate Correlation Analyses between Wisdom, Resiliency, Perceived Stress, Well-Being, and Control Variables; Pearson's r

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	M	SD	N
(1) Mental health	-													5.06	.70	984
(2) Happiness (e*/4)	.55*	-												3.96	1.41	975
(3) Life satisfaction	.58*	.51*	-											5.24	1.14	983
(4) 3D-wisdom	.33*	.34*	.29*	-										3.56	.43	994
(5) Adverse life events (ln)	-.27*	-.17*	-.22*	-.07	-									.25	.22	982
(6) Resilience	.51*	.45*	.45*	.48*	-.10*	-								3.11	.63	981
(7) Mastery	.43*	.42*	.43*	.55*	-.07	.52*	-							3.01	.47	980
(8) Perceived stress	-.60*	-.41*	-.45*	-.44*	.30*	-.48*	-.52*	-						1.42	.62	990
(9) Self-rated health	.42*	.40*	.41*	.26*	-.08*	.38*	.38*	-.34*	-					3.72	.90	994
(10) Age	.11*	-.05	.14*	-.13*	-.16*	-.04	-.21*	-.02	-.08	-				77.26	12.17	994
(11) Gender (1=male)	.10*	-.01	.09*	-.09*	-.17*	.02	.10*	-.15*	.03	.00	-			.51	.50	994
(12) Race (1=white)	-.02	.01	-.05	.12*	-.12*	.06	.02	-.09*	.05	.12*	-.01	-		.81	.39	990
(13) Married (1=yes)	.09*	.10*	.14*	.03	-.15*	.08	.15*	-.08	.10*	-.23*	.44*	-.06	-	.49	.50	991
(14) Educational degree	.10*	.08	.09*	.26*	-.11*	.12*	.18*	-.16*	.14*	-.14*	.23*	.05	.21*	8.36	2.19	990

Note: * $p < .01$

3.2 Path Analysis Model

The multiple imputation method in PRELIS 2.80 was used to impute missing values for 45 respondents with one missing value, 26 with two missing values, and three with three missing values (Schafer, 1999). We used the imputed data set of 994 cases to analyze a mediated path model and test whether the association between wisdom and SWB was mediated by resilience, mastery, and perceived stress. The residuals of the two resiliency variables were allowed to covary freely. Both resiliency variables were expected to be negatively related to perceived stress and positively to SWB. Perceived stress, in turn, was predicted to be negatively related to SWB. SWB was assessed as a latent variable to take measurement error into account with its variance set to 1 to scale the latent variable (Bollen, 1989). All other variables were treated as manifest variables so that a satisfactory model fit could be obtained. A preliminary inspection indicated that the variables did not follow a multivariate normal distribution. Therefore, covariance and asymptotic covariance matrices were computed in PRELIS 2.80 and a weighted least squares (WLS) estimation was used in LISREL 9.30 to obtain corrected χ^2 -statistics and corrected standard errors and t -values of the direct, indirect, and total effects (Jöreskog et al., 1999). The WLS estimator is asymptotically sufficient even under the condition of nonnormality (Bollen, 1989).

For comparison purposes, a direct effects model without the mediating variables was estimated first (see Model 1 in Table 2). Because the number of cases and coefficient estimates was large, only coefficient estimates that were statistically significant at a more conservative alpha of .01 or lower were included as direct effects in the model. However, if a coefficient estimate was statistically sig-

nificant in the direct effects model, it was also retained in the path model to make direct comparisons possible. All control variables were initially added to the model, but non-significant coefficient estimates ($p > .01$) were removed in a step-wise procedure, starting with the coefficient estimate with the lowest t -value. After eliminating all non-significant coefficient estimates, modification indices of deleted paths were consulted and those with large modification indices were reentered to check their significance again in an iterative procedure.

The direct effects Model 1 in Table 2 repeats our earlier moderation analysis of the ameliorating effect of wisdom on the negative association between adverse life events and SWB (see Model 2 in Table 2 in Ardel & Jeste, 2018). Without the mediation variables, wisdom was moderately positively related to the latent variable SWB. The positive interaction between wisdom and adverse life events implied that higher wisdom buffered the negative association between adverse life events and SWB and that the effect of wisdom on SWB was significantly stronger for older adults with more frequent and/or more severe adverse life events during the past year than for older adults with no reported adverse life events (see Figure 1 in Ardel & Jeste, 2018). The factor loadings of the three effect indicators for SWB were significant and satisfactory in size.

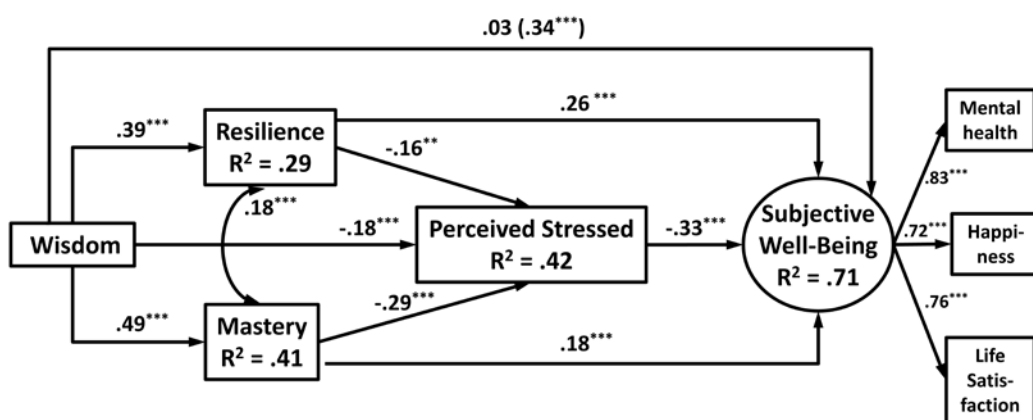
The mediated path model was analyzed next. The direct, indirect, and total effects of the path model on SWB are shown in Model 2 in Table 2, while Table 3 displays the direct and indirect effects on the mediation variables. As illustrated in Figure 1, the positive association between wisdom and SWB was completely mediated by resilience, mastery, and perceived stress for older adults with average adverse life event scores. The direct unstandardized/standardized effect of wisdom on SWB changed from 1.10/.34 ($p < .0001$) in the direct

Table 2

Results of the Path Analysis Model for Subjective Well-Being as Dependent Variable

Independent Variables	Subjective Well-Being (SWB)							
	Model 1 Direct Effects Model				Model 2 Path Model			
	Direct Effects		Direct Effects		Indirect Effects		Total Effect	
	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β
Three-dimensional wisdom	1.10***	.34	.15	.03	1.36***	.32	1.51***	1.35
Adverse life events	-1.18***	-.18	-.91***	-.11	-.59***	-.07	-1.50***	-.17
Wisdom x adverse life events	1.70**	.12	1.85**	.10	-	-	1.85**	.10
Resilience	-	-	.77***	.26	.16***	.05	.93***	.31
Mastery	-	-	.74***	.18	.38***	.09	1.11***	.28
Perceived stress	-	-	-1.03***	-.33	-	-	-1.03***	-.33
<i>Control Variables</i>								
Self-rated health	.71***	.45	.55***	.27	.42***	.20	.97***	.47
Age	.02***	.18	.03***	.18	-.01***	-.04	.02***	.15
Gender (0=female, 1=male)	ns	ns	ns	ns	.24***	.06	.24***	.06
Race (0=non-white, 1=white)	-.52***	-.15	-.65***	-.14	-	-	-.65***	-.14
Married (0=no, 1=yes)	.31**	.11	.21*	.06	-	-	.21*	.06
Educational degree	ns	ns	ns	ns	-	-	-	-
<i>Factor Loadings for SWB</i>								
Mental health	.38***	.78	.30***	.83	-	-	-	-
Happiness	.70***	.72	.53***	.72	-	-	-	-
Life satisfaction	.59***	.75	.45***	.76	-	-	-	-
<i>Overall Model Fit Statistics</i>								
R^2 for structural equations	.50				.71			
Degrees of freedom	20				43			
Weighted least squares χ^2	76.80				135.50			
Normed chi-square (NC)	3.84				3.15			
Goodness of fit index (GFI)	1.00				1.00			
Incremental fit index (IFI)	.96				.95			
RMSEA [90% confidence interval]	.053 [.041, .066]				.047 [.038, .055]			
<i>p</i> for close fit (RMSEA < .05)	.31				.73			
Critical <i>N</i> (CN)	486.70				495.38			

Note: $n = 994$; *** t -value > 3.90 ($p < .0001$), ** t -value > 3.29 ($p < .001$), * t -value > 2.58 ($p < .01$), + t -value > 1.96 ($p < .05$); WLS estimation using LISREL 9.30; standard errors, t -values, and χ^2 statistics corrected for non-normality; b = unstandardized effect, β = standardized effect; RMSEA = Root Mean Square Error of Approximation; ns = Path was eliminated because coefficient estimate was not statistically significant at $p < .01$

**Figure 1**

Mediated Pathway Between Wisdom and Subjective Well-Being for Average Adverse Life Events

Notes. *** t -value > 3.90 ($p < .0001$); $n = 994$

Weighted least squares $\chi^2 = 135.50$, $p < .001$ ($df = 43$); NC=3.15, GFI = 1.00, IFI = .95, RMSEA = .047, p for close fit (RMSEA < .05) = .73; CN= 495.38; WLS estimation using LISREL 9.30; completely standardized coefficient estimates are shown, controlling for self-rated health, demographic characteristics, and average occurrence/severity of adverse life events, unmediated effect of wisdom on subjective well-being in parenthesis; standard errors, t -values, and χ^2 statistics are corrected for non-normality.

NC = Normed chi-square, GFI = Goodness of Fit Index, IFI = Incremental Fit Index, RMSEA = Root Mean Square Error of Approximation, CN = Critical N.

Mediation Variables	Resilience		Mastery		Perceived Stress			
	Direct Effects		Direct Effects		Direct Effects		Indirect Effects	
	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β
Independent Variables								
Three-dimensional wisdom	.57***	.39	.52***	.49	-.25***	-.18	-.28***	-.20
Adverse life events	ns	ns	ns	ns	.57***	.21	-	-
Wisdom x adverse life events	ns	ns	ns	ns	ns	ns	-	-
Resilience	-	-	-	-	-.15***	-.16	-	-
Mastery	-	-	-	-	-.37***	-.28	-	-
Control Variables								
Self-rated health	.19***	.27	.13***	.24	-.10***	-.15	-.07***	-.11
Age	ns	ns	-.01***	-.14	ns	ns	.00***	.04
Gender (0=female, 1=male)	ns	ns	.13***	.14	-.10*	-.08	-.05***	-.04
Race (0=non-white, 1=white)	ns	ns	ns	ns	ns	ns	-	-
Married (0=no, 1=yes)	ns	ns	ns	ns	ns	ns	-	-
Educational degree	ns	ns	ns	ns	ns	ns	-	-
Residual Covariance/Correlation								
Resilience and mastery	.05***	.18						
Overall Model Fit Statistics								
R ² for structural equations	.29		.41		.42			

Notes: *n* = 994; *** *t*-value > 3.90 (*p* < .0001), ** *t*-value > 3.29 (*p* < .001), * *t*-value > 2.58 (*p* < .01); WLS estimation using LISREL 9.30; standard errors, *t*-values, and χ^2 statistics corrected for non-normality; *b* = unstandardized effect, β = standardized effect; RMSEA = Root Mean Square Error of Approximation; ns = Path was eliminated because coefficient estimate was not statistically significant at *p* < .01.

Table 3

Results of the Path Analysis
Model for Resilience,
Mastery, and Perceived
Stress as Mediation Variables

effects model (Model 1 in Table 2) to almost zero (.15/.03; *p* = .23) in the mediated path model (Model 2 in Table 2), while the indirect effect of wisdom on SWB, mediated by resilience, mastery, and perceived stress, was statistically significant (1.36/.32; *p* < .0001). As predicted in Hypothesis 1, wisdom was positively related to resilience and mastery and negatively to perceived stress. Resilience and mastery, in turn, were negatively related to perceived stress and positively to SWB, while perceived stress was inversely associated with SWB, corroborating Hypotheses 2 and 3, respectively. The residuals of resilience and mastery were positively correlated. Additional analyses (not shown) revealed that the association between wisdom and well-being remained significant if any of the three mediation variables was removed from the model, indicating that all three variables were necessary to account for the positive relation between wisdom and well-being.

The negative association between adverse life events and well-being for average wisdom scores was partially mediated by perceived stress (indirect unstandardized/standardized effect = -.59/-.07, *p* < .0001), but not resilience and mastery. The positive interaction between wisdom and adverse life events on well-being remained significant, however, reaffirming not only the buffering effect of wisdom on the negative association between adverse life events and well-being but also suggesting a continuing positive direct effect of wisdom on well-being for respondents who reported more frequent and/or more stressful adverse life events.

To test Hypothesis 4, the path analysis was repeated for subsets of respondents with no reported adverse life events during the past year and those with the highest adverse life events (see Table 4). Compared to the path model with the full sample, race was added as a control variable for resilience, because whites tended to score significantly higher on resilience than non-whites among older adults with no reported adverse life events. An analysis of the 243 respondents with no recounted adverse life events showed that the total effect of wisdom on SWB (unstandardized/standardized effect = 1.44/.33, *p* < .0001) was completely mediated by resilience, mastery, and perceived stress (direct unstandardized/standardized effect = -.09/-.02, *p* = .77; indirect unstandardized/standardized effect = 1.52/.35, *p* < .0001). By contrast, and as predicted by Hypothesis 4, an analysis of the 220 respondents with the highest reported adverse life events (a score of .50 or higher on the original 0-3 index) revealed that the direct effect of wisdom on SWB remained statistically significant (unstandardized/standardized effect = .67/.15, *p* = .006) in addition to the significant indirect effect on SWB (unstandardized/standardized effect = 1.54/.34, *p* < .0001), mediated by resilience, mastery, and perceived stress, resulting in a total unstandardized/standardized effect of 2.21/.49 (*p* < .0001). For example, these respondents might have experienced five or more adverse life events, which did not upset them too much or at least one adverse life event that upset them very much in addition to a lesser upsetting life event.

Among the control variables in Tables 2 and 3, self-rated health was positively related to SWB, resilience, and mastery and negatively to perceived stress. Hence, resilience, mastery, and perceived stress also partially mediated the association between self-rated health and SWB (unstandardized/standardized indirect effect = .42/.20, $p < .0001$), although the direct effect (.55/.27, $p < .0001$) remained significant. Age was negatively related to mastery, resulting in a negative indirect effect of age on SWB. However, the total effect of age on SWB was positive due to a greater direct positive effect of age on SWB. Compared to women, men tended to score higher on mastery and lower on perceived stress and, therefore, indirectly higher on SWB. White older adults tended to score lower on SWB than non-whites. Marital status and educational degree were unrelated to the dependent variables at the .01 level of significance.

The path model explained 71% of the variation in SWB, 29% of the variation in resilience, 41% of the variation in mastery, and 42% of the variation in perceived stress. Overall, the path model fit the data slightly better than the direct effects Model 1 in Table 2 based on the overall fit statistics. The Critical N (CN) value of 495.38 was larger and the

root mean square error of approximation (RMSEA) value of .047 was smaller for the path model than the CN of 486.70 and the RMSEA of .053 for the direct effects model. Yet, both CN-values were above the recommended minimum value of 200 and the RMSEA-values were close to .05, indicating a good model fit (Bollen, 1989; Kline, 2005). Moreover, the goodness of fit index (GFI) and the incremental fit index (IFI) were above the recommended values of .95 and .90, respectively, for both models. However, the normed chi-square (NC), which divides χ^2 by the degrees of freedom and is more appropriate for large sample sizes, was 3.84 for the direct effects model, which is somewhat higher than the recommended value of < 3 . By contrast, the NC for the path model was with 3.15 closer to 3, further supporting the notion of a close approximate fit.

A comparison of the coefficient estimates based on the imputed data set with estimates derived from a listwise deletion of cases ($n = 920$) showed that the results were very close with most differences in the standardized coefficient estimates not greater than .02, confirming the robustness of the results. The largest difference was found in the effect of self-rated health on perceived stress,

Table 4

Comparison of Path Analysis Models for Subjective Well-Being for Respondents with No Adverse Life Events and Highest Adverse Life Events Scores

Dependent Variable	Subjective Well-Being (SWB)							
	No Adverse Life Events (n = 243)				Highest Adverse Life Events Scores (n = 220)			
	Direct Effects		Indirect Effects		Direct Effects		Indirect Effects	
Independent Variables	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β	<i>b</i>	β
Three-dimensional wisdom	-.09	-.02	1.52***	.35	.67*	.15	1.54***	.34
Resilience	.56**	.19	.02	.01	.59+	.19	.12+	.04
Mastery	1.24*	.30	.93***	.23	.97**	.23	.36**	.09
Perceived stress	-1.29***	-.40	-	-	-.81***	-.27	-	-
<i>Control Variables</i>								
Self-rated health	.64**	.28	.42***	.18	.60***	.29	.41***	.20
Age	.03**	.19	-.01+	-.06	.04***	.24	-.01+	-.04
Gender (0=female, 1=male)	ns	ns	.30+	.08	ns	ns	.39**	.09
Race (0=non-white, 1=white)	-.53	-.09	.19+	.03	-.72**	-.15	.02	.00
Married (0=no, 1=yes)	.20	.05	-	-	.20	.05	-	-
Educational degree	ns	ns	-	-	ns	ns	-	-
<i>Factor Loadings for SWB</i>								
Mental health	.20***	.75	-	-	.38***	.92	-	-
Happiness	.35***	.57	-	-	.61***	.83	-	-
Life satisfaction	.36***	.70	-	-	.52***	.85	-	-
<i>Overall Model Fit Statistics</i>								
R^2 for structural equations	.72				.76			
Degrees of freedom	33				33			
Weighted least squares χ^2	47.06				59.00			
Normed chi-square (NC)	1.43				1.79			
Incremental fit index (IFI)	.97				.95			
RMSEA [90% confidence interval]	.042 [0, .067]				.060 [.034, .084]			
<i>p</i> for close fit (RMSEA $< .05$)	.67				.24			
Critical N (CN)	282.66				204.31			

Note: *** *t*-value > 3.90 ($p < .0001$), ** *t*-value > 3.29 ($p < .001$), * *t*-value > 2.58 ($p < .01$), + *t*-value > 1.96 ($p < .05$)

WLS estimation using LISREL 9.30; standard errors, *t*-values, and χ^2 statistics corrected for non-normality; *b* = unstandardized effect, β = standardized effect; RMSEA = Root Mean Square Error of Approximation; ns = Path was eliminated because coefficient estimate was not statistically significant at $p < .01$ in the original path model or in the analyses with the two subsamples.

which was weaker by .04 standard units in the smaller data set.

4 Discussion

Using a sample of older adults ($M = 77$ years) from the Successful AGing Evaluation (SAGE) study, this research analyzed whether resiliency and perceived stress might be another possible pathway between wisdom and well-being. Resiliency was assessed by both resilience, confidence in one's ability to bounce back physically and psychologically after adversity (Bonanno, 2004), and a sense of mastery and control over one's life and the future (Pearlin & Schooler, 1978). As predicted, wisdom was positively associated with resilience and mastery and negatively with perceived stress (*Hypothesis 1*), resilience and mastery were positively related to SWB and negatively to perceived stress (*Hypothesis 2*), and perceived stress was inversely related to SWB (*Hypothesis 3*). The results confirm earlier qualitative research findings that wisdom in old age tends to enhance resilience and a sense of mastery and to reduce perceptions of stress directly and indirectly through greater resilience and mastery (Ardelt, 2005; Choi & Landeros, 2011; Taranto, 1989). After introducing the three mediating variables to the path model, the direct association between wisdom and SWB was no longer statistically significant. The relation between wisdom and SWB remained significant, however, if one of the mediating variables was eliminated from the model. This implies that wisdom might be positively related to well-being in later life because it strengthens resilience and mastery and reduces perceptions of stress through the development of equanimity (Ardelt, 2005; Randall & Kenyon, 2001).

It is likely that resilience and mastery reinforce each other, as indicated by the significant residual correlations between the two variables, even after controlling for the effects of wisdom and significant control variables. Resilience might foster a sense of mastery, because resilient older adults might be more likely to feel that they can master the challenges of everyday life (Aldwin & Igarashi, 2012; Linden, 2014). Even if they have no control over an event, such as declining physical health and stamina, individuals with a sense of mastery know that they can choose how to respond mentally (Ardelt, 2005; Plews-Ogan et al., 2012). A sense of mastery, in turn, might strengthen perceptions of resilience. If older adults feel that they have some control over their life and future, they might also be confident to overcome adversity. Knowing how to bounce back from adversity and how to master the vicissitudes of life likely lessen stress and improve well-being in old age (Aldwin & Igarashi, 2012; Wiles et al., 2012; Windle & Woods, 2004). Accumulating adverse life events, however, might overwhelm older adults by causing additional stress

and undermining their sense of well-being (Kwag et al., 2011; Lavretsky, 2012). In fact, perceived stress partially mediated the inverse association between adverse life events and SWB, but resilience and mastery remained unaffected by adverse life events, thereby providing a buffer against increasing stress (Janssen et al., 2012; Wiles et al., 2012; Windle & Woods, 2004).

Yet, for older adults with the most or most severe reported adverse life events in the previous year, the direct association between wisdom and well-being remained significant in the mediated path model in addition to its indirect significant effect as expected (*Hypothesis 4*). These findings support the notion that wisdom is particularly valuable in times of distress as it might help older adults to cope with crises and difficulties with equanimity and calmness to maintain an emotional equilibrium that is threatened by adverse life events (Ardelt, 2005; Ardel & Edwards, 2016; Ardel & Ferrari, 2014; Etezadi & Pushkar, 2013; Weststrate & Glück, 2017b). For example, several studies have shown that wisdom is inversely associated with loneliness and depression across the adult lifespan (Lee et al., 2019; Nguyen et al., 2020). Even during the COVID-19 pandemic, wisdom and resiliency in older adults contributed to their mental well-being despite high physical vulnerability and greater social isolation (Jeste, 2020).

However, physical illness or disability appears to be one adverse life event that inversely affects resiliency. Self-rated health was directly and indirectly related to greater SWB, partially mediated by resilience, mastery, and perceived stress. Feeling physically well rather than ill might boost older adults' sense of resilience and confidence to exert control over their lives, which might reduce feelings of stress directly and indirectly through greater resilience and mastery. For example, past research has shown that mastery mediated the relationship between physical functioning and life satisfaction in old age (Windle & Woods, 2004).

Longitudinally, the relations among wisdom, resilience, and mastery are probably dialectical. Resilience and mastery are likely to facilitate stress-related growth and the attainment of wisdom by enabling individuals to learn valuable life lessons (Bluck & Glück, 2004; Choi & Landeros, 2011; Glück & Bluck, 2013; Glück et al., 2019; Weststrate & Glück, 2017a, 2017b). Greater wisdom, in turn, strengthens resilience and the confidence to master future crises, thereby reducing stress and providing opportunities for further growth (Aldwin & Igarashi, 2015; Ardel, 2005; Nelson-Becker, 2013; Pascual-Leone, 2000). In this way, wisdom development resembles the process of cumulative advantage and cumulative disadvantage across the life course (Dannefer, 2003). Successful coping with adversity through resilience and mastery leads to stress-related growth and greater wisdom, which increases feelings of resilience and mastery and the

probability of successful coping with future adversity, resulting in further stress-related growth and greater wisdom (Aldwin & Igarashi, 2012; Linley, 2003). Randomized controlled trials of behavioral interventions to enhance components of wisdom, such as compassion, have shown that compassion and well-being can be increased in a sizable proportion of people (Lee, et al., 2020). A recent longitudinal study found that baseline levels of compassion as well as subsequent increases in compassion predicted greater well-being and less loneliness (Lee, et al., 2021).

Thus, adversity might be a catalyst for the development of greater resilience, mastery, and wisdom (Ardelt, 2005; Glück & Bluck, 2013; Weststrate & Glück, 2017a, 2017b). Without adversity, people might lack the motivation to grow in wisdom, which might place them at a disadvantage during the later years of life when they have to cope with age-related losses. Yet, without sufficient resources, people might be overwhelmed by hardship (Elder & Liker, 1982; Seery, 2011). Some adversity in combination with personal, social, and economic resources might be most conducive to stress-related growth in wisdom and, ultimately, greater subjective well-being even if circumstances are less than optimal (Aldwin et al., 2009; Glück & Bluck, 2013; Glück et al., 2019; Linden, 2014).

However, the study has several limitations. One limitation of survey research is the possibility that item scores are affected by self-deception and social desirability bias (Staudinger & Glück, 2011). For example, wise older adults who are aware of and accept their own shortcoming might score lower on the 3D-WS than less wise individuals who are under the illusion that they are perfect or at least want to appear this way (Bangen et al., 2013). Yet, earlier research found that the effect of social desirability on wisdom, mastery, perceived stress, and well-being is either relatively weak or non-significant (Ardelt, 2016; Dawes et al., 2011; Taylor et al., 2011). Another limitation is the underrepresentation of racial/ethnic minorities and lower educated older adults, which limits the generalizability of the results, although random digit dialing was used to select the sample among San Diego County residents in California (USA). Finally, a major limitation of the study is the cross-sectional nature of the data, which makes it impossible to determine causality. Although longitudinally, resilience and mastery might lead to stress-related growth and greater wisdom, contemporarily it appears more likely that greater wisdom is accompanied by resilience and a sense of master of everyday life (Taranto, 1989) than that resilience and mastery invoke greater wisdom. In fact, a short-term longitudinal study found that baseline wisdom was positively related to mastery and SWB ten months later but not vice versa after controlling for baseline scores (Ardelt, 2016). Future experimental and longitudinal

research will need to explore the causal pathways further.

Notwithstanding its limitations, our results suggest a possible mediating process that might explain the relation between wisdom and well-being in later life, although this is not the only possible pathway between wisdom and well-being (Ardelt & Edwards, 2016; Etezadi & Pushkar, 2013; Zacher et al., 2013). It appears that wisdom increases subjective well-being through multiple pathways, but resiliency might be crucial in later life to maintain subjective well-being despite physical, cognitive, and social losses. The findings support growing evidence for neuroplasticity of aging (Jeste et al., 2020) and emphasize the importance of social interventions or wisdom-related therapy to strengthen wisdom and resiliency and enhance well-being in old age (Linden, 2014; Parisi et al., 2009).

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