Lay Theories of Successful Aging After the Death of a Spouse: A Network Text Analysis of Bereavement Advice

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Social theories of successful aging attempt to explain how individuals adapt to changes characteristically associated with aging and to predict whether older adults' adaptations will lead to successful aging. The death of a spouse and the accompanying bereavement process entail dramatic changes to personal networks and experience to which individuals must adapt to age successfully. Network text analysis (including word frequencies, cluster analysis, and multidimensional scaling) of advice for adjusting to, and coping with, the loss of a spouse given by a sample of 60 bereaved spouses (mean age = 68) at 6 points in time after the death of their marital partner (3–4 weeks to 24 months) reveal respondents' lay theories of successful aging. Thematic clusters address social positioning and qualifiers, activity, communication, time, and spousal characteristics. Results indicate respondents frame their advice as unique to their context of social relationships while providing support for activity theory and negatively addressing disengagement theory.

Theories of successful aging developed by academics are generally concerned with explaining the biological, personal, social, and environmental changes that occur in later adulthood. Formal aging theories are consciously, systematically, and methodically developed and tested. Nonacademics also develop theories—implicit or lay—to make sense of growing old. The primary goal of both types of aging theories is to address the question, "How do human beings successfully age?" Although what it means to age successfully is debated, Rowe and Kahn (1998) concluded that the ability to maintain a low risk of disease, high mental and physical functioning, as well as an active engagement with life are at its core.

Communication contributes to many (if not all) aspects of an individual's ability to successfully age. Tamir (1979) noted, "successful communication experiences contribute to the psychological, social, and biological well-being of the older adult" (p. 135). Communication is also central to an active engagement with life. Tamir

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(1979) succinctly described the integral role of message behavior: "Communication with others is vital to human activity. The need to interact remains important to the individual through all stages of life" (p. 135). Studies addressing communication and social support (Albrecht & Adelman, 1984; Query & James, 1989) illustrate the essential nature of communication in creating and maintaining high mental and physical health, as well as the ability to maintain a low risk of disease. Although the exact nature of the link is not fully understood, it is clear that "social support can improve resistance to infection and disease, extend life, enhance psychological adjustment and perceptions of self-efficacy, and reduce mortality" (Albrecht, Burleson, & Goldsmith, 1994, p. 419). The importance of communication in formal care provider–patient relationships and social networks is clearly documented: "Communication is essential in the provision of social support (by health care providers, participants in formal or informal support groups, family members, or friends) to help the afflicted cope with, and confront, their health problems" (Kreps, O'Hair, & Clowers, 1994, p. 249). Kreps (1990) noted the necessity of communication in health education and promotion: "Interpersonal communication of accurate and timely information about health and illness (health information) can promote effective health evaluation and maintenance" (p. 274). Despite the pervasive influence of communication in successful aging, however, communication is not yet a central concept in social theories of successful aging.

In this article, we focus on social theories of aging that attempt to explain how individuals adapt to changes characteristically associated with aging (such as the loss of work roles or the death of peers) and predict whether adults' adaptations will lead to successful aging (Hooyman & Kiyak, 1996). We examine older adults' lay theories of successful aging after bereavement to assess their fit with academics' social theories of successful aging. One characteristic change that many older adults encounter is the death of a spouse and the bereavement process that accompanies their loss. Widowhood entails dramatic changes to personal networks and experience (McCall, 1982), with potential implications for physical health as well. As Wortman and Silver (1990) noted

> The study of coping with loss is particularly relevant for understanding successful aging. … Loss of a spouse is generally considered to be one of the most serious threats to health, well being, and productivity during the middle and later years. (p. 225)

Individuals must cope with and adapt to bereavement to age successfully. Thompson and Nussbaum (1988) emphasized the need for communication during this transition: "For widows and widowers, grieving and helping are needed functions served by their relationships with others" (p. 102). As a means of uncovering and explicating lay theories of aging, we investigate the advice a bereaved spouse would give to other bereaved spouses after the death of a partner. Such advice asking prompts participants to move from the "local narrative" (Bochner, 1994, p. 21) of direct experience to generalized principles offered as guidance for others.

In the next section, we review a communication perspective on aging, followed by a review of four gerontology-based grand theories of successful aging. We selected these latter theories because they are commonly discussed in the communication and aging (e.g., Nussbaum, Thompson, & Robinson, 1989) and social gerontology (e.g., Hooyman & Kiyak, 1996) literature. Skinner (1985) defined grand theories as formal theories that are "abstract and normative theories of human nature and conduct" (p. 3). The goal of grand theories is to construct a "systematic theory of 'the nature of man and society'" (Mills, 1959; as cited in Skinner, 1985, p. 1; for discussion and critique see Hamilton, 1996, and Outhwaite, 1996). Achenbaum and Bengtson (1994) described the development of these theories as attempts to generate grand theories of aging that could cross disciplinary boundaries. As such, they are general formulations, broad in scope, and therefore not amenable to direct testing.

Hawes (1975) contended that universal generalizations (grand theories) are composed of primary statements that are assumed to be true. As a result "secondary statements must be added to the primary statements so that the assumptions can be tested for accuracy" (p. 39). Most of the midrange variable-centered research conducted by communication and aging scholars tests secondary statements of grand theories (e.g., Nussbaum, 1983a, 1983b, 1985; Query & James, 1989). Due to the exploratory and descriptive nature of our study, grand theories are more appropriate, given their scope, than midrange variable-centered theories such as Baltes and Baltes's (1990) attempt to predict successful aging from psychological variables. The utility of these grand theories is debated, they have not been exhaustively tested, and each has been subject to criticism (Achenbaum & Bengtson, 1994; Bengtson, Parrott, & Burgess, 1996; Hendricks, 1994, 1996; Lynott & Birren, 1996; Lynott & Lynott, 1996; Maddox, 1994; Marshall, 1994). As each grand theory focuses on unique aspects of an older adult's relational experience, continued evaluation of the theories may provide specific areas for future investigation and, eventually, inform the development of competent interventions in the aging process.

COMMUNICATION AND SUCCESSFUL AGING

Communication scholars have yet to propose a grand theory of successful aging. Instead, researchers working from a relational perspective have derived testable hypotheses from gerontology-based grand theories and have linked communication to various outcome variables indicative of successful aging. The use of gerontological grand theory is not always explicit; as noted by Hendricks (1994), "one need not be conscious of adopting [a grand theory] for it to channel and shape perceptions of and interaction with the elderly" (p. 753).

Before reviewing gerontology-based theories and the empirical, communication-based studies, it is necessary to define a *relational perspective*. Rogers (1998) reported a "growing consensus among interpersonal scholars of the intimate link

between communication and social relationships" (p. 69). A relational perspective recognizes the formative nature of communication, that is, "Relationships between people, intimate or otherwise, do not develop out of nothingness. They are created through what the two people involved in the relationship do with each other—how they communicate" (Thompson & Nussbaum, 1988, p. 95). A relational perspective recognizes that although "We are who we are through the relationships we build with other people" (Thompson & Nussbaum, 1988, p. 95), it is not just frequency of communication that is important. Tamir (1979) cautioned that quality of relationships must be considered, especially in the case of the elderly, because "Quality, not quantity of communication is the crucial factor" (p. 135). Communication constitutes, forms, and enables all social activity. Nussbaum (1983b) suggested the complexity of social relationships warrants the inclusion of all theoretical perspectives (theories of successful aging) in any explanation of the link between social activity and successful aging.

GRAND THEORIES OF AGING

Disengagement Theory

Disengagement theory (Cumming, Dean, Newell, & McCaffrey, 1960; Cumming & Henry, 1961) is a functional approach to the study of aging and refers to the mutual withdrawal of the elderly from society and society from the elderly (Nussbaum et al., 1989). Disengagement theory is defined by Cumming and Henry (1961) as "an inevitable process in which many of the relationships between an aging person and other members of society are severed, and those remaining are altered in quality" (p. 213). The theory grew out of the Kansas City Studies of Adult Life (Cumming & Henry, 1961), which interviewed 279 mostly White, middle-class, healthy adults ranging in age from 50 to 90 over a 6-year period. According to Achenbaum and Bengtson (1994), "It was the first truly comprehensive, truly explicit, and truly multidisciplinary theory advanced by social and behavioral scientists in gerontology" (p. 762).

Disengagement theory assumes that, as society withdraws from the elderly, older adults withdraw from society because they desire a decrease in social roles and societal demands, resulting in a decrease in the quantity and quality of their relational networks (Havighurst, Neugarten, & Tobin, 1968; Nussbaum, 1981). This desire is likely manifested in decreased activity levels, decreased communicative interaction, increased seeking of more passive social roles, and increased preoccupation with their individual lives (Hooyman & Kiyak, 1996).

Nussbaum et al. (1989) postulated that if disengagement theory adequately explains older adult relationships, several communicative changes should be apparent. First, older adults should enter into fewer relationships with increasing age. Second, the closeness of the older adult's relationships should lessen with increas-

ing age. Finally, decreases in the personal networks of older adults should be apparent within their communicative acts. For example, the content of elderly conversations should focus more on self than on the larger community (Nussbaum, 1983b). Achenbaum and Bengston (1994) summarized the empirical adequacy of disengagement theory by reporting that apart from the original work of Cumming and Henry (1961), few empirical findings support disengagement theory. Communication scholars have reported only limited support for disengagement theory. For example, Nussbaum (1983a, 1983b) tested disengagement theory by examining a variety of communicative behaviors of the elderly living in three different environments: at home, in a retirement center, or in a nursing home.

Nussbaum (1983b) examined the elderly's closeness ratings of family and friends. He derived a secondary statement testing the assumption that evidence of disengagement would be manifested in decreased closeness ratings for the elderly. Disengagement theory was partially supported in the nursing home context. Nursing home residents reported significantly lower closeness ratings for family and friends than elderly individuals living at home or in a retirement center.

Nussbaum (1983b) examined the relation between perceptions of conversational content and successful aging (operationalized as high life satisfaction). He derived a secondary statement testing the assumption that evidence of disengagement theory would be manifested in the content of talk centering more on the self than the larger community or other persons. Individuals scoring higher on life satisfaction did not report more conversational content focusing on self. Individuals living in nursing homes, however, did not report conversational content focused on the larger community. Nussbaum (1983b) concluded that "the principle of society disengaging from the elderly individual holds true for individuals living in a nursing home" (p. 318).

Activity Theory

One of disengagement theory's chief critics (Havighurst, 1963, 1968) developed a competing theory out of the same data from the Kansas City Studies of Adult Life (Cumming & Henry, 1961). Activity theory (Havighurst, 1963, 1968; Maddox, 1963) posits that activities that were enjoyed in middle age should be continued in later adulthood. Thus, older adults should remain socially active in their later years. It is a symbolic interactionist theory that agues the more active older adults are, the greater their chances to successfully age (Passuth & Bengtson, 1988). Because validation of self is achieved through continuing roles characteristic of middle-age roles, older adults must substitute new roles for those roles lost through changes (e.g., loss of a spouse) occurring in older adulthood (Hooyman & Kiyak, 1996; Passuth & Bengtson, 1988).

According to disengagement theory, society will, to some degree, withdraw from the elderly. If society does indeed withdraw from older adults, their chances

of maintaining middle-age roles decrease. Activity theory assumes the elderly must combat societal withdrawal from them by continuing middle-age roles or substituting new social roles. Thus, if activity theory reflects the key to successful aging, Hooyman and Kiyak (1996) suggested that "older adults must deny the existence of old age by maintaining middle age lifestyles as long as possible: remain active, keep busy, and stay young!" (p. 70).

Nussbaum et al. (1989) reasoned that if activity theory adequately explains older adults' relationships, several communicative changes should be apparent. First, older adults should enter into frequent interactions. Second, these relationships should retain a high level of closeness. Third, activities should retain their quantitative and qualitative dimensions within the older adults' relational network. Working from the perspective of activity theory, Nussbaum's (1985) modeling of interaction frequency and level of closeness as predictors of life satisfaction clearly indicates the importance of quality of communication in relationships. He reported a direct causal relationship between the qualitative dimension of perceived closeness of family and friends and successful aging (high life satisfaction). Conversely, no relationship was reported for the quantitative dimension of frequency of interaction and life satisfaction.

Query and James (1989) tested activity theory propositions derived from Maddox (1963) and Conner, Powers, and Bultena (1979). Query and James reported that elders rating themselves higher on communication competence had larger social networks and were more satisfied with their social support than elders rating themselves lower on communication competence.

Continuity Theory

Continuity theory (Havighurst et al., 1968; Neugarten, Havighurst, & Tobin, 1968) posits that an individual's ability to age successfully is dependent on the ability to continue social-psychological characteristics present in youth and middle age to later life. Neugarten et al. (1968) stated "we regard personality as the pivotal dimension in describing patterns of aging and in predicting relationships between level of social role activity and life satisfaction" (p. 177). Thus, to age successfully, personality characteristics that have been central to an individual throughout life should remain so or become even more important. That is, an individual's ability to adapt to old age in ways that are consistent with his or her personality should predict successful aging. If roles are lost through changes in old age, similar roles must be substituted (Hooyman & Kiyak, 1996).

Continuity theory has similar ramifications for disengagement theory as does activity theory. If society does withdraw from older adults, lost roles must be replaced with roles that allow the older adult's personality to remain consistent. Nussbaum et al. (1989) postulated that if continuity theory adequately explains older adults' relationships, communicative behaviors must be linked to personality

and be consistent throughout an individual's life span. That is, changes in personality would be indicated by changes in communicative behaviors.

Communication researchers studying communicator traits have generally linked personality to verbal and nonverbal behavior or identified beliefs about communicators' personality traits based on language attitudes and speech styles (Giles & Street, 1994). To date, communication researchers have not directly tested continuity theory. Rawlins's (1995) study of friendships in later life, however, implicitly tested continuity theory by examining the continuities and discontinuities of older adults' lifelong patterns of interaction. He argued, "To a considerable degree, continuities in friendship practices reflect stability in the participants' capacities for interpersonal contact and enabling circumstances, whereas discontinuities arise from changes in these circumstances, which frequently transcend individual choice" (p. 227). Because older adults have the same expectations for close friends as they did as younger adults, older adults will successfully age to the extent that they can manage changes in situations that either continue or discontinue lifelong patterns of communication with friends.

Social-Environmental Theory

Social-environmental theory (Gubrium, 1973; Hendricks & Hendricks, 1977) is a functional theory that emphasizes the influence of environment, context, or both in the daily interactive lives of older adults. According to Gubrium (1973), "Environments for the aged are external constraints on persons' actions. The constraints may be social and/or individual restrictions" (p. 36). Nussbaum et al. (1989) concluded that although some research in this area stresses the impact of the environment on social interaction (Nussbaum, 1981), other research stresses the individual meanings interpreted within the social and individual restrictions of the environment (Gubrium, 1973; Hendricks & Hendricks, 1977; Marshall, 1986).

The research of Nussbaum (1983a, 1983b, 1985) reviewed earlier illustrates the impact of environment (particularly nursing homes) on social interaction and successful aging. Alternatively, McKay and Caverly (1995) adopted a feminist perspective that enabled them to capture individual meanings resulting from interactions of people of different genders and cultures. They argued persuasively that the changing nature of family structure, family roles, and lifestyles necessitates alternative forms of inquiry (such as feminist perspectives) that can capture the unique meanings resulting from environmental changes and constraints.

Social-environmental theory responds to the common criticism of disengagement theory—that it describes all behavior as normatively prescribed—by allowing for individual choice. Similarly, activity theory would require activities be continued in older adulthood to age successfully. Social-environmental theory recognizes the need for activity as a social context or norm but allows for variation in ability to carry out certain activities as mediating the behavioral choices of older adults.

Research conducted from a social-environmental theory perspective allows for and demands attention to the unique social and personal environment of older adults. Reker and Wong (1988) argued for theories of aging that focus on what aging means to those who are experiencing it, in contrast to theories focusing on describing and predicting aging processes. They called for research in aging that attends to social and personal norms as well as values. They argued that "personal meaning is built on the foundation of experience, values and beliefs" (p. 241). Communication processes must figure centrally in such research as providing "a symbolic bridge … connecting biological processes, meanings, and relationships" (Query & Kreps, 1993, p. 66). Social-environmental theory provides a framework within which this call can be addressed; it encourages us to attend to the "lived experience" of aging by older adults and to apply a narrative approach concerned with "detailing their causal and interpretive stories" (Query & Kreps, 1993, p. 65).

The four grand theories of aging discussed earlier are formal theories developed by social scientists to explain social phenomena associated with aging. Communication scholars have applied each of these theories directly or indirectly. Communication, however, is not privileged in any of the theories. Each of the grand theories reviewed earlier has received at least partial support when scholars have investigated communication concepts derived from them. There is, of course, another wellspring for explanations of aging: the lay or informal theories held by aging adults themselves. Lay theories are one conceptual avenue to uncovering personal meaning and answering Reker and Wong's (1988) call for new theories of aging that account for individual meanings of growing old and Bochner's (1994) call for attention to "meanings" over "facts." Thus, research should examine if communication is a central concept in lay theories of successful aging.

LAY THEORIES OF AGING

Lay theories are implicit and informal theories about reality and experience; they serve as conceptual systems for performing, interpreting, and evaluating action (Cole & Bradac, 1996). They bear some resemblance to formal theories in that: "they employ concepts and relationships derived from observation; they provide a structure through which social reality is observed; they enable [us] to make predictions" (Wegner & Vallacher, 1977, p. 21). In contrast to formal theories, lay theories are not constrained by standards of internal consistency. As Furnham (1988) posited, "people can hold two mutually incompatible ideas or beliefs at the same time and not be particularly troubled by that inconsistency" (p. 3). Lay theories are implicated in learning and adapting to change: Lay epistemology suggests that learning is dependent on the availability and recognition of prior knowledge embodied in lay theories (Kruglanski, 1989). A person's lay theory of "how to do bereavement," for example, is the framework within which a bereavement event is experienced and sense is made of that experience.

Formal theories are developed within scientific communities on the basis of logical theorizing, systematic empirical observation, and rigorous testing. They are evaluated by examining to what degree explicitness, coherency, consistency, parsimony, and testability are present. In contrast, lay theories are developed within cultural communities on the basis of shared experiences and sense-making. As cultural knowledge, they are not subject to systematic development and testing, and they may be, to some extent, implicit, inconsistent, or vague. Despite these gaps, shared lay theories can shape individual approaches to aging and therefore may be responsible, in part, for the recurring behavior patterns that can be tested to help assess formal theories of aging. We exploit solicited advice as a tool for revealing lay theories: We ask older adults what advice for coping with bereavement they would share with others who have lost a spouse. As Cole and Bradac (1996) suggested, "lay theories identify the causal components of a given outcome (as perceived by naive respondents)" (p. 58). We are interested in respondents' perceptions of causal components leading to the outcome of successful aging. Soliciting advice "for others in similar situations" prompts respondents to identify causal principles generalized from their concrete experiences. It gives them the opportunity to make explicit, as guidance for others, their theories of successful aging after bereavement as abstracted from their situations. Tripathi, Caplan, and Naidu (1986) underscored the status of advice as lay theory by noting that in many cases "if recipients accept the advice, they do so at the cost of abandoning their own theories" (pp. 214–215). The patterned language of advice, therefore, is our foundation for identifying lay theories in this study: "The structure of our language itself … serves as an implicit theoretical framework that not only circumscribes experience but acts as a filter through which individual encounters are perceived, modified, and categorized as examples of more general phenomena" (Hendricks & Hendricks, 1977, p. 103). Our first research question (RQ) explores the theoretical frameworks embedded in the language of bereaved spouses' advice:

RQ1: What are the conceptual meaning structures in the language of respondents' advice to other bereaved spouses?

Explication of lay theories of aging may allow us to discover if theories of aging held by those who are experiencing it are reflected in our formal theories of aging. Hendricks and Hendricks (1977) commented that "the theories formulated by social gerontologists can be viewed as extensions of the unreflective theorizing carried out in ordinary life" (p. 103). Comparing and contrasting formal and lay theories may reveal overlooked factors and other limitations of formal theories (Cole & Bradac, 1996). It may also help us integrate theory, policy, and practice by assisting communication between users of the vocabularies of formal and lay theories of aging. We seek to reveal lay theories and to examine their correspondence with formal theories of aging by comparing their themes and claims for successful coping:

RQ2: How do core themes of respondents' lay theories of successful aging after bereavement correspond with central concepts of formal theories of successful aging?

METHOD

Data

The data in this study were collected as part of a larger research project on bereavement. The data are transcribed interview responses of recently bereaved spouses, age 50 and over, identified through the obituaries in a large metropolitan newspaper in the western United States. Data collection and interview transcription are described in detail in Caserta, Lund, and Dimond (1985).[1] The 104 bereaved spouses were each randomly assigned to one of 11 interviewers. Interviewers were graduate students in nursing, psychology, or sociology. Interviewer training included reading on aging and bereavement, instruction in interviewing techniques, and practice interviews with bereaved elderly. The training lasted 6 weeks and emphasized the need for procedural standardization. Face-to-face interviews were conducted in the bereaved spouses' homes. Because of the longitudinal nature of the original study, the large number of interviewers, and the large number of respondents, the investigators in the original project tested for interviewer effects to ensure that training was adequate. They found "no statistical differences … among the interviewers with respect to the respondents' bereavement outcome measures" (Caserta et al., 1985, p. 638). Each spouse was interviewed at six points in time (3–4 weeks, 2 months, 6 months, 1 year, 18 months, and 2 years after bereavement). The mean age of respondents was 66.7 years ($SD = 8.5$), mean age of deceased spouse 71.1 years ($SD = 9.2$), mean number of years married 38.3 ($SD = 14.3$). Of the respondents, 81.7% were women, 98% were White, and 80.7% had finished high school.

The interview protocol consisted of a battery of closed-ended questions and a moderately structured set of open-ended questions investigating the spouse's death, the role of family and friends, rituals, as well as current health and psycho-

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[1]The longitudinal nature of the study, and the intervals at which interviews were performed, were determined by the needs of a larger research project concerning bereavement. Readers interested in the scope, methods, and results of the larger project should consult Caserta et al. (1985); Lund, Caserta, and Dimond (1986); Dimond, Lund, and Caserta (1987); Lund (1989); and Dimond, Caserta, and Lund (1994). Our analysis returns to underutilized data generated by the bereavement project. Although the data are over 10 years old, the richness of this data on such a sensitive topic merits its continued analysis. "History" is always a potential threat to validity, and therefore also to generalizability of results over time, but we argue that it is a small threat in this case as we are investigating an event associated with aging that is typically experienced only once or twice in a lifetime and for which patterns of individual responses, and the social norms influencing them, are likely to change at a relatively slow pace.

logical well-being.[2] For the purposes of this study, we analyzed responses only to the question, "Is there any advice that you would give someone else in a situation similar to yours?" This question appeared midway in the interview schedule. Prior questions provided adequate context to avoid ambiguity; responses demonstrated a clear understanding of a "similar situation" as coping with the loss of a spouse. We restrict our analysis to responses of participants who completed at least five of the six interviews. We were able to obtain 60 interview sets complete for five ($N = 25$) or six time periods ($N = 35$) for a total of 335 interviews. Each interview was transcribed by a commercial data transcription service.

Data Treatment

Content analysis of responses according to an a priori category system is unlikely to capture lay theories, as it imposes the meaning structure of a formal theory. Emergent categorization (e.g., through the "constant comparative" technique of Glaser and Strauss, 1967) is more open to alternative meaning structures in responses, but it actively filters the responses through one or more coders' conceptual frameworks and is limited by the constraints of human cognitive capacity. Krippendorf (1980) argued that in the case of large textual data sets, "unaided, the analyst is likely to form biased, incomplete, and highly selective impressions" (p. 121). To avoid these drawbacks, we applied a set of network text analysis (NTA) tools. In conventional communication network analysis, network nodes typically are individuals and links are reported communication relationships between people. In semantic network analysis, the nodes are people, but a link is defined by two individuals sharing elements of a vocabulary. In NTA, the nodes are words and links are constituted by the co-occurrence of words within a specified unit or "window" of text.

NTA exploits the structures of language to map semantic relations among groups of words. Carley (1997) emphasized the utility of examining patterns of language use to explore social meaning: "Language as social chronicle implicitly contains the socially accepted meanings or definitions of the various concepts in the social vocabulary" (p. 99). NTA is an appropriate technique for identifying lay theories. As Carley suggested, "Mental models can be abstracted from texts as a network of relations between concepts" (p. 79). In the technique used here, we first identified all primary words in the data. We then generated a frequency listing of the most commonly occurring words. The words by themselves reflect the fundamental concerns voiced by respondents in the interviews. Word frequencies identify important topical subdomains of the realm of advice but not how the terms relate to each other. Patterns

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[2]Due to the scope of the original study, the complete protocol is too lengthy to report here. It included the interview schedule, numerous psychological scales, and interviewer observational ratings of respondent behaviors. See sources in Footnote 1 for a complete description of interview schedules, instruments, and protocols.

of word co-occurrence, however, reveal themes constructed from these elements: Words that occur close to each other are likely to be conceptually linked. Hierarchical cluster analysis is used to identify clusters of such words. The clusters represent common and dense co-occurrences of words, which may be interpreted as more general concepts. To aid in the interpretation of these clusters of words, we visually portrayed the relations among the words through multidimensional scaling (MDS). The thematic clusters or concepts are then used as the basis for contrasting lay and formal theories of aging. Each step of this process is described in detail later.

Word frequency.   The complete responses to the bereavement advice question across all interviews were entered into a text file. The interviews initially yielded 16,252 total words, not including nonsubstantive words such as "a," "an," "not," "but," "the," and so forth and 2,270 unique words. The initial frequency listing of each unique, substantive word in this complete file was inspected for variations on the same root word and all variations (e.g., plurals, past tense, contractions, synonyms, etc.) were changed to a common form (i.e., "accept" for "accepted" and "accepting," "friend" for "friends," "crying" to "cry," etc.). The final translated file yielded 13,114 total words and 1,570 unique words.[3] The Catpac (1993) qualitative textual analysis program was used to generate a rank-ordered frequency list of all unique words in the file.

Word co-occurrence and cluster analysis.   The 95 most frequent words were selected for co-occurrence analysis of words from Interview 1 through Interview 6 (see Table 1). The word co-occurrence matrix generated by the Catpac (1993) program is based on the appearance of each pair of words within five words of each other within each response (dropping nonsubstantive words and dropping words that do not co-occur with other words in the data set). The value in each cell of the matrix is the number of times each pair of words occurs together within the five-word window.

Discovering themes by direct inspection of the word list and co-occurrence matrix would be difficult and subject to interpretive distortion; therefore hierarchical cluster analysis was applied to the word co-occurrence matrix. The Catpac (1993) program applies hierarchical clustering (complete linkage method) to the respective co-occurrence matrices to identify clusters of words at any given clustering threshold. Cluster analysis is a technique used "to find groups of similar entities in a sample of data" (Aldenderfer & Blashfield, 1984,

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[3]Deletion of nonsubstantive words such as articles and conjunctions is standard practice in textual network analysis. If not omitted, these frequently occurring words obscure substantive thematic terms in subsequent frequency analyses and co-occurrence analyses.

TABLE 1
Ninety-Five Most Frequently Occurring Substantive Words Across All Interviews

Word	Frequency	Percent
I	1936	14.76
Know	379	2.89
Think	347	2.65
Thing	283	2.16
Go	215	1.64
Me	192	1.46
People	179	1.36
Keep	148	1.13
Time	128	.98
Going	128	.98
Feel	124	.95
Want	104	.79
Cannot	102	.78
Really	101	.77
Talk	99	.75
Busy	98	.75
Something	92	.70
Yes	92	.70
Day	91	.69
Help	83	.63
Husband	83	.63
Advice	82	.63
Tell	77	.59
Good	77	.59
Yourself	75	.57
Over	74	.56
Right	69	.53
Lot	67	.51
Year	65	.50
Live	63	.48
Home	62	.47
Never	60	.46
Mind	57	.43
Work	57	.43
Different	56	.43
Anything	56	.43
Sit	54	.41
Life	54	.41
Person	51	.39
Little	51	.39
Maybe	51	.39
Stay	50	.38
Doing	50	.38
Else	49	.37
Need	48	.37
Best	48	.37

(Continued)

TABLE 1 *(Continued)*

Word	Frequency	Percent
Friend	48	.37
Death	47	.36
Look	45	.34
Let	44	.34
Problem	43	.33
Mean	43	.33
Put	41	.31
Always	41	.31
Down	40	.31
Hard	40	.31
Somebody	40	.31
Two	39	.30
Long	39	.30
Anyone	38	.29
Happen	37	.28
Times	36	.27
Thought	35	.27
Kind	34	.26
Alone	34	.26
House	33	.25
Around	33	.25
Course	33	.25
Family	33	.25
Marriage	32	.24
Guess	32	.24
Better	31	.24
First	31	.24
Away	31	.24
Child	30	.23
Everything	29	.22
Lost	28	.21
Night	28	.21
Told	27	.21
Again	27	.21
Everybody	27	.21
Care	26	.20
Wife	26	.20
Month	26	.20
Cry	25	.19
Call	25	.19
Write	25	.19
Nothing	24	.18
Three	24	.18
Bad	23	.18
Start	23	.18
Read	23	.18
Week	23	.18
Situation	23	.18
Sorry	23	.18

Note. Total words = 13,114. Total unique words = 1,570.

p. 33). Hierarchical clustering proceeds in this method by considering each item as its own cluster and then successively merging smaller clusters into larger ones on the basis of similarity. Clustering methods differ in the rules by which two clusters are merged. In the *complete linkage method* (also known as *the diameter method*) "we consider the distance between one cluster and another cluster to be equal to the longest distance from any member of one cluster to any member of the other cluster" (Borgatti, 1994, p. 78). At each step in the process the two clusters merged are those with the smallest distance as measured according to this rule.

To highlight the more frequent word sets, the program was set to cluster only the 95 most frequently occurring words. The cluster analysis solution was chosen by identifying major jumps in the level at which clustering occurred and the point where clusters of words not specific to the topic of aging and bereavement began to dominate new clusters (Step 18 of the 38-step clustering). In one case, a word that merged with a cluster immediately past the breakpoint ("talk") was included because it enhanced interpretation of the cluster.

MDS.   Cluster analysis reports word groupings but does not reveal how the groupings relate to each other. The same co-occurrence matrices were also scaled and plotted via MDS, to show visually how clusters of words are more or less "close" to each other in terms of the overall patterns of co-occurrence. The word co-occurrence matrix was converted into a correlation matrix, where the symmetric values of cell$_{(i,j)}$ represent the extent to which word i and word j co-occur with each other word. Thus, the correlations represent the similarity of words i and j. The higher the correlation, the more similar, and the "closer," the two words are to each other. Metric MDS then tries to reproduce the relations among the words in n-dimensional space. The optimum number of dimensions is the smallest number that produces an acceptable stress value. The stress value indicates, for any particular n-dimensional result, how well the location of the words in that space represents the underlying correlation strengths. Typically, researchers choose to report results for only two or three dimensions in a network analysis; dimensions greater than three are difficult to represent and to interpret visually. As the relations among 95 words are unlikely to be so simple as two dimensions, the stress value for the MDS result in two dimensions is .41, and in three dimensions .32, rather than below .1 as is typically desired. There is indication of an "elbow" in the stress plot at five dimensions, at a stress of .23. In this case, however, a lower dimension but higher stress plot will serve because we are more interested in "neighborhoods" than dimensions. Our focus is on similarity and clustering; as Kruskal and Wish (1978) explained, neighborhood analysis focuses "on the small distances … while a dimensional approach attends most to the large distances" (p. 44). We provide two- and three-dimension MDS solutions.

RESULTS

Word Frequency

Of the 1,570 unique words in the interviews, 227 words occurred at least 10 times, and 146 words occurred at least 15 times. Table 1 displays the 95 substantive words that occurred at least 23 times in the interviews. Only the top 25 words occur 75 or more times in the data for all interviews. We grouped these words by semantic value and named each group according to the shared meaning. The 25 most frequently occurring words include language for persons (*I, me, yourself, people, husband*); cognitive and affective states (*know, think, feel, want, help*); communication (*talk, advice, tell*); activity (*keep, go, going, busy*); time (*time, day*); nonspecific referents (*thing, something*); and qualifiers (*cannot, really, good, yes*). Analysis of words for each round of interviews reveals that word frequency rankings are somewhat similar across interview rounds, especially for the top 10 words (Table 2). The most consistently frequent words across interviews concern persons, cognitive states, nonspecific referents, and activity.

Cluster Analysis

The cluster analysis yielded 37 words in 15 clusters with 2 to 7 words per cluster. The small cluster size yielded by this relatively conservative reading of the analysis aided interpretation and naming. Table 3 reports cluster contents and our names for the clusters. We then qualitatively grouped the thematic clusters into umbrella themes of social positioning and qualifiers, activity, time, and spouse. The 4-word clusters we grouped as *social positioning* and *qualifier themes* situate the advice relative to the advice giver. The 3 clusters labeled as *spousal themes* describe or evaluate the lost spouse. The 6 clusters classed as *activity themes* contain action terms, passivity terms, or both. The 2 clusters grouped as *time themes* name the number or length of time intervals.

MDS

The lack of complete fit of the semantic space of bereavement advice the in two-dimensional MDS solution is revealed by words that clustered in the hierarchical cluster analysis but are spread through the two-dimensional space (Figure 1). Overlaying the cluster analysis on the MDS results, however, shows how various clusters are more or less close to each other, indicating potential meta-concepts of related word clusters. MDS and plotting of the word co-occurrence matrix reveals the largest cluster (social positioning and qualifiers) is composed of words that are central to the semantic space of bereavement advice (Figure 1). These words are central, in part, be-

TABLE 2
Fifty Most Frequently Occurring Words in Bereavement Advice Responses by Interview Round

Interview 1[a]		Interview 2[b]		Interview 3[c]		Interview 4[d]		Interview 5[e]		Interview 6[f]	
Word	%	Word	%	Word	%	Word	%	Word	%	Word	%
I	13.85	I	17.01	I	13.98	I	14.02	I	13.68	I	15.61
Know	2.75	Know	3.82	Know	3.06	Thing	2.67	Think	2.82	Think	2.87
Think	2.46	Think	2.98	Think	2.56	Think	2.52	Know	2.64	Know	2.44
Thing	1.93	Time	1.79	Thing	2.51	Know	2.41	Thing	2.27	Thing	2.12
Me	1.67	Thing	1.67	Go	1.83	Go	2.04	Me	2.02	Go	1.65
People	1.53	Me	1.55	Me	1.60	People	1.28	Keep	1.90	Year	1.38
Go	1.51	Keep	1.51	People	1.60	Me	1.13	Go	1.66	Keep	1.27
Little	1.11	Go	1.47	Cannot	1.42	Feel	1.13	People	1.60	Feel	1.27
Day	1.03	People	1.23	Time	1.32	Going	1.10	Time	1.41	Me	1.27
Going	1.00	Mind	1.23	Keep	1.28	Keep	1.02	Yes	1.10	Yes	1.27
Really	.98	Really	1.19	Yes	1.10	Time	.99	Want	.98	Cannot	1.27
Husband	.95	Life	1.19	Going	1.01	Husband	.99	Yourself	.98	People	1.06
Feel	.93	Talk	1.15	Help	.78	Talk	.88	Live	.98	Really	1.01
Lot	.87	Husband	1.11	Something	.78	Live	.84	Feel	.92	Day	1.01
Want	.85	Year	1.03	Tell	.78	Want	.80	Busy	.86	Want	1.01
Friend	.82	Cry	1.03	Anything	.73	Something	.80	Around	.86	Busy	.96
Keep	.79	Going	.95	Feel	.73	Day	.77	Find	.86	Going	.96
Anything	.79	Maybe	.95	Busy	.69	Tell	.66	Really	.80	Over	.96
Kind	.79	Busy	.91	Right	.69	Lot	.66	Friend	.80	Yourself	.90
Help	.77	Something	.91	Over	.69	Busy	.66	Better	.80	Somebody	.90
Man	.77	Need	.91	Advice	.64	Never	.66	Start	.80	Advice	.90
Call	.77	Over	.91	Really	.64	Really	.66	Long	.80	Look	.85
Time	.74	Advice	.87	Yourself	.64	Yes	.62	Tell	.74	Time	.80
Mine	.71	Ever	.87	Want	.64	Yourself	.62	Interest	.74	Talk	.80
Work	.71	Lot	.83	Home	.59	Year	.58	Going	.74	Maybe	.80

(Continued)

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TABLE 2 *(Continued)*

Interview 1[a]		Interview 2[b]		Interview 3[c]		Interview 4[d]		Interview 5[e]		Interview 6[f]	
Word	*%*	*Word*	*%*	*Word*	*%*	*Word*	*%*	*Word*	*%*	*Word*	*%*
Anyone	.71	Want	.83	Stay	.59	Cannot	.55	Something	.74	Need	.80
Else	.71	Feel	.83	Look	.59	Home	.55	Death	.74	Live	.80
Hospital	.71	Felt	.83	Best	.55	Good	.55	Work	.74	Little	.80
Used	.69	Times	.79	Never	.50	Child	.51	Girl	.67	Never	.74
Hard	.69	Everybody	.79	Husband	.50	House	.51	Face	.67	Different	.74
Good	.66	Women	.76	Talk	.50	Help	.47	Down	.67	Problem	.74
House	.66	Quite	.76	Friend	.50	Sit	.47	Help	.61	Help	.69
Two	.66	Mother	.76	Work	.46	Person	.44	Husband	.61	Job	.69
Maybe	.66	Ill	.76	Live	.46	Little	.44	Life	.61	Doing	.69
Busy	.63	Bed	.76	Month	.46	Always	.44	Themselves	.61	Sorry	.69
Fact	.63	Cause	.76	Year	.46	Doing	.44	Family	.61	Better	.69
Relief	.63	Family	.76	Let	.46	Advice	.44	Someone	.61	Good	.64
Sweet	.63	Always	.76	Day	.46	Friend	.44	Real	.61	Husband	.64
Piece	.63	Help	.76	First	.46	Put	.44	Together	.61	Tell	.64
Somebody	.63	Day	.72	Better	.41	Better	.44	Read	.61	Cause	.64
Knew	.63	Good	.72	Mind	.41	Anyone	.44	Need	.61	Plenty	.64
Never	.63	Right	.72	Care	.41	Family	.44	Lost	.61	Two	.64
Advice	.61	Scrub	.72	Nothing	.41	Work	.40	Job	.61	Marriage	.64
Cannot	.61	Walls	.72	Sit	.41	Happen	.40	Away	.61	Times	.58
Over	.61	Physical	.72	Hurt	.41	Down	.40	Times	.61	Write	.58
Misery	.61	Number	.72	Need	.37	Else	.37	Sorry	.61	Probably	.58
Lady	.61	Love	.72	Thought	.37	Kind	.37	Good	.61	Worse	.58
Hold	.61	Money	.72	Else	.37	Three	.37	Young	.61	Once	.58

[a]3,783 unique words. [b]2,516 unique words. [c]2,189 unique words. [d]2,739 unique words. [e]1,630 unique words. [f]1,884 unique words.

TABLE 3
Thematic Word Clusters for Bereavement
Advice Responses for All Interviews

Theme	Cluster Contents
Social positioning and qualifiers	[I, know, think, thing, people, cannot, talk]
	[everybody, different]
	[anyone, advice]
	[help, me]
Spouse	[lost, husband]
	[wife, death]
	[good, person]
Activity	[live, life]
	[keep, busy, sit]
	[stay, home]
	[yourself, feel, sorry]
	[go, want]
	[something, else]
Time	[two, week]
	[time, day]

cause they are so frequent: They tend to co-occur frequently with each other and with the other, more peripheral, words.

The three-dimensional MDS solution has less stress (.32) and illustrates the source of the "worm" clusters in the two-dimensional solution: The spatial plot of the frequently occurring words is approximately spherical. As three-dimensional plots can be difficult to read (especially with word labels added and "floor spikes" shown to indicate location in the third dimension), Figure 2 provides the complete three-dimensional plot without word labels, and Figure 3 displays separate, labeled subplots for words belonging to each group of clusters. The semantic space modeled in Figure 2 and in each subplot of Figure 3 is the same. The subplots reveal the positioning of specific word clusters in the three-dimensional MDS solution with other words omitted from the graph for clarity.

DISCUSSION

RQ1

RQ1 asked what conceptual meaning structures are present in the respondents' advice. Meaning structures were uncovered using NTA and the emergent groups of
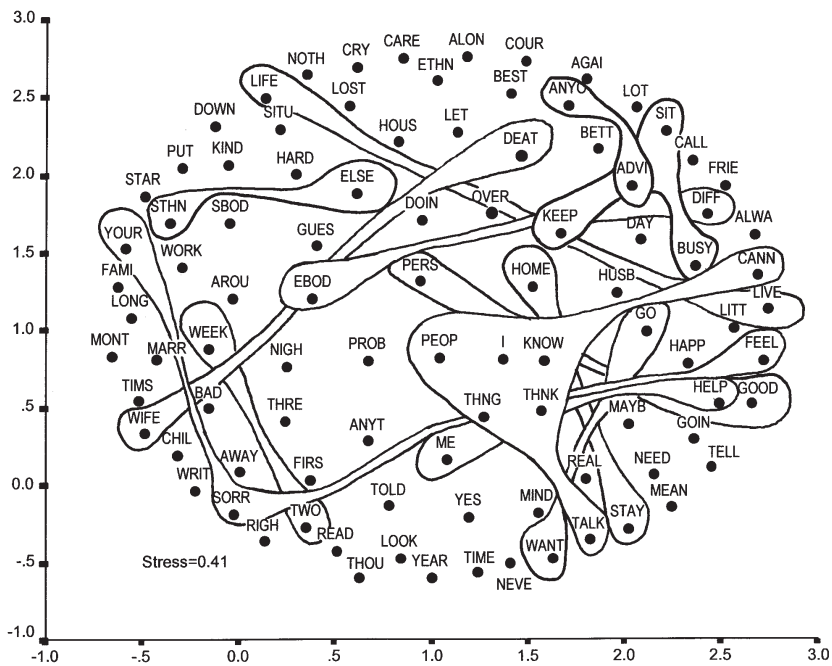
FIGURE 1   MDS solution in two dimensions for the semantic distances of the 95 most fre-
quently occurring words, with cluster analysis results superimposed.

clusters (social positioning and qualifiers, activity, time, spouse) were briefly re-
ported earlier. Interpretation of the clusters, however, can be difficult. Repeated
co-occurrence of words is a good indicator that they are semantically linked into
concepts, but it alone cannot reveal the exact nature of that linking. Fortunately, af-
ter components of respondents' lay theories are explicated through cluster analysis
and MDS, the researcher employing NTA techniques can refer to the original data
for further interpretation. Searching for key words from each cluster reveals arche-
typal interview responses containing words from that cluster. We returned to the
original data to aid in our interpretation of the clusters, starting with the word "clus-
ters" we labeled *social positioning and qualifiers.*

   The largest of these ([*I, know, think, thing, people, cannot, talk*]) is, in part, re-
flective of ownership and object of the advice. Interviewees label their advice as
personal opinion or *lay theory;* for instance, "I know what worked for me"; "I
think the thing that helped me most was talking to people." Several clusters ([*ev-
erybody, different*], [*help, me*], [*anyone, advice*]) suggest that respondents see their
lay theories of bereavement and aging not only as arising from personal experience
but also as possibly unique to that experience, as in "Everybody is different," "I

know what helped me but I can't advise anyone else." Examination of the MDS plot of words belonging to social positioning and qualifiers clusters also suggest two thematic neighborhoods (aligned on the horizontal axis in the Figure 3 subplot): one concerned with qualifying the positioning of the advice relative to the advice giver ([*I, know, thing, talk, help, me, think, different*]) and one concerned with the target of advice ([*anyone, everybody, advice, cannot*]).

Conceptual clusters of activity words establish contrasting reactions to bereavement: to withdraw ([*yourself, feel, sorry*], [*stay, home*]), for example, "You could just stay home and feel sorry for yourself," or to engage the world ([*live, life*], [*go, want*], [*keep, busy, sit*]), for example, "You need to live life," "You want to keep going," "Keep busy and don't sit around." The cluster [*something, else*] echoes interviewees' advice to focus activity on something other than the bereavement: "Do or think about something else." The word clusters associated with activity also show two neighborhoods in the MDS analysis: words associated with activity (*keep, busy, go, something, else*) and contrasting passive words (*home, sit, stay, sorry, want*); interestingly, the [*live, life*] cluster is found in this neighborhood—perhaps because these words tend to be contrasted with passive vocabulary (e.g., "Don't sit home; live life").

The lost spouse and the passage of time are the remaining cluster groups. References to the lost spouse emerge as word clusters [*lost, husband*], [*death, wife*], [*good,*
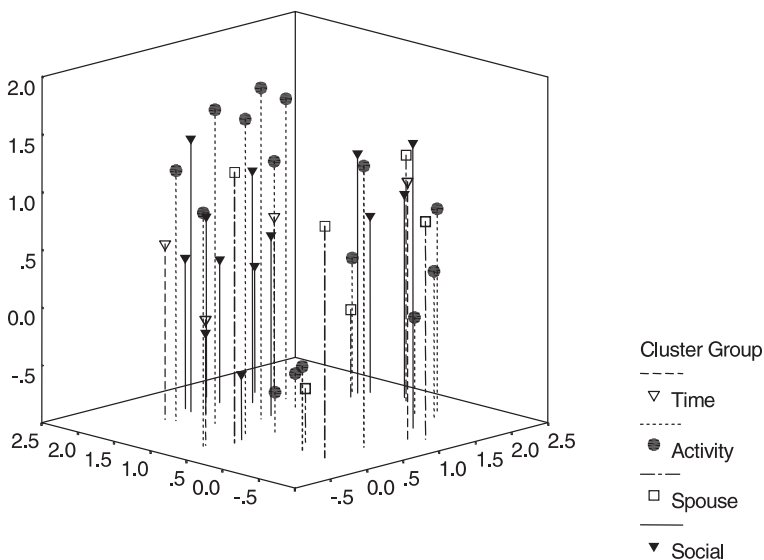

FIGURE 2   MDS solution in three dimensions for the semantic distances of the 37 clustered words (nonclustered words are omitted for clarity).
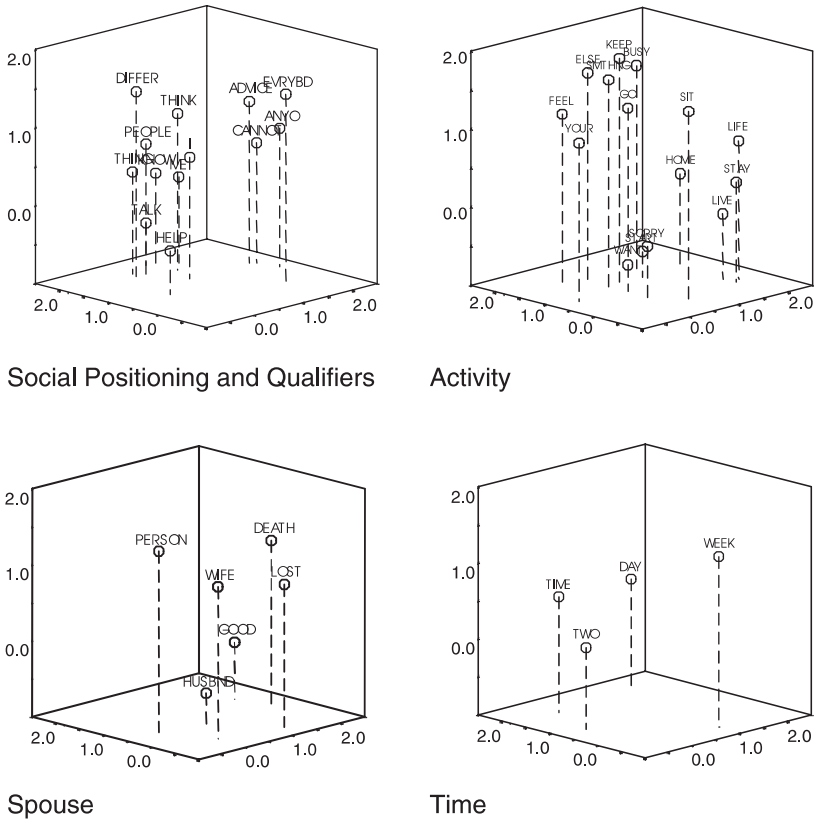
FIGURE 3   Subplots in three dimensions for semantic distances of words in groups of themati-
cally related clusters.

person]; for example, "when I lost my husband," "since the death of my wife," "he
was a good person." The linking of bereavement advice to spouse references under-
scores the tendency for the advice to be given relative to the advice giver's own expe-
riences. The talk about the lost spouse suggests that, although the lay theories
embedded in the bereavement advice may be rooted in cultural knowledge, they are
offered as lessons from experience. The core concept suggested by the time-related
clusters ([*two, week*], [*time, day*]) is the passage of time, in particular, that adjust-
ment is day-by-day and that responses to bereavement change over time, as in "It's
been six weeks since I lost my husband," "Time passes day by day." The MDS sub-
plots of spouse and time clusters do not reveal distinct neighborhoods; the words are
distributed in the three-dimensional space. The words in these clusters co-occur of-
ten enough to emerge as discrete themes in the cluster analysis; however, comments

about the passage of time and the lost spouse co-occur with other primary themes frequently enough to be distributed throughout the space.

RQ2

RQ2 investigated the correspondence of respondents' lay theories with formal theories of successful aging. We now turn to a discussion of lay theories revealed by respondents' conceptual meaning structures. The meaning structures reported earlier reveal lay theories conceptually congruent with activity theory. An active engagement with life is reflected in the activity clusters [*keep, busy, sit*]; [*go, want*]; and [*live, life*]. The following are examples of advice that represent these clusters:

(1) Oh, to be with people and keep busy.
(2) The only thing I've found that does me any good whatsoever is to keep on the go as constantly as possible and work and keep your mind and body as busy as you can, at work, at church, whatever is best for you that keeps you occupied.

Activity is also represented by clusters indicating withdrawal: [*yourself, feel, sorry*] and [*stay, home*]. A casual examination of these clusters might encourage an interpretation that reflects disengagement theory; however, NTA practice commonly includes dropping nonsubstantive words from the analysis. As a result, researchers must exercise caution and allow for variations that may be lost through the deletion of words (specifically, in this case, nonsubstantive negations). The earlier example of "keep busy and don't sit around" is a good illustration of how negations explain the clustering of [*keep, busy, sit*]. Similarly, the following examples illustrate that clusters containing the vocabulary of withdrawal actually reflect engagement with life and activity theory:

(3) Well, just go on with their normal life, to keep busy. Not just at home but to keep busy and be with people. The longer one stays home the easier it would be to stay home.
(4) But you could just murder yourself if you stayed at home and just brooded.

These examples further illustrate the reflection of activity theory, not disengagement theory. Disengagement theory, however, is reflected in some responses, for example

(5) I could stay home forever and do nothing the rest of my life. I don't want to do that.

This respondent acknowledges the possibility of disengagement but recognizes that coping strategies representative of disengagement strategies would not work for him.

The notion of individuation is in fact the strongest (most central) theme in the MDS analysis and also contains the most frequently occurring and co-occurring words. The social positioning and qualifiers cluster reveals how responses were framed in light of a lay theory of social-environmental influences: Respondents frame their advice as unique to their own experience. Examples 2, 3, and 5 indicate how what works for the individual respondent might not work for others. The following examples further illustrate this individuation:

(6) More than likely the circumstances of each person's past and their marital history might [pause] each one of them would have a different problem or a different feeling perhaps, I don't know. I've had lots of advice about [pause] from people who've lost their mate. The interesting part is that each one of them have a different viewpoint on what is right and what was wrong. I think that personalities and the type of marriage that they had, whether it was good or it was medium, mediocre, whether they were close or not.

(7) The first person who walks up to me and says it's going to get easier just got the cane. My husband had a walking cane. Just hit them over the head. Forget it. I get sick and tired of people that are always saying, "Oh I know how hard it's been." You don't know until you walk in my shoes. They don't know and it's a lot of bull when they're standing there saying they know how I feel.

Representative examples of the social positioning and qualifier clusters also implicitly illustrate continuity theory by encouraging people to continue behaviors that are consistent with their prior lifestyle. Although personality features themselves are not addressed, behaviors congruent with earlier traits are advocated:

(8) Well, just go along and live a normal life. Associate a lot with the neighbors. Get into programs, you know, if they're already in them, why, just continue you know, that's what I do.

(9) I think, I really think, with me anyway, getting back into things and talking to people and things like that has been the best for me.

The potential explanatory utility of social-environmental theory is further highlighted in the following example, which also reflects activity theory:

(10) Keep as active as your health permits you to be and be around people as much as you possibly can.

Activity theory requires activities be continued in older adulthood to successfully age. Social-environmental theory recognizes the need for activity as a social con-

text or norm but allows for individual ability to carry out certain activities as mediating the behavioral choices of older adults. Although social-environmental theory allows for explanation of individualization and thus can explain the qualifiers in Example 10, the formal theory is weakened by a lack of internal consistency.

As reported in the results section, the time cluster is primarily concerned with the passage of time during the bereavement process.

(11) Well I guess I'd say to try to make the best of it and just take it one day at a time.

(12) And his spirit is here. Not all the time. Other times, if I'm busy and I don't think about it you know, about him being gone. And other times when I get a little lonely, why you know he's just right here with me.

(13) Just try to keep control until time passes. Time's the only thing that makes it easier.

The preceding examples illustrate that the emergence of the time cluster is probably a function of two related factors. First, the context of the advice is bereavement, and one would expect respondents to reference the need for time in adjusting to the loss of a spouse. Second, Example 12 illustrates the high frequency of time references in typical examples. As a result, the emergence of the time cluster is probably produced by the nature of the topic of advice. It serves as another reminder, however, that respondents frame their lay theories situated within their own experiences and time frames.

In summary, these examples illustrate how some of the respondents' lay theories of successful aging match formal theories, whereas others require more elaboration to explore how they compare with formal theories. Hendricks (1994) argued that

> What is interesting about theory, or any conceptual framework, is that one need not be conscious of adopting it for it to channel and shape perceptions of and interaction with the elderly. If it is "in the air," it is likely to show up in the way people think. (p. 753)

Our respondents report that an enactment of disengagement theory is possible but not preferable. The explication of respondents' lay theories supports the merit of activity theory as an established formal theory that is also congruent with lay theories. Although respondents do not frame their advice in terms of the psychological traits central to continuity theory, their lay theories include continuity as a possible element in successful aging. The central clusters and the most frequently occurring and co-occurring words concerned social positioning and qualifiers, suggesting a lay theory of social-environmental influences congruent with social-environmental theory. The centrality of this lay theory adds merit to Reker and Wong's (1988) call for new theories and approaches to aging processes that account for individual meanings of growing old—an argument that applies to research in coping and bereavement as well.

Limitations

Ironically, one of greatest strengths of NTA methods is also a potential limitation of the present study. It is important to note that meaning structures developed through NTA are not as subject to researcher biases, selective perception, and validity problems associated with an a priori category system (content analysis) or emergent category or thematic analysis (constant comparison technique). NTA techniques allow researchers to group and classify respondents' meaning structures with minimal threats to internal validity due to the researcher. The technique, as applied here, however, does not capture individual differences. As a result, the emergent clusters are not amenable for use in linking an individual's meaning structures to specific outcome variables (e.g., life satisfaction, coping ability, and social support). Future studies measuring outcome variables could utilize the conceptual meaning structures uncovered here or employ NTA techniques to generate individual meaning structures that could then be used for the basis of category formation. Subsequently, researchers could employ techniques (e.g., content analysis) that can link individuals to outcome variables while reducing threats to internal validity.

Using the discourse of interview responses reveals core concepts of lay theories and their semantic neighborhoods but does not directly identify causal relations. To further the examination of lay theory, future research could move from naturalistic discourse to structured tasks in which respondents sort key concepts into causal relations, as used by Cole and Bradac (1996) in their explication of lay theories of friendship.

Implications

Rowe and Kahn (1998) asserted that an active engagement with life is one of the central determinants of the ability to age successfully. The results of this study support Rowe and Kahn's conclusion by explicating the respondents' conceptual meaning structure of activity. The results also suggest that any formulaic approach to predicting successful aging should be viewed with caution. Further, most of the examples reported earlier reflect multiple, formal theories of successful aging. For example, the examples that reflect continuity theory (Examples 8 and 9) also reflect social-environmental theory. The resulting lack of internal consistency is problematic for formal theories but is expected in lay theories. Future studies should recognize that older adults do have multiple, implicit theories of successful aging, and they do not appear to be troubled by resulting contradictions or inconsistencies. Our respondents' most central meaning structure indicates that individuals currently coping with changes that must be met to age successfully recognize the importance of any one individual's personal experience and meaning when adjusting to change.

Future research should also explore lay theories of successful aging held by those who are not yet elderly. It is the norm for older adults to have intergenerational rela-

tionships with their health care providers. As reported earlier by Hendricks (1994), lay theories of aging are held by those who interact with the elderly as well. Identifying these lay theories may aid our understanding of the ways in which intergenerational health communication is hampered or aided by the lay theories in interaction. The results also suggest that health care practitioners who are aiding the bereaved elderly may find it helpful to communicate to them that other older adults experiencing bereavement emphasize that every individual will have a unique experience. Despite the differing circumstances of personal situations, continuing or enhancing the individual's typical social interaction and activity may be beneficial.

Communication researchers working directly or indirectly from the grand theories of activity, continuity, and social-environmental theories, should be heartened by the conceptual congruency of these formal theories with our respondents' lay theories. Our results indicate that if communication researchers are ever to pose a grand theory of aging consistent with the experiences of the elderly, it should include concepts of individualization, social activity, and continuity where communication and social interaction are central.

ACKNOWLEDGMENTS

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