

Stressors Arising in Highly Valued Roles, Meaning in Life, and the Physical Health Status of Older Adults

Neal Krause

School of Public Health and Institute of Gerontology, University of Michigan, Ann Arbor.

Objectives. The purpose of this study is to see if stressors arising in highly valued roles affect health by eroding an older person's sense of meaning in life. A second goal is to assess whether emotional support provided by social network members helps offset the deleterious effects of stress on meaning and health.

Methods. Interviews were conducted with a nationwide sample of older people. Survey items were administered to assess stressors in highly valued roles, meaning in life, and self-rated health.

Results. The findings suggest that life events arising in roles that are valued highly are associated with less favorable health ratings. Moreover, the data reveal that stressors in highly valued roles affect health primarily by eroding an older person's sense of meaning in life. Finally, the results indicate that emotional support helps older people cope more effectively with stress by restoring their sense of meaning in life.

Discussion. Researchers have devised a number of interventions to improve the health of older people by enhancing the functioning of their social networks. These interventions have met with mixed success. The findings from the current study suggest that focusing on meaning in life may help researchers devise more effective interventions.

MOST researchers would agree that stressful life events exert a pernicious effect on health and well-being in late life (Krause, 2003a). But research on the stress process is far from complete. To take this work to the next level, investigators need to devise more articulate theoretical perspectives that clearly specify *how* the noxious effects of stress arise. One promising line of inquiry may be found by turning to insights provided by identity theory (Thoits, 1991). According to this perspective, stressors arising in highly valued roles exert a more deleterious effect on health and well-being than life events emerging in roles that are less important to study participants.

A series of studies (e.g., Krause, 1994) provide empirical support for the theoretical perspective developed by Thoits (1991). Although these findings are encouraging, key facets of identity theory have yet to be evaluated empirically. According to Thoits (1991), events arising in highly valued social roles tend to erode health and well-being because they deprive people of a sense of meaning in life. The first goal of the current study is to address this gap in the knowledge base by empirically evaluating the potentially important mediating effect of meaning in life. However, this objective is difficult to attain because researchers have encountered a number of challenges in staking out the content domain of meaning and devising good measures of this elusive construct. Therefore, a secondary aim of this study is to develop and test a measurement model of meaning in late life.

Theoretical Overview

The theoretical foundation of this study is developed below by first reviewing the core tenets of identity theory. Following this, the crucial role played by meaning in this conceptual scheme is explored in greater detail. In the process, a case is made for why stressors in highly valued roles are likely to erode a person's sense of meaning. Then, the emerging theoretical

framework is developed further by showing why salient role stressors may have an especially deleterious effect on health as people grow older. Next, the conceptual scheme is extended by assessing how support from significant others may counteract the deleterious effects of stress by helping older people restore and maintain a sense of meaning in life. Finally, the theoretical framework is completed by discussing how meaning may influence health.

Basic tenets of identity theory.—Identity theory rests on two core constructs: social roles and role identities. Social roles are defined structurally as positions in a group (e.g., husband, father, provider), whereas identities refer to the kinds of information that people emphasize when thinking about themselves and presenting themselves to others. This information is grounded in the roles they occupy (e.g., "I am a father"). Associated with each social role are clusters of normative expectations that tell role occupants what to do and what to expect. As a result, they provide a sense of direction and purpose in life as well as a basis for evaluating the adequacy of one's own role performance. These normative expectations are important because, as Thoits (1991) points out, they are a major source of meaning in life.

According to Thoits (1991), stressors arising in certain roles are likely to be especially noxious because they have the capacity to undermine the identity associated with the role. However, this perspective further stipulates that only some events are capable of doing so. People typically occupy a number of different roles. As a result, there is a separate identity associated with each of these social positions. However, individuals attach greater importance to some roles than others. More specifically, as Stryker (2001) argues, individual role identities are organized into a salience hierarchy reflecting various levels of commitment to, and emotional investment in, the roles underlying the identities.

The crux of the argument developed by Thoits (1991) rests on the assumption that if some roles are more important than others, then the impact of stressors arising in various roles will depend upon where the roles are located in the salience hierarchy: Events arising in roles that are valued highly will exert a more deleterious effect on health than stressors that emerge in roles that are less important.

Meaning in life.—As noted above, Thoits (1991) highlights the role played by meaning in the stress process. To see why this construct occupies a central position in this theoretical scheme, it is important to define meaning, stake out its conceptual domain, and show how salient role stressors may challenge a person's sense of meaning in life.

Reker (1997) defines meaning as "having a sense of direction, a sense of order, and a reason for existence, a clear sense of personal identity, and a greater social consciousness" (p. 710). McCall and Simmons (1966) provide an insightful overview of how a sense of meaning arises from the roles people occupy (see also Battista & Almond, 1973). Three facets of their discussion are especially useful. First, they argue that roles provide a system of values and beliefs that guide behavior. In a world where the utility and worthiness of specific thoughts and actions are often unclear, values provide the basis for selecting among different options by giving the assurance that personal choices are, in the words of Baumeister (1991), right, good, and justifiable. Values make this possible through the wider social process upon which they rest. More specifically, the values attached to specific types of role behavior are agreed upon and endorsed by significant others as well as the wider social order, thereby providing the sense that what one does is sanctioned by a higher authority, be it close others, society, or even God.

According to McCall and Simmons (1966), social roles provide a second key component of meaning: a sense of purpose. Although clearly linked to values, having a sense of purpose is at the same time conceptually distinct. A sense of purpose has to do with believing that one's actions have a set place in the larger order of things and that one's behavior fits naturally into the course of a larger, more important social whole. Values are codes or standards that define which specific types of thoughts and actions are desirable, whereas a sense of purpose carries evaluative or affective connotations that arise from successfully implementing, executing, and complying with underlying values. Put another way, a sense of purpose cannot arise without action or effort, because it is only through action and effort that the underlying intent and worth of values become manifest.

Third, McCall and Simmons (1966) point out that the sense of meaning arising from occupying roles creates expectations for the future as well. In particular, social roles provide goals to strive for. Goals are targets for the future—they are specific endpoints toward which current behavior is oriented. Goals help organize current activities and provide conduits for focusing and implementing energies, efforts, and ambitions. Although guided by values, goals refer to more specific, concrete behaviors than those associated with values. Even though goals are oriented toward the future, they also provide more immediate rewards by giving rise to a sense of hope and by reinforcing and building upon the sense of achievement a person may have already derived. The essence of this perspective was captured some time ago in Cooley's (1927) discussion of plans, which are closely

akin to goals. He argued, "Able men plan and strive not as being discontented now, but because they need to continue that hope and sense of achievement they already have. They bring the future into the scene to animate the present. . . . Our plans are our working hopes and among our chief treasures" (Cooley, 1927, p. 205). Then, almost as if anticipating the influence of stress, Cooley went on to suggest, "What worse prodigality than to dissipate our plans!" (p. 205).

If salient role stressors operate by eroding a sense of meaning in life, then it is important to see how they influence each component of meaning identified above. In essence, stressors arising in highly valued roles signal an inability to execute or comply with key role expectations and norms. When this happens, stressors in highly salient roles sever the link between a person and the values they previously endorsed. These events make older people painfully aware of their inability to live up to their chosen code, thereby presenting them with the prospect of living outside the protective sphere of an overarching system of guidance. Role-related stressors may also deprive older individuals of a sense of purpose because problems in role performance may make them feel their actions no longer fit into the wider social order that has previously embraced them. Finally, stress may force people to see that the goals to which they aspire may be either unattainable or, at the very least, difficult to reach, thereby depriving them of the social compass that energizes the present, fills them with hope, and illuminates the path into the future.

Exploring the influence of aging.—The study of stressors arising in highly valued roles and meaning appears to be especially well suited for research with older people because a number of scholars have argued that meaning becomes increasingly important with age. Evidence of this is provided by Erikson (1959). His widely cited theory of aging specifies that the life span is divided into eight stages, each posing unique developmental challenges. The final stage, which arises in late life, is characterized by the crisis of integrity versus despair. This is a time of deep introspection where an individual begins to accept the kind of person he or she has become over the years. This is accomplished by reconciling what one set out to do in life with what has actually been accomplished. If this crisis is resolved successfully, elderly people are thought to derive a deep sense of meaning in life. But if it is not resolved successfully, they are likely to slip into despair.

Unfortunately, two critical questions are not addressed fully in Erikson's (1959) work. First, the precise factors that elders take into consideration when confronting the final developmental task are not clearly specified. Second, it is unlikely that people set out to establish a single goal in life. Instead, individuals set multiple goals in a number of different life domains. As a result, it is not clear from Erikson's discussion how people derive a sense of integrity when they are faced with success in one domain (e.g., the economic sphere) and failure in another (e.g., family life). Fortunately, focusing on highly salient social roles helps resolve these issues by making it possible to determine which sets of goals are most important, which factors weigh most heavily in the construction of a sense of meaning in life, and why stressors in highly valued roles may be particularly disruptive to Erikson's final stage of development.

Although there are shortcomings in Erikson's (1959) work, he also provides a number of valuable insights. In particular, he shows that older people derive a sense of meaning in life by reflecting on their pasts, thinking about how their lives have unfolded and how their lives have been lived. Examining this process carefully suggests there may be an especially important dimension of meaning in life that is not typically contained in most measures of this construct. In particular, Erikson's work suggests older people derive a sense of meaning by reviewing and reflecting upon the past. By empirically assessing meaning that arises from a review of the past, the current study aims to address this important age-related gap in the knowledge base.

Examining the impact of significant others.—Although the theoretical discussion provided up to this point may be useful, it fails to capitalize on insights into the stress process that have been known for some time. More specifically, stress researchers have argued for decades that when people are faced with challenging events, they often turn to significant others for assistance (Krause, 2001). Therefore, any credible theory of the stress process in late life must come to grips with the vitally important influence of social network members. However, instead of merely relying on previous research, it is important to develop the conceptual foundation of the social support process further by showing how assistance from others is especially likely to restore a sense of meaning in life that has been compromised by events arising in highly valued roles.

As research by Hobfoll (1989) suggests, people are especially motivated to actively confront events that threaten things they value highly. Perhaps when salient stressors emerge, the heightened motivation on the part of the stressed individual is complemented by an added sensitivity on the part of the support provider. Perhaps support providers are willing to afford greater latitude to the stressed person when they are aware this individual is grappling with a highly salient event that threatens a core element in his or her identity. Instead of being quick to affix blame, significant others may be willing to overlook, or even downplay, any part stressed persons may have played in bringing about the problem they face. Moreover, support providers may be less critical of failed coping efforts when the precipitating event arises in a highly valued role. Simply put, the stress-buffering properties of supportive social ties may be greatly enhanced when those giving assistance are especially reassuring and go out of their way to express concern (Krause & Borawski-Clark, 1994).

But if stress in highly salient roles operates by eroding a sense of meaning in life, then it is important to show how assistance from others helps replenish this important resource. As McCall and Simmons (1966) point out, roles are socially negotiated entities: They exist because role occupants and their social network members jointly agree on the duties, rights, and responsibilities associated with them. So if roles are socially constructed and if stress compromises successful role enactments, then perhaps the renewal or restoration of successful role performance depends upon the input and influence of significant others as well. Preliminary evidence of this may be found in the work of Debats (1999), who shows that significant others are the most important source of meaning in life. But it is not clear why this may be so. Casting this issue in the context of salient role stressors may provide valuable insight into this issue.

Perhaps significant others help restore a sense of meaning by reminding stressed elders that even though they may not have been able to live according to their values, it is still possible to get back on track and pursue these values with renewed commitment and dedication. In addition, as Frankl (1963) points out, significant others may help stress victims find a new sense of purpose in their suffering by helping them see that adversity is often a necessary prerequisite for personal growth. Moreover, close social network members may help stressed elders rediscover, renew, and re-establish goals and plans by helping them develop a clear sense of what needs to be done next (Caplan, 1981). Finally, support providers may help older adults work through and reconcile failures and disappointments associated with unsuccessful role enactments. By advising and listening to elders as they process and work through their problems, significant others may help them reconcile things that have passed. These specific helping behaviors underscore why meaning-making is an inherently social process (Settersten, 2002).

Meaning in life and health.—If a sense of meaning plays a key role in the stress process, then it is important to show why it may be associated with the health of older people. Unfortunately, as Ryff and Singer (1998) point out, this issue is not investigated often. Nevertheless, a recent meta-analysis by Pinquart (2002) reveals that a strong sense of meaning is associated with better health among older adults. There are at least four reasons why a sense of meaning may be related to health in late life.

First, people with a strong sense of meaning are sometimes able to see that they have grown in the face of adversity. This is important because a small, but intriguing, body of research suggests that experiencing personal growth in the face of stressful events is associated with better physical and mental health (McMillen, 1999).

Second, according to the conceptual framework developed for this study, having a set of goals is one of the key components of meaning. As the insights of Cooley (1927) reveal, goals are important because they foster a sense of optimism. These benefits are noteworthy because a number of studies suggest that optimism may have significant health-protective effects (e.g., Peterson, Seligman, & Vaillant, 1988).

Third, as Ryff and Singer (1998) point out, people with a greater sense of meaning may enjoy better health because meaning may have direct physiologic effects on the body. More specifically, meaning may improve health by enhancing immune functioning.

Finally, a good deal of work indicates that having a sense of meaning in life is associated with fewer mental health problems (Reker, 1997). This is important because extensive research reveals that symptoms of psychological distress are, in turn, associated with more physical health problems (Cohen & Rodriguez, 1995).

Taken as a whole, the theoretical rationale developed in this section leads to the following study hypotheses:

1. Stressors arising in highly salient roles will exert a more noxious effect on the physical health status of older adults than life events that emerge in roles they value less highly.

2. Stressors arising in highly valued roles will diminish the health of older people by eroding their sense of meaning in life.
3. Support from significant others will buffer or offset the pernicious effects of salient role stressors on health in late life.
4. Social support provided by social network members will reduce the deleterious effects of salient role stressors on meaning in life.

METHODS

Sample

The data used in the analyses presented below come from an ongoing longitudinal study conducted by Krause (1994). When the baseline data were collected, the study population was defined as all household residents who were noninstitutionalized, English speaking, 65 years of age or older, and retired. In addition, residents of Alaska and Hawaii were excluded from the study population.

The sampling frame consisted of all eligible persons contained in the Health Care Financing Administration (HCFA) Medicare Beneficiary Eligibility List (HCFA is now called the Centers for Medicare and Medicaid Services [CMS]). Three waves of interviews were conducted between 1992 and 1997. All waves of data were collected by Harris Interactive, New York. A total of 1,103 interviews were successfully completed at the baseline interview in 1992–1993. Then, 605 of these study participants were successfully reinterviewed in 1996–1997. Finally, a third wave of interviews was conducted in 1998–1999. A total of 530 older people who participated in earlier rounds of interviews were successfully reinterviewed at Wave 3.

In 2002–2003, a fourth wave of interviews was conducted. However, the sampling strategy was complex. Two groups of respondents were interviewed at Wave 4. The first consisted of older people who had participated in Waves 1–3. A total of 269 of these individuals were successfully reinterviewed. This group was then supplemented with a sample of new study participants who had not been involved in the project previously. This sample was also selected using information in the CMS files. However, in this case, the sample was selected so that when it was combined with those who had participated in the study before, there would be an approximately equal number of subjects in the following age groups: 65–74 years ($N = 491$), 75–84 years ($N = 515$), and 85 years and older ($N = 509$). So, altogether, the Wave 4 sample consisted of 1,518 older adults. The overall response rate for the Wave 4 interviews was 54%. The response rate is somewhat lower than what might be found in the typical survey of older people because a larger amount of nonresponse was encountered among people age 85 and older.

Data provided by the subjects from all three age cohorts were pooled when the analyses for this study were performed. Based on current Census Bureau's Current Population Survey (CPS) estimates, the data were weighted by age, sex, education, and race.

Because adequate measures of meaning in life were not obtained until the Wave 4 survey, all analyses in this study are based on this round of interviews only. After using list-wise deletion of cases containing item nonresponse, the sample sizes

used in these analyses ranged from 1,301 to 1,446 older people. Based on an analysis of the 1,446 respondents, preliminary data analysis revealed that the average age of the study participants was 74.7 years ($SD = 7.4$ years), approximately 41% were men, 89% were White, and 57% were married at the time the interview took place. The preliminary analyses further indicate that the average number of years of completed schooling was 12.0 ($SD = 3.3$ years).

Measures

Table 1 contains the indicators that were used to measure the core constructs in this study. The coding of these measures is reported in the footnotes of this table.

Self-rated health status.—The main outcome measure, physical health status, was assessed with three items that are used widely in the literature. All three indicators are coded so that a high score reflects better self-rated health. Basic descriptive data for the health status measure are as follows: mean = 8.535, $SD = 2.275$, range = 3–12. The internal consistency reliability estimate for this brief composite is .822.

Stressful life events.—The first step in measuring stressors arising in highly salient roles involves the identification of roles that are important to older study participants. Respondents were presented with a list containing eight roles: spouse, parent, grandparent, other relative, friend, homemaker, provider, and volunteer worker/church or club member. Study participants were then asked to identify three roles that are most important to them. Following this, information on stressful life events was obtained with a 54-item checklist devised by Krause (1994). Respondents were asked if they had experienced any of the events during the year prior to the survey. In addition, they were asked to indicate whether the events were desirable or undesirable. The items in the life event checklist were organized into eight conceptual domains, corresponding to the eight roles identified above. This means, for example, that all stressors dealing with the parental role were presented in the same section.

It is impossible to assemble life event checklists that contain every stressor that can arise in a given role. Fortunately, it is possible to address this issue by placing an open-ended item at the end of each list of role-related stressors that asks study participants if anything else had happened in that domain. For example, the section dealing with events involving a respondent's children concludes with an open-ended item that asks study participants if anything else had happened to their children in addition to the events contained in the close-ended checklist.

Two stress measures were created from these data. The first, which assesses stressors arising in salient roles, was developed by computing the unweighted sum of all undesirable life events that had arisen in the three roles respondents identified as being most important. Separate measures of stressors in each of the three salient roles were not computed because the average number of events in any one role was too small. The older people in this study experienced an average of .948 ($SD = 1.407$, range = 0–11) events during the previous year in the three roles that were most important to them. The second measure, which assesses stress in less important roles, was developed by computing the unweighted sum of all undesirable events arising

Table 1. Study Measures

| | |
|--|--|
| 1. Self-rated physical health | |
| A. | How would you rate your overall health at the present time? Would you say it is excellent, good, fair, or poor? ^a |
| B. | In general, how satisfied are you with your health? ^b |
| C. | Would you say your health is better, about the same as, or worse than most people your age? ^c |
| 2. Stressors arising in highly salient roles | |
| The unweighted sum of all undesirable events arising in the three roles that are most important to study participants. | |
| 3. Stressors arising in roles that are not valued highly | |
| The unweighted sum of all undesirable events arising in roles that are not important to study participants. | |
| 4. Meaning in life ^d | |
| A. Values | |
| 1. | I have a system of values and beliefs that guide my daily activities. |
| 2. | I have a philosophy of life that helps me understand who I am. |
| 3. | I have really come to terms with what is important in my life. |
| B. Purpose | |
| 1. | In terms of my life, I see a reason for my being here. |
| 2. | I feel like I am living fully. |
| 3. | I feel like I have found a really significant meaning in my life. |
| 4. | I have discovered a satisfying life purpose. |
| C. Goals | |
| 1. | In my life, I have clear goals and aims. |
| 2. | I have a sense of direction and purpose in life. |
| 3. | I have a good sense of what I am trying to accomplish in the rest of my life. |
| D. Reflection on the past | |
| 1. | I feel good when I think about what I have done in the past. |
| 2. | I find it satisfying to think about what I have accomplished in life. |
| 3. | I am able to make sense of the unpleasant things that have happened in the past. |
| 4. | I am at peace with my past. |
| 5. Emotional support ^e | |
| A. | Thinking back over the past year, how often has someone been right there with you (physically) in a stressful situation? |
| B. | Thinking back over the past year, how often has someone comforted you by showing you physical affection? |
| C. | Thinking back over the past year, how often has someone listened to you talk about your private feelings? |
| D. | Thinking back over the past year, how often has someone expressed interest and concern in your well-being? |

^aThis item was coded in the following manner (scoring in parentheses): poor (1), fair (2), good (3), excellent (4).

^bThis item was coded in the following manner: not at all satisfied (1), not very satisfied (2), somewhat satisfied (3), very satisfied (4), completely satisfied (5).

^cThis item was coded in the following manner: worse (1), about the same (2), better (3).

^dThese items were coded in the following manner: disagree strongly (1), disagree somewhat (2), agree somewhat (3), agree strongly (4).

^eThese items were coded in the following manner: never (1), once in a while (2), fairly often (3), very often (4).

in all nonsalient roles combined (mean = 1.496, *SD* = 1.963, range = 0–14).

Meaning in life.—As shown in Table 1, 14 indicators were included in the interview schedule to measure meaning in life. The majority of these items were taken from scales that are already in the literature, including the measures developed by Debats (1998), Wong (1998), and others. These indicators are

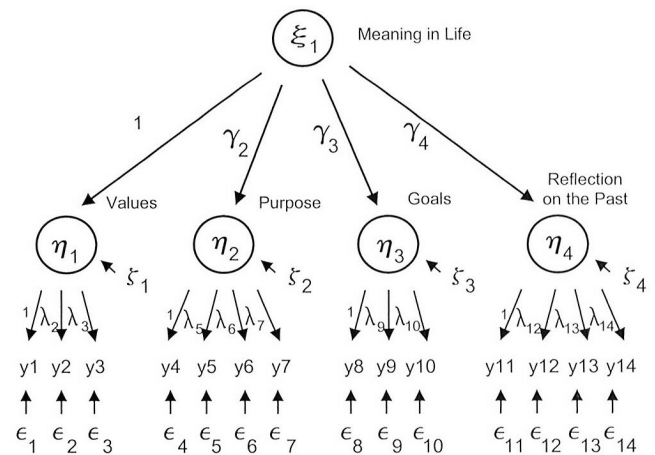


Figure 1. A measurement model of meaning in life.

coded so that a high score denotes a greater sense of meaning in life.

The items were selected to measure the four dimensions of meaning that were discussed earlier. It is important to determine whether responses to the items are consistent with underlying conceptualization of this construct. This was accomplished by estimating the second-order confirmatory factor model depicted in Figure 1.

Although a first-order specification provides useful information, the second-order factor model makes it possible to address another important conceptual issue. Given the lack of prior work with this construct, it is difficult to know if the four dimensions should be treated as separate scales or whether they should be summed to form a single global measure of meaning in life. One way to get some preliminary insight into this issue involves estimating a second-order factor model that specifies that the four first-order measures of meaning are related to a higher-order, more abstract construct that represents a global sense of meaning in life. Preliminary analyses provide the following descriptive data for the full 14-item meaning scale: mean = 49.868, *SD* = 6.092, range = 14–56.

Emotional support from others.—Four indicators were used to assess how often family members and close friends provided emotional support to older study participants in the year prior to the interview. These items, which were developed by Krause (1995), are coded so that a high score stands for more emotional support. Basic descriptive data for the emotional support composite measure are as follows: mean = 11.141, *SD* = 3.609, range = 4–16. The reliability estimate for this brief composite is .859.

Demographic control measures.—The relationships among the main study measures were evaluated after the effects of age, sex, marital status, education, and race were controlled statistically. Age is scored continuously in years, and education reflects the total number of years of completed schooling. In contrast, sex (1 = men, 0 = women), marital status (1 = presently married, 0 = otherwise), and race (1 = White, 0 = all other racial and ethnic groups) were coded in a binary format. A matrix containing the correlations among all the variables

Table 2. Estimated From the Second-Order Factor Model of Meaning in Life ($N = 1,353$)

| Item | First-Order Factors | | | | Error Variances |
|------------------------|---------------------|-----------------|-------|------------------------|-----------------|
| | Values | Purpose | Goals | Reflection on the Past | |
| Values ^a | .832 ^b | | | | .309 |
| Philosophy | .866 | | | | .249 |
| Important | .741 | | | | .452 |
| Reason | | .794 | | | .370 |
| Living fully | | .754 | | | .432 |
| Meaning | | .902 | | | .187 |
| Purpose | | .919 | | | .155 |
| Goals | | | .893 | | .203 |
| Direction | | | .946 | | .105 |
| Accomplish | | | .878 | | .229 |
| Good about past | | | | .846 | .285 |
| Satisfied with past | | | | .857 | .265 |
| Unpleasant | | | | .767 | .412 |
| Peace | | | | .848 | .281 |
| Residual variances | .378 | .062 | .146 | .387 | |
| Second-Order Factors | | | | | |
| First-Order Factor | | Meaning in Life | | | |
| Values | | .789 | | | |
| Purpose | | .969 | | | |
| Goals | | .924 | | | |
| Reflection on the past | | .783 | | | |

^aItem stem is paraphrased; see Table 1 for full text.

^bAll parameter estimates are from the completely standardized solution. The first-listed item in each factor was set to 1.0 in the unstandardized solution. All parameter estimates are significant at the .001 level.

examined in this study is available upon request from the author.

Data Analysis Strategy

The third and fourth hypotheses evaluated in this study are the most complex. According to these specifications, emotional support from significant others will offset the noxious effects of stressors arising in salient social roles on meaning in life as well as physical health status. These hypotheses call for a statistical interaction effect between emotional support and salient role stressors on health and meaning. These hypotheses will be evaluated with a two-step hierarchical ordinary least-squares (OLS) multiple regression analysis. In the first step, health (and alternatively meaning) is regressed on the measures of salient role stress, events in roles that are valued less highly, emotional support, and the control variables. This first step is useful because it evaluates the first two study hypotheses, which specify that stressors in salient roles exert a more pernicious effect on health and meaning than events arising in less salient roles.

The second step in the proposed analyses tests for the statistical interaction between emotional support and salient role stressors as well as the interaction between emotional support and events in less important roles. This step is executed by adding two multiplicative terms to the model (i.e., emotional support \times salient role stressors, emotional support \times nonsalient role stressors). If the regression coefficients associated with the multiplicative terms are statistically significant, then the procedures described by Aiken and West (1991) are used to

clarify and interpret the interaction effects. For example, if the interaction between emotional support and salient role stressors is significant, then the effects of salient stress on health (or meaning) should become progressively weaker among older people with increasingly higher levels of emotional support. The hand calculations used to illustrate these effects yield two estimates: (a) unstandardized regression coefficients representing the relationship between salient role stress and health (or meaning) at select levels of emotional support; (b) t tests that are designed to see if these coefficients differ significantly from zero. Following this, standardized regression coefficients for the relationship between salient role stress and health (or meaning) at select levels of emotional support were computed in the usual manner.

RESULTS

The findings are presented below in three sections. The results derived from estimating the second-order factor model of meaning are reviewed first. Then, findings from the tests of the four study hypotheses are reviewed in the second section. Finally, some supplementary analyses that have not been discussed up to this point will be presented.

Second-Order Factor Model Estimates

Table 2 contains the results derived from estimating the second-order factor model of meaning in life. These coefficients were obtained with version 8.50 of the LISREL statistical software program (du Toit & du Toit, 2001).

Before turning to the data in Table 2, it is important to examine the fit of the model to the data. The findings suggest that the fit of the model to the data is adequate. More specifically, the normed fit index (Bentler & Bonett, 1980) estimate of .931 is above the recommended cutpoint of .900. Similarly, Bollen's (1989) incremental fit index value of .935 as well as the Tucker-Lewis coefficient (Tucker & Lewis, 1973) estimate of .919 are sufficiently close to the ideal target value of 1.0. However, the standardized root mean square residual estimate of .057 is just above the recommended ceiling of .050 (Kelloway, 1998).

The standardized factor loadings and standardized measurement error estimates in Table 2 are useful because they provide preliminary information on the psychometric properties of the measure of meaning in life. In general, factor loadings in excess of .400 indicate that measures have good reliability and validity. The factor loadings for the first-order factors are given in the top of Table 2. These estimates reveal that all the first-order factor loadings are quite high (i.e., the smallest factor loading is .741). The second-order factor loadings in the bottom of Table 2 provide information on the relationship between the first-order factors and the higher-order construct reflecting a global sense of meaning in life. The lowest second-order factor loading is .783. Taken as a whole, the data suggest that the measures of meaning used in this study have very good psychometric properties.

Although the factor loadings and measurement error terms provide useful information about the reliability of each observed indicator, it would be helpful to know something about the reliability of the four dimensions composing a sense of meaning. Fortunately, these estimates can be computed with a formula provided by Rock and associates (Rock, Werts, Linn,

& Jöreskog, 1977). Applying this formula to the data in Table 2 provides the following reliability estimates for the four components of meaning: values (.855), purpose (.908), goals (.932), and reflections on the past (.899).

The fact that the second-order factor loadings in the bottom of Table 2 are quite large suggests that it may be best to simply treat the four dimensions of meaning as a single composite measure in the substantive analyses that follow. Consequently, all 14 observed indicators were added together to form a single global scale. Given this conclusion, it is important to compute the reliability of the composite taken as a whole. This can be accomplished by, again, using the formula provided by Rock and colleagues (1977). The resulting reliability estimate for all 14 meaning measures taken together is .925.

Tests of the Core Hypotheses

Stress, emotional support, and health.—Table 3 contains the results for the OLS analyses that were designed to assess whether stressors arising in highly valued roles exert a more noxious effect on health (Hypothesis 1) and whether emotional support buffers the pernicious effects of salient role stressors on health in late life (Hypothesis 3).

The data for Model 1 in Table 3 suggest that stressors arising in highly valued roles are not significantly associated with self-rated health status in late life ($\beta = -.048$, *NS*). In contrast, events that arise in less important roles are associated with less favorable health ratings ($\beta = -.141$, $p < .001$). Taken together, these results initially appear to provide no support for the theoretical rationale that was developed for this study. However, the data provided for Model 2 in Table 3 suggest this initial conclusion may not be correct. More specifically, the findings provided by Model 2 reveal that emotional support from significant others tends to offset the effects of salient role stressors on health ($b = .036$, $p < .01$), but not the effects of stressors arising in roles that are not valued highly ($b = -.004$, *NS*).

To illustrate the stress-buffering effects of social support more clearly, the hand calculations recommended by Aiken and West (1991) were performed. This involves deriving estimates of the effects of salient role stressors on health at select levels of emotional support. Although any value of emotional support could be selected for this purpose, the following values were used in the hand calculations: the lowest observed value of support, -1 *SD* below the mean, the mean value of emotional support, $+1$ *SD* above the mean, and the highest observed emotional support value. Subsequent computations (not shown in Table 3) reveal that at the lowest observed emotional support score (i.e., 4), stressors arising in highly valued roles are associated with a statistically significant decline in self-rated health ($\beta = -.212$, $b = -.342$, $p < .01$). At 1 *SD* below the mean support value, stressors in highly valued roles continue to exert a noxious effect on health ($\beta = -.133$, $b = -.215$, $p < .01$), but the impact is not as great. The findings further suggest that for older people with mean levels of emotional support, stressors arising in highly valued roles fail to exert a statistically significant effect on health ($\beta = -.053$, $b = -.085$, *NS*). The same is true for older people with emotional support scores that are 1 *SD* about the mean ($\beta = .028$, $b = .045$, *NS*) as elders with

Table 3. Stress, Emotional Support, and Physical Health Status ($N = 1,446$)

| Independent Variable | Model 1 | Model 2 |
|--|--|---------------------|
| Age | .022 ^a (.007) ^b | .027 (.008) |
| Sex | -.089*** (-.410) | -.089*** (-.410) |
| Marital status | .096*** (.439) | .096*** (.439) |
| Education | .201*** (.139) | .199*** (.138) |
| Race | -.001 (-.007) | -.002 (-.012) |
| Stress in salient roles | -.048 (-.077) | -.053 (-.085) |
| Stress not in salient roles | -.141*** (-.163) | -.140*** (-.163) |
| Emotional support | -.091*** (-.057) | -.083*** (-.052) |
| Stress in salient roles \times Emotional support | — | (.036)** |
| Stress not in salient roles \times Emotional support | — | — |
| Multiple R^2 | .087 | .091 |

^aStandardized regression coefficient.

^bMetric (unstandardized) regression coefficient.

* $p < .05$; ** $p < .01$; *** $p < .001$.

the highest observed emotional support scores ($\beta = .056$, $b = .090$, *NS*).

Taken as a whole, the data presented in Table 3 lead to two important conclusions. First, emotional support from significant others helps older people deal more effectively with the deleterious effects of stress, but only those events that arise in roles they value highly. Second, stressors arising in less important roles are also associated with less favorable health ratings ($\beta = -.141$, $p < .001$). Although the impact of stressors in less salient roles may initially appear to be greater than that of events in highly valued roles, a different picture emerges when social support is taken into consideration. More specifically, when older adults receive little support from others (i.e., those with the lowest score [4]), the effect size associated with stressors in highly valued roles ($\beta = -.212$, $p < .001$) is larger than that of events in less valued roles. Similarly, the effects of salient role stressors at a value of 5 ($\beta = -.189$, $p < .01$) and 6 ($\beta = -.167$, $p < .01$) are also larger than the coefficient associated with events in roles that are less important. These results are noteworthy because 187 older study subjects had emotional support scores of 6 or less.

Stress and meaning in life.—The second hypothesis specifies that stressors arising in highly valued roles tend to erode an older person's sense of meaning in life, whereas Hypothesis 4 proposes that emotional support received from significant others serves to reduce the noxious effects of salient role stressors on meaning. The findings from the analyses that were designed to assess these issues are provided in Table 4.

The data provided for Model 1 in Table 4 suggest that, as hypothesized, stressors arising in highly salient roles tend to erode a sense of meaning in life ($\beta = -.066$, $p < .05$). However, two factors must be kept in mind when reviewing these results.

Table 4. Stress, Emotional Support, and Meaning in Life ($N = 1,334$)

| Independent Variable | Model 1 | Model 2 |
|---|--|---------------------|
| Age | -.029 ^a (-.024) ^b | -.023 (-.019) |
| Sex | -.040 (-.491) | -.040 (-.487) |
| Marital status | .043 (.534) | .043 (.523) |
| Education | .069* (.126) | .066* (.121) |
| Race | -.085** (-1.655) | -.085** (-1.663) |
| Stress in salient roles | -.066* (-.283) | -.075* (-.319) |
| Stress not in salient roles | -.069* (-.215) | -.065* (-.202) |
| Emotional support | .102*** (.171) | .109*** (.184) |
| Stress in salient roles \times Emotional support | — | (.124)*** |
| Stress not in salient roles \times Emotional support | — | (-.022) |
| Multiple R^2 | .033 | .041 |

^aStandardized regression coefficient.^bMetric (unstandardized) regression coefficient.* $p < .05$; ** $p < .01$; *** $p < .001$.

First, the size of the effect is relatively modest. Second, events arising in roles that are not valued highly have nearly the same impact ($\beta = -.069$, $p < .05$). However, the data provided by Model 2 show that the relationship between stressors in highly valued roles and meaning is more complicated than this.

The data for Model 2 in Table 4 indicate that emotional support from significant others tends to reduce the pernicious effect of salient role stressors on meaning ($b = .124$, $p < .001$). In contrast, emotional support does not appear to buffer the effects of life events arising in roles that are less important to study participants ($b = -.022$, NS).

Following the approach in the previous section, the hand calculations recommended by Aiken and West (1991) were used to clarify the nature of the interaction effect between salient role stress and emotional support on meaning in life. These supplementary analyses reveal that at the lowest observed emotional support score, events arising in highly salient roles are associated with a fairly sharp decline in meaning ($\beta = -.283$, $b = -1.211$, $p < .001$). At 1 SD below the mean support value, salient role stressors still tend to erode a sense of meaning in life, but the effect size is reduced by about 36% ($\beta = -.180$, $b = -.768$, $p < .001$). At the mean level of emotional support, events arising in roles that are valued highly continue to exert a significant effect on meaning, but the size of the impact has been reduced substantially ($\beta = -.075$, $b = -.319$, $p < .05$). Finally, stressors arising in highly valued roles appear to completely offset the deleterious effects of salient role stressors on meaning for older people with emotional support scores at 1 SD above the mean ($\beta = .030$, $b = .130$, NS) as well as those with the highest observed support scores ($\beta = .065$, $b = .277$, NS).

Supplementary Analyses

Two sets of additional analyses were performed in an effort to clarify and extend the findings that have been provided up to this

point. The first has to do with teasing out some of the finer nuances of the relationship between salient role stressors, meaning, social support, and health. According to the conceptual framework developed for this study, stressors arising in highly valued roles tend to compromise health in late life because these events erode an older person's sense of meaning in life. This suggests that meaning mediates the effects of salient role stressors on health. Formal tests of mediating effects are often conducted with the procedures outlined by Baron and Kenny (1986). Cast within the context of this study, this approach involves performing three sets of analyses: Step 1, regressing health on salient role stressors and the other study measures (including the interaction terms with social support); Step 2, regressing meaning on stress arising in highly valued roles and the other study measures; and Step 3, regressing health on both salient role stress and meaning as well as the other variables used throughout this study. If the relationship between salient stress and health is mediated by meaning, then the interaction between salient role stress and social support should exert a significant effect on health in Step 1 but fail to do so once meaning is introduced into the analysis at Step 3. In contrast, the relationship between meaning and health should be statistically significant.

The data in Table 3 (see Model 2) show there is a statistically significant interaction effect between salient role stressors and emotional support on health ($b = .036$, $p < .01$) when meaning is not in the equation. However, when meaning is added to this model (not shown in Table 3), the interaction effect between salient role stressors and health is no longer statistically significant ($b = .025$, NS). In addition, and in keeping with the criteria for determining mediating effects, the analyses further reveal that meaning exerts a significant additive impact on health ($\beta = .263$, $p < .001$).

The second set of supplementary analyses involves respecifying the way the measure of meaning is handled. The analyses presented up to this point are based on a single global composite measure of meaning in life. It is important to see if more meaningful findings emerge when the first-order factors are treated as separate scales. Cast in the context of the current study, this approach involves testing whether the interaction effect between stressors in salient social roles and emotional support exerts a differential effect on the subscales of meaning that assess values, purpose, goals, and reflections on the past. If salient role stressors affect the dimensions of meaning in different ways, then it may be possible to more precisely specify how support from others helps older adults maintain a sense of meaning in the face of adversity.

Four sets of additional analyses (not shown here) were conducted by regressing measures of values, purpose, goals, and reflections on the past on the two stress measures, emotional support, the interaction between the stress measures and support, as well as the control variables. The analyses reveal that emotional support does not reduce the deleterious effects of salient role stressors on values ($b = .009$, NS). The results further suggest that emotional assistance from significant others appears to help elders find a sense of purpose in the face of salient role stressors ($b = .033$, $p < .05$), but the size of the effects is not substantial. Similarly, emotional support helps reduce the noxious effects of salient role stressors on developing and maintaining goals ($b = .026$, $p < .05$), but, once again, the effect

size is fairly modest. However, in contrast to the results that have been presented so far, the data further indicate that emotional support from social network members substantially reduces the deleterious effect of salient role stressors on finding meaning through the past ($b = .047, p < .001$). This suggests that emotional support from significant others helps older adults find meaning in the face of adversity primarily because it assists them in reconciling and making sense of the events they have encountered.

DISCUSSION

Research that extends the basic tenets of identity theory has provided some of the richest theoretical insights into the stress process (Thoits, 1991). The purpose of the current study was to contribute to this emerging conceptual framework by evaluating previously untested elements of this perspective. Three main findings emerged from the analyses. First, the data suggest that events in highly salient roles are associated with less favorable self-rated health. This is noteworthy because previous studies have been primarily concerned with subjective well-being (e.g., Krause, 1994). Second, the findings reveal that stressors in highly salient roles affect physical health status, but only when older adults do not get sufficient emotional support from their social network members. Third, and perhaps most important, the results suggest that events arising in highly valued roles affect health primarily by eroding an older person's sense of meaning in life. This last finding is noteworthy because there do not appear to be any studies in the literature that empirically link salient role stressors with meaning, even though the proposed relationship between these constructs represents one of the core theoretical tenets of identity theory.

The supplementary analyses that were performed with emotional support, salient role stressors, and meaning are especially useful because they help illuminate some of the finer nuances of the stress process. Meaning was conceptualized in this study as comprising values, a sense of purpose, goals, and reflection on the past. The findings suggest that when events arise in highly valued roles, emotional assistance from significant others is especially useful for helping older people reflect on and reconcile the past. This finding is consistent with the work of Staudinger (2001), who argues that reviewing the past with a trusted other tends to increase the amount of insight gained. A careful examination of the items listed in Table 1 suggests that two themes are captured by the indicators used to assess this dimension of meaning. More specifically, these indicators involve finding accomplishments in past activities as well as making sense of, and being at peace with, unpleasant life events. This suggests that significant others may help older people deal with salient role stressors in one of two ways. First, social network members may remind older adults of past successes and accomplishments in highly valued roles. This may help counterbalance the effects of current stressors by casting them in the wider context of an otherwise successful role history. Second, family members and close friends may help older people see that setbacks are an inevitable part of life and that important lessons and insights may be gleaned from challenges arising in highly valued roles. In this way, older people may eventually be able to make sense of, and reconcile, the unpleasant events they have encountered in roles that are highly important to them.

Although a number of important issues have been examined in the analyses presented above, a good deal of work remains to be done. For example, older people may be especially inclined to actively seek out assistance from others when events arise in highly valued roles. This issue needs to be examined with a new generation of social support measures that assess whether older people explicitly asked for the help they received.

Finding meaning in the face of stressful events may be the gateway to further personal gain. As noted earlier, exposure to stress may lead to personal growth (McMillen, 1999). But this may not happen until a good deal of time has passed. As a result, it is not possible to study this process with the data available in the current study. Even so, it is important to reflect on this issue so that guidance may be provided for those wishing to pursue this important issue in the future. Growth in the face of adversity may be manifest in a number of ways. For example, older people may develop new coping responses or become more efficient in using the coping responses they already possess. We need to know more about who experiences growth in the face of adversity and why. Finding meaning and growth in the face of adversity is a difficult task that requires deep introspection, creativity, persistence, and highly developed abstract reasoning skills. This suggests that older people with higher levels of educational attainment may be especially likely to reap the growth-related benefits identified here. But this may create the mistaken impression that only elders in upper socioeconomic status groups are capable of finding meaning and growth in the face of adversity. Clearly, there is more to it than this. Consistent with the findings from the current study, significant others may play a key role in this process. As Lyons and colleagues maintain, the development of coping responses is an inherently social process, and many times, a strategy for dealing with stressful events is jointly negotiated by a support provider and support recipient (Lyons, Mickelson, Sullivan, & Coyne, 1998; see also Caplan, 1981). To the extent that this is true, we must develop new measures that focus on socially negotiated coping responses that are aimed specifically at helping support recipients find meaning and growth in the face of adversity. Although extensive batteries of coping responses are already in place (Lazarus & Folkman, 1984), these inventories do not assess the kinds of growth-related experiences discussed here.

The upshot of finding meaning and growth in the face of adversity is that older adults may feel more confident about the future and more secure in the belief they can cope with whatever events may arise. This is important because it helps highlight the fact that the future as well as the past are important components in the way older people view the world.

There is a vast literature on interventions that are designed to improve health and well-being by enhancing the functioning of informal social support networks. Unfortunately, these interventions have met with mixed success (Hogan, Linden, & Najarian, 2002). Although there are a number of reasons for this, at least part of the problem arises from the fact that researchers have yet to pinpoint the precise ways in which informal social support bolsters health and well-being. By showing that significant others shore up a sense of meaning by enhancing the way an elder processes what has happened in the past, the findings from the current study bring us a step closer to the kind of focused information needed to develop more successful support-based interventions.

Although the findings from this study may have contributed to our understanding of the stress process, the enthusiasm for these results should be tempered by an understanding of the limitations in the work that has been done. Three shortcomings are reviewed briefly below.

First, the data for this study were gathered at a single point in time. As result, the temporal ordering among the constructs in the analyses was based on theoretical considerations alone. It was proposed that stressors arising in highly valued roles and meaning in life affect an older person's self-rated health. However, one could just as easily reverse this causal sequence and argue instead that older people with poor health subsequently find less meaning in life and encounter more difficulties in role performance because of their physical limitations. In fact, there is some evidence that older people create life meaning out of their own good health. More specifically, elders in good health are better able to provide support to others and engage in other productive activities that form the cornerstone of a meaningful life (Reker & Wong, 1998). Clearly, these as well as other causal assumptions made in this study need to be evaluated with data that have been gathered at more than two points in time.

Second, the findings from this study suggest that a sense of meaning in life may influence the health of older people, but the intervening mechanisms linking meaning with health were not measured or examined empirically. For example, it was suggested earlier that meaning affects health by fostering a sense of hope or optimism. However, measures of hope and optimism are not available in this study. Consequently, assessing the relationships among meaning, hope, optimism, and health should be a high priority in the future.

Finally, research on the stress process reveals that in addition to relying on social network members, older adults utilize a range of other resources to cope with the events they encounter. For example, research indicates that feelings of personal control figure prominently in this respect (Krause, 2003b). Those wishing to further refine the insights provided by identity theory would be well advised to take this as well as other key coping resources into consideration.

When viewed at the broadest level, the findings from this study suggest the stress process is far more complex than it initially appears. As proponents of the transactional model maintain, we must move beyond simple models to more complex specifications that more closely approximate the real social world (Lazarus & Folkman, 1984). Consistent with this goal, the findings presented above suggest that health in late life is shaped by stressors in highly valued roles and the social resources that are enlisted to deal with them. But even this more refined perspective fails to go far enough. For example, a host of issues arise around the ways in which older people appraise the events that confront them. If the insights provided by identity theory are correct, then how events are appraised and defined must be determined in part by whether stressors are encountered in roles that are valued highly. Clearly, this, as well as a host of other issues, must be gradually integrated into the empirical work we do. Perhaps the greatest contribution of the work presented here arises from the fact that it shows it is possible to approach complex issues in a straightforward way and that with persistence, insight, and guidance from the literature, we can better understand the processes that ultimately shape the health and well-being of our aging population.

ACKNOWLEDGMENTS

This research was supported by National Institute on Aging Grant "Well-Being Among the Aged: Personal Control and Self-Esteem" (RO1 AG09221).

Address correspondence to Dr. Neal Krause, Department of Health Behavior and Health Education, School of Public Health, University of Michigan, 1420 Washington Heights, Ann Arbor, MI 48109-2029. E-mail: nkrause@umich.edu

REFERENCES

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Battista, J., & Almond, R. (1973). The development of meaning in life. *Psychiatry*, 36, 409-427.
- Baumeister, R. F. (1991). *Meanings of life*. New York: Guilford.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in analysis of covariance structures. *Psychological Bulletin*, 88, 588-606.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Caplan, G. (1981). Mastery of stress: Psychosocial aspects. *American Journal of Psychiatry*, 138, 413-420.
- Cohen, S., & Rodriguez, M. S. (1995). Pathways linking affective disturbances and physical disorders. *Health Psychology*, 14, 374-380.
- Cooley, C. H. (1927). *Life and the student: Roadside notes on human nature, society, and letters*. New York: Knopf.
- Debats, D. L. (1998). Measurement of personal meaning: The psychometric properties of the Life Regard Index. In P. T. P. Wong & P. S. Fry (Eds.), *The human quest for meaning* (pp. 237-259). Mahwah, NJ: Lawrence Erlbaum.
- Debats, D. L. (1999). Sources of meaning: An investigation of significant commitments in life. *Journal of Humanistic Psychology*, 39, 30-57.
- du Toit, M., & du Toit, S. (2001). *Interactive LISREL: User's guide*. Lincolnwood, IL: Scientific Software International.
- Erikson, E. (1959). *Identity and the life cycle*. New York: International University Press.
- Frankl, V. (1963). *Man's search for meaning*. New York: Wiley.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513-524.
- Hogan, B. E., Linden, W., & Najarian, B. (2002). Social support interventions: Do they work? *Clinical Psychology Review*, 22, 381-440.
- Kelloway, E. K. (1998). *Using LISREL for structural equation modeling: A researcher's guide*. Thousand Oaks, CA: Sage.
- Krause, N. (1994). Stressors in salient social roles and well-being in later life. *Journal of Gerontology: Psychological Sciences*, 49, P137-P148.
- Krause, N. (1995). Negative interaction and satisfaction with support among older adults. *Journal of Gerontology: Psychological Sciences*, 50B, P59-P73.
- Krause, N. (2001). Social support. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (5th ed., pp. 272-294). San Diego: Academic Press.
- Krause, N. (2003a). Stress, social support, and health in late life: Key issues for future research. *Contemporary Gerontology*, 10, 3-6.
- Krause, N. (2003b). The social foundations of personal control. In S. Zarit, L. I. Pearlin, & K. W. Schaie (Eds.), *Societal impacts of personal control in the elderly* (pp. 45-70). New York: Springer.
- Krause, N., & Borawski-Clark, E. (1994). Clarifying the functions of social support in late life. *Research on Aging*, 16, 251-279.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisals, and coping*. New York: Springer.
- Lyons, R. F., Mickelson, K. D., Sullivan, M. J., & Coyne, J. C. (1998). Coping as a communal process. *Journal of Social and Personal Relationships*, 15, 570-605.
- McCall, G. J., & Simmons, J. L. (1966). *Identities and interactions: An examination of human associations in everyday life*. New York: Free Press.

- McMillen, J. C. (1999). Better for it: How people benefit from adversity. *Social Work, 44*, 455–468.
- Peterson, C., Seligman, M., & Vaillant, G. (1988). Pessimistic explanatory style is a risk factor for physical illness: A thirty-five year longitudinal study. *Journal of Personality and Social Psychology, 55*, 23–27.
- Pinquart, M. (2002). Creating and maintaining purpose in life in old age: A meta-analysis. *Ageing International, 27*, 90–114.
- Reker, G. T. (1997). Personal meaning, optimism, and choice: Existential predictors of depression in community and institutional elderly. *The Gerontologist, 37*, 709–716.
- Reker, G. T., & Wong, P. T. (1988). Aging as an individual process: Toward a theory of personal meaning. In J. Birren & V. Bengtson (Eds.), *Emergent theories on aging* (pp. 214–247). New York: Springer.
- Rock, D. A., Werts, C. A., Linn, R. L., & Jöreskog, K. G. (1977). A maximum likelihood solution to errors in variables and errors in equations models. *Journal of Multivariate Behavioral Research, 12*, 187–197.
- Ryff, C. D., & Singer, B. (1998). The role of purpose in life and personal growth in positive human health. In P. T. P. Wong & P. S. Fry (Eds.), *The human quest for meaning* (pp. 213–235). Mahwah, NJ: Lawrence Erlbaum.
- Settersten, R. A. (2002). Social sources of meaning in later life. In R. A. Weiss & S. A. Bass (Eds.), *Challenges of the third age: Meaning and purpose in later life* (pp. 55–79). New York: Oxford University Press.
- Staudinger, U. M. (2001). Life reflection: A social-cognitive analysis of life review. *Review of General Psychology, 5*, 148–160.
- Stryker, S. (2001). Traditional symbolic interactionism, role theory, and structural symbolic interactionism: The road to identity theory. In J. H. Turner (Ed.), *Handbook of sociological theory* (pp. 211–231). New York: Plenum.
- Thoits, P. A. (1991). Merging identity theory and stress research. *Social Psychology Quarterly, 54*, 101–112.
- Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*, 1–10.
- Wong, P. T. P. (1998). Implicit theories of meaningful life and the development of the Personal Meaning Profile. In P. T. P. Wong & P. S. Fry (Eds.), *The human quest for meaning* (pp. 111–140). Mahwah, NJ: Lawrence Erlbaum.

Received January 8, 2004

Accepted April 27, 2004

Decision Editor: Charles F. Longino, Jr., PhD