

Development and psychometric testing of the relocation of self-efficacy scale.

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Abstract:

Background: With greater numbers of older adults relocating to independent living communities (ILCs), there is an increasing need to determine whether factors such as self-efficacy can facilitate relocation adjustment. However, no relocation self-efficacy instrument is available.

Objectives: To develop and test an instrument measuring older adults' self-efficacy to relocate to an ILC.

Method: A 101-item initial instrument representing facets of relocation self-efficacy was developed based on the literature on self-efficacy and relocation and on qualitative interviews with a sample of women who had relocated to ILCs. The instrument was content validated by a panel of experts, reduced to 65 items, and then evaluated by a convenience sample of 166 community-dwelling older adults who planned to move to an ILC. The sample ranged in age from 65 to 91 years ($M = 76.59$ years, $SD = 6.02$ years); most were female (63%), Caucasian (96%), college educated (59%), and married (62%). Assessment of the scale included calculation of internal consistency reliability, test-retest reliability, item and scale correlation coefficients, and principal components factor analysis with varimax rotation to evaluate construct validity, scale structure, and item response range. In addition, convergent validity of the Self-Efficacy Relocation Scale (SERS) was evaluated by assessing correlations with measures of positive relationships (Positive Relations With Others Scale) and environmental mastery (Environmental Mastery Scale).

Results: The final SERS consists of 32 items in three factors: Engagement Efficacy, Daily Living Efficacy, and Transition Management Efficacy. These three factors explained 68% of the sample variance. Cronbach's $[\alpha]$ for the total scale was .97; $[\alpha]$ for the three factors was .96, .96, and .91, respectively. As anticipated, convergent validity was supported by moderate positive correlations between the three SERS factors and the Positive Relations With Others Scale and Environmental Mastery Scale.

Discussion: Identifying older adults at risk for difficulty in adjusting to relocation prior to moving to an ILC by using a measure of relocation self-efficacy has important implications for their health and life satisfaction. This study suggests that the SERS may be useful in identifying such individuals and alerting healthcare professionals to initiate early interventions to facilitate positive relocation adjustment. Further testing of the SERS with heterogeneous socioeconomic, marital, ethnic, and racial samples is needed.

Keywords: nursing | nursing research | psychometric testing | self-efficacy | independent living communities | older adults | relocation

Article:

By 2030, there will be approximately 71.5 million adults in the United States aged 65 years or older (U.S. Department of Health and Human Services, Administration on Aging [AOA], 2005), and many of them will be moving to independent congregate living communities (ILCs; "Absorption of Seniors Housing Gains in 2005," 2006). This residency option represents a way for older adults to continue living independently in a sheltered environment with services designed to support aging in place (Raymond, 2000). With this growing trend, however, there is a need to better understand how older adults respond to relocation and what might be necessary to improve the transition process. Therefore, the objective of the study reported here was to develop and test a measure of relocation self-efficacy as a basis for assessing older adults' needs in the transition process.

The personal impact of relocation is dependent on how well the individual is able to manage the transition. For some, the outcomes are largely positive, resulting in enhanced psychological benefits (Smider, Essex, & Ryff, 1996), increased social engagement (Heisler, Evans, & Moen, 2004; Rossen & Knafl, 2007), and improved quality of life (Rossen & Knafl, 2007). For others, the impact is less positive, leading to dissatisfaction with their new home (Rossen & Knafl, 2003), declining health (Heisler et al., 2004), reduced functional independence (Armer, 1993), increased social isolation and loneliness (Rokach & Brock, 1997), and increased depression (George, 1990; Rossen & Knafl, 2007). When relocation results in negative outcomes, it often translates into high healthcare costs (Badger, 1998; Callahan, Hui, Nienaber, Musick, & Tierney, 1994; Piven & Buckwalter, 2001), increased risk for institutionalization, and increased morbidity and mortality (Danermark & Ekstrom, 1990; Piven & Buckwalter, 2001).

Among those who have moved to independent congregate living environments, the perception of choice has been correlated positively with emotional and psychological well-being (Armer, 1993). Positive psychological adjustment has been shown also to occur when the relocation experience includes a sense of environmental mastery, autonomy, and a sense of personal growth (Ryff & Essex, 1992; Smider et al., 1996). Moreover, studies have indicated that preservation of relationships and continued social support from family and friends positively influence adjustment to and satisfaction with a move (Armer, 1993; Rossen & Knafl, 2003, 2007). Together, these studies suggest that perceived choice, preparation, psychological resources, and relationships affect relocation adjustment, as well as physical, psychological, and social well-being.

Also suggested is that people are better able to meet challenges such as relocation when they believe that their thoughts, emotions, behaviors, and living situations are within their control and they have the confidence to carry out the needed behaviors (Bandura, 1997; Maddux & Lewis, 1995). Thus, self-efficacy to relocate may be essential for relocation adjustment. As defined by Bandura (1997), self-efficacy is the belief that one can perform specific behaviors or tasks in a specific context. Self-efficacy includes efficacy beliefs, "beliefs in one's capability to organize and execute the courses of action required to manage prospective situations" (Bandura, 1997, p. 2), and outcome expectancies, "judgments of the likely consequence that behavior will produce" (Bandura, 1986, p.391). Beliefs in personal efficacy contribute greatly to ability to activate the motivation, cognitive resources, and actions necessary to accomplish tasks (Bandura, 1997). Research has shown that low self-efficacy is correlated with emotional problems such as depression, anxiety, and social or interpersonal anxiety (Maddux & Lewis, 1995). Thus, older adults' self-efficacy or sense of control over their behavior, their environment, and their own thoughts and feelings may be key to a positive relocation adjustment.

To ensure positive relocation adjustment, a measure of relocation self-efficacy is needed to identify older adults who may be at risk for adjusting poorly to relocation; however, no such scale has been available. In developing the scale reported here, relocation was defined as a transitional process that includes changes in the life situation that initiate a move, the actual physical move, and adjustment to the new environment (Remer & Buckwalter, 1990). Based on Bandura's (1997) definition of self-efficacy and on self-efficacy theory, relocation self-efficacy was defined as an older adult's confidence in executing the actions necessary to relocate to an ILC. The ILCs were defined as independent living apartments adapted to meet the special needs of older adults, with services available such as meals, housekeeping, and transportation.

Methods

Initial Development of the Self-Efficacy Relocation Scale

The development of the Initial Development of the Self-Efficacy Relocation Scale (SERS) was guided by Bandura's (1997) Self-Efficacy Theory and the Nursing Model of Transitions (Schumacher & Meleis, 1994), which frames relocation as a complex, process-oriented situational transition that may be influenced by personal and environmental conditions. An initial pool of 101 items representing facets of relocation self-efficacy was developed based on review of the literature on relocation and self-efficacy and on themes related to relocation that emerged from a qualitative study of 31 older women pre-relocation and postrelocation to ILCs (Rossen & Knafl, 2003). Interviews with these women pointed to the importance of move preparation and readiness to move in terms of plans, arrangements, and packing; having a sense of social competence and sufficiency to handle the demands of the new situation; and having perceived well-being of relationships. Although only women were included in the study, both men and women were examined in the literature, serving as a corrective to bias that might have been introduced with the qualitative data. Inclusion in the item pool was based on assessment that an item reflected attitudinal, behavioral, or affective aspects of relocation. Item construction followed established guidelines related to self-efficacy (Bandura, 2002) and standards for item structure and wording (Dillman, 2000; Mishel, 1998). A large number of items were generated to increase representativeness and ensure the selection of high-quality indicators of relocation process and impact. Sample items are shown in Table 1.

Content validity

The pool of items was reviewed by a panel of six content experts who assessed whether relocation self-efficacy was adequately measured with the items. The judges were selected based on the recommendations of Davis (1992) and Grant and Davis (1997): documented clinical expertise with the target population; professional recognition in a related topic area; and engagement in scholarly activities in the topic area (i.e., presenting and publishing professional papers, conducting research, or both). The six judges were from nursing, psychology, sociology, and public health, and they had expertise in self-efficacy measurement and gerontology. The experts were blind to others involved in the process.

These content experts were mailed a construct definition and the SERS Expert Reviewers' Scale and were asked to evaluate each item on a 4-point scale for (a) relevance to the construct of relocation self-efficacy of older adults relocating to independent congregate-type living facilities and (b) readability and appropriateness of the item for adults aged 65 years and older. Reviewers were requested to also give additional recommendations and comments on each item's relevance, readability, and appropriateness for measuring relocation self-efficacy and to evaluate the instructions and response format. They were also asked to decide whether the item should be included, included with revisions, or deleted. Finally, they were asked to recommend items not included. Items were retained if they were rated 3 (moderately relevant) or 4 (highly relevant) by at least five of the six judges (Lynn, 1986). Based on the reviewers' recommendations, 37 items were dropped (17 for redundancy and 20 for lack of clarity or lack of relevance) and 1 item was added. The content validity index was .83, indicating strong agreement among the expert reviewers on the relevance of items and evidence of the validity of the content (Lynn, 1986).

The revised pool of items was then organized into an initial 65-item SERS measuring relocation efficacy beliefs and outcome expectations. Items were used to capture behaviors necessary to plan for and execute a move from an established home to an ILC. For example, some items were related to premove behaviors, such as the decision to keep, sell, or give away items; organize and arrange the move; sell a home; pack; hire movers; and handle the financial necessities of a move. Other items were related to getting in the new home (at the ILC), such as arranging furniture in a pleasing manner, learning new information about the ILC, maintaining contact with family and friends, continuing religious activities, and finding meaningful activities at the ILC. Items were designed to be rated on a 5-point scale indicating respondents' degree of confidence in their ability to carry out needed relocation behaviors (5 = extremely confident, 4 = very confident, 3 = moderately confident, 2 = a little bit confident, and 1 = not at all confident). Presentation of the items and the response format were designed for older adults with poor vision and moderate literacy. Items were written at a fifth-grade reading level and printed using a font size of 14. The total score was calculated by summing the responses, with higher scores indicating greater confidence in being able to carry out the behaviors necessary to move to ILCs.

Psychometric Testing

To test the psychometric properties of the SERS, a convenience sample of 166 community-dwelling older adults who were either contemplating or planning to move to an ILC were recruited from waiting lists of five Midwestern and five Southeastern ILCs. Criteria for inclusion were (a) an interest in or plans to move to an ILC; (b) age 65 years or older; (c) ability to speak, read, and write English; and (d) if widowed, spouse's death having occurred at least 13 months prior to participation. This last criterion was designed to exclude participants whose responses to the data collection materials might be affected by grief after the death of their spouse.

Coordinating representatives from each ILC assisted in identifying potential participants who met the study criteria. A cover letter and questionnaire with postage and a self-addressed, stamped return envelope were then mailed by the participating ILCs to potential participants. Confidentiality was maintained because the researchers did not have the names and addresses of potential participants. In the cover letter, it was stated that participation in the study was voluntary and returning the completed instrument would indicate consent to participate. The questionnaire packet requested no personal identification information.

Study Instruments

The questionnaire packet included demographic questions, the SERS, the Positive Relations With Others Scale (PRO; Ryff & Keyes, 1995), and the Environmental Mastery Scale (EM; Ryff & Keyes, 1995). Demographic information was collected on age, gender, marital status, race, religion, education, income, self-rated health, health satisfaction, activity limitations, medical problems, and number of bed rest days, physician visits, and hospital days in the past 6 months. Convergent construct validity of the SERS was assessed by comparison with the PRO and EM subscales, which are part of the Psychological Well-Being Scale (Ryff & Keyes, 1995). Because self-efficacy is essential to psychological adjustment, behavioral effectiveness, and well-being, it was hypothesized that fair to moderate correlations would exist with scores on these two measures of psychological well-being (Maddux & Lewis, 1995). These hypotheses were constructed a priori based on theoretical stances and previously conducted research (Kling, Seltzer, & Ryff, 1997; Maddux & Lewis, 1995; Rossen & Knafl, 2003; Smider et al., 1996).

The PRO scale has 14 items, rated from 1 (strongly disagree) to 6 (strongly agree). A total score (range, 0 to 84) is calculated by summing responses, with higher scores indicating a greater sense of having warm, satisfying, and trusting relationships with others. Internal consistency reliabilities (Cronbach's [alpha]) of this measure have been reported to range from .88 to .92 (Ong & Allaire, 2005; Ryff & Essex, 1992; Schmutte & Ryff, 1997; Smider et al., 1996). Internal consistency reliability in this study was .92.

The EM scale has 14 items measuring respondents' sense of effectiveness and competence in managing the environment. Items are rated from 1 (strongly disagree) to 6 (strongly agree). A total score (range, 0 to 84) is calculated by summing responses, with higher scores indicating a greater sense of competence in managing the environment. Internal consistency reliabilities (Cronbach's [alpha]) of .83 to .91 have been reported (Kling et al., 1997; Ryff & Essex, 1992; Schmutte & Ryff, 1997; Smider et al., 1996). Internal consistency reliability in this study was .85.

All measures were administered in a single survey. The total time to complete the survey was approximately 30 minutes. In addition, the SERS was administered a second time 2 weeks later to a subsample of 30 Midwestern participants to assess test-retest reliability. These participants volunteered by submitting their name and address in response to a request to participate in a follow-up questionnaire. Names and addresses were destroyed after receipt of the retest. All data collection materials and procedures were approved by the University's institutional review board.

Results

Sample Characteristics

Two hundred fifty-nine survey packets were mailed by the ILCs to potential participants (Midwest [MW] = 96, Southeast [SE] = 163). One hundred ninety-five (75.3%) of the surveys were returned to the researchers (MW = 70, SE = 127). Twenty-nine (14.9%) of the returned surveys were excluded because they had 50% or greater missing data ($n = 23$) or did not meet the study criteria ($n = 6$; four were under 65 years of age and two were answered by someone other

than the intended respondent). The final sample constituted 64.1% ($n = 166$; $MW = 61$, $SE = 105$) of the total surveys given to prospective participants and 85.1% of the returned surveys.

Sixty-one respondents were from the Midwest and 105 were from the Southeast. A summary of demographic data is presented in Table 2. Chi-square tests were conducted to examine differences between the two geographic samples on the variables of age, marital status, education, health, income, and race. They did not differ significantly except for income (more of the Midwestern sample reported incomes below \$20,000) and race (the Midwestern sample included only one minority participant, whereas the Southeastern sample included nine). The data from the two groups were combined to form a single sample.

Although the sample was homogeneous in terms of race (96% Caucasian), there was variability on six other characteristics: 61% were women and 39% were men; over half (61%) had a college education, whereas 39% were less educated; 61% were unmarried and 39% were married; 26% had a yearly income below \$20,000, 26% had a yearly income between \$20,000 and \$39,999, and 48% had incomes of \$40,000 and greater; 85% self-rated their health as good to excellent, whereas 15% self-rated their health as fair to poor; and age ranged from 65 to 91 years ($M = 76.59$ years, $SD = 6.02$ years). The sample was drawn from two geographic regions in the United States and 10 independent ILCs (5 ILCs from each region).

Item Reduction of the Relocation Self-Efficacy Scale

To further develop the SERS, exploratory orthogonal principal components factor analysis (PCFA) was used to eliminate items of low explanatory value to the primary dimensions (factors) represented in the scale and to reduce the number of items to an interpretable set of subscales. The aim was to retain the fewest number of variables to explain the maximum amount of variance in the data (Bryant & Yarnold, 1995).

Prior to the PCFA, a missing-values analysis was conducted to examine the pattern of missing values and to determine if imputation of missing values was warranted (Acock, 1997). This approach was used to decrease estimate bias and improve the reliability of the factor loadings. The results revealed that the maximum number of missing scores was 7 for any one item, and only two items had more than 3% missing scores. The estimation maximization subroutine in SPSS (Chicago, IL) was used to impute missing values using age, race, and marital status as predictor variables. All analyses were run in SPSS Version 13.1.

Factors were identified using the 1.0 eigenvalue cutoff rule and the Scree test. Item retention was based on coefficient values (item loadings) $\geq .50$. Items that cross-loaded (factor coefficients of $\geq .50$) on two or more factors were eliminated from the scale to achieve a balance of good estimation and avoidance of overcapitalizing on sampling error (Thompson, 2004). Item redundancy was limited by retaining only items that loaded with a factor coefficient of .50 or higher and loaded only on one factor. The final item matrix represented a three-factor solution that explained 68.04% of the total variance (Solution 4). Finally, one item was eliminated due to being cross-loaded on two factors, resulting in a 32-item set. The items are shown by factor and coefficient loadings in Table 3.

The items representing each factor were then examined, and items with the highest factor coefficients were used to name each factor. The three factors were titled Engagement Efficacy, Daily Living Efficacy, and Transition Management Efficacy. Factor 1, Engagement Efficacy, is made up of 16 items that refer to engagement in social interactions and activities. Factor 2, Daily Living Efficacy, consists of 7 items that refer to meeting new and continuing demands of living. Factor 3, Transition Management Efficacy, is made up of 9 items that refer to planning, preparing, and strategizing the activities of moving.

Reliability Estimations

Two-week test-retest reliability of the 32-item SERS, tested with a subsample of 30 participants, resulted in Pearson's $r = .696$ ($p = .001$), indicating adequate stability of the SERS. Cronbach's $[\alpha]$ for the total SERS scale and for the SERS factors were high: $[\alpha] = .97$ for the total scale, $[\alpha] = .96$ for Engagement Efficacy, $[\alpha] = .96$ for Daily Living Efficacy, and

[alpha] = .91 for Transition Management Efficacy. Thus, the SERS and its three subscales exhibited a high level of internal consistency reliability in this sample.

Psychometric Properties

The means and standard deviations of the items selected (associated with factor coefficients $\geq .50$) to represent each subscale are presented in Table 4. Respondents were, on average, most confident in their ability to achieve the tasks that made up Daily Living Efficacy ($M = 4.47$), less confident in achieving the tasks representing Engagement Efficacy ($M = 4.11$), and least confident in achieving Transition Management Efficacy ($M = 3.84$).

Table 4

An examination of inter-item correlations of the items making up the three factors revealed strong inter-item relationships. For the 16-item Engagement Efficacy factor, the inter-item correlation range was $r = .324$ to $.886$ ($M = .668$), with only three intercorrelations (out of a possible 120) exceeding $.80$, representing a strong correlational relationship (Miller & Salkind, 2002). For the 9 items comprising the Transition Management Efficacy factor, the inter-item correlation range was $r = .371$ to $.768$ ($M = .558$); no intercorrelations (out of a possible 36) among the items exceeded $.80$. Of the 7 items representing the Daily Living Efficacy factor, inter-item correlations ranged between $r = .678$ and $.954$ ($M = .786$). This scale had the highest intercorrelations: 8 out of a possible 21. Because of the concern of item redundancy (e.g., for Daily Living Efficacy, the items concerning paying bills and handling banking were correlated highly, $r = .94$), the correlational patterns of the highly correlated pairs were assessed with the other items comprising the scale. After an examination of the mean correlation and range of intercorrelations, it was concluded that despite the high pair correlations of several items, their content and relationship patterns with the other items comprising the scale were dissimilar enough to warrant their inclusion in the scale based on the sample statistics. The high item intercorrelation pattern for this scale raises an issue of possible item redundancy that needs to be addressed in future applications of the scale as currently comprised.

Convergent Validity

Convergent validity of the SERS was assessed using the PRO and EM subscales of the Psychological Well-Being Scale (Ryff & Keyes, 1995). As anticipated, the results revealed moderate positive correlations, indicating convergent validity. Correlations of the three factors with the PRO and EM were the following: $r = .485$ and $r = .482$ for Engagement Efficacy, $r = .409$ and $r = .447$ for Daily Living Efficacy, and $r = .324$ and $r = .524$ for Transition Management Efficacy. All correlations were significant at the .001 level. As anticipated, the PRO showed the strongest correlation with the Engagement Efficacy factor, and the EM showed the strongest correlation with the Transition Management Efficacy factor.

Discussion

In this study, a 32-item scale was developed and tested to measure older adults' perceived self-efficacy to relocate to congregate living facilities. Orthogonal principal components analysis of the SERS yielded three factors: Engagement Efficacy, Daily Living Efficacy, and Transition Management Efficacy, which reflect important aspects of the relocation transition process. The Engagement Efficacy factor reflects confidence in maintaining contact with family and friends and continuing meaningful activities with others. The Daily Living Efficacy factor pertains to confidence in the ability to handle the behaviors or activities essential to daily living, such as learning the new address and telephone number and handling mail. Finally, Transition Management Efficacy characterizes confidence in carrying out transition and relocation management behaviors, such as hiring movers and unpacking boxes.

The items in these factors represent differentiated sets of beliefs or self-efficacy linked to distinct realms of functioning that occur across the relocation transition process. The three factors represented in the scale provide a basis for understanding what an older individual is likely to be concerned about when faced with a major relocation, particularly if it involves moving from a place to which he or she is attached, living in a familiar setting and among familiar people and places. The scale factors reflect stages in the move process from the actual preparatory and completion actions (Transition Management Efficacy) to consideration of new business and daily living arrangements (Daily Living Efficacy) and to dealing with staying connected with friends and family and connecting with the new environment (Engagement Efficacy). As responses to the items on the scale suggested, respondents were most confident ($M = 4.47$) in their ability to handle changes in their business arrangements, that is, maintaining checking accounts, paying

bills, and changing the mailing address (Daily Living Efficacy); less confident ($M = 4.11$) in their ability to continue social relations and activities and make new social connections (Engagement Efficacy); and least confident ($M = 3.84$) in their ability to do what was necessary to physically move from their current residence to the new residence (Transition Management Efficacy).

Initial psychometric evaluation of the SERS produced acceptable test-retest reliability; internal consistency reliability; and content, construct, and convergent validity based on established criteria (Carmines & Zeller, 1979; Lynn, 1986; Nunnally & Bernstein, 1994). Convergent validity was evidenced by correlations with the PRO and EM measures.

The literature suggests that high self-efficacy related to challenges such as relocation enables people to better handle the situation. Thus, older adults' beliefs in personal efficacy to relocate can contribute greatly to their ability to activate the motivation, cognitive resources, and actions necessary to accomplish the move (Bandura, 1997) and may be key to positive relocation adjustment (Maddux & Lewis, 1995). The SERS can be used to identify older adults in the premove phase who may be at risk for difficulty in adjusting to relocation and thus alert healthcare professionals to initiate early interventions to prevent avoidable stress and worry about moving to a new and less-independent living environment.

The results of this study have clear implications for nursing practice in today's aging society. Approximately one in every eight persons, or 12.4% of the population, is 65 years of age or older, and by 2030, this group is expected to make up 20% of the population (U.S. Department of Health and Human Services, AOA, 2005). Nurses who work with older adults need to recognize the role they can play in developing and implementing health promotion and illness prevention activities for older adults. Because relocation self-efficacy supports positive relocation adjustment, it is recommended that nurses working with older adults in primary care and community health settings assess their clients for impending relocation and their degree of relocation self-efficacy. This measure of self-efficacy to relocate can then guide nursing interventions to improve the self-efficacy of clients who have low relocation self-efficacy. Community health nurses also may consider providing education and preventive consultations

with older adults through community resources such as senior centers, churches, and other organizations.

The study had several methodological limitations. First, the sample was not random, so the results could be biased toward those who were willing to participate in the study. Second, the results are based on a moderately sized sample of 166 respondents. Third, although test-retest results and convergent validity showed positive results, additional validation of the scale is warranted. Fourth, the high item intercorrelation pattern for the Daily Living Efficacy subscale raises an issue of possible item redundancy that needs to be addressed in future applications of the scale as currently comprised. Future testing of the SERS will need to determine how well it works with more ethnically diverse populations and homogeneous minority populations. Finally, it will be important to examine the scale's use with individuals in the early stages of cognitive decline and those with physical and medical limitations who may be moving into assisted living environments and to examine the tool's applicability to couples making the transition together.

Psychological adjustment to relocation to a congregate living facility has been shown to be influenced by preservation of positive relationships and continued social support from family and friends (Rossen & Knafl, 2003, 2007; Ryff & Essex, 1992; Smider et al., 1996) and a sense of control over one's behavior and environment (Maddux & Lewis, 1995). The SERS provides a measure of perceived self-efficacy in those dimensions.

The SERS is a useful tool for assessing individuals for potential pre-relocation adjustment issues and identifying such individuals so that healthcare professionals can initiate early interventions to facilitate positive relocation adjustment. Future work will need to be focused on developing intervention strategies to bolster relocation self-efficacy and reduce any concomitant adverse risk to the psychological well-being and health of the older adult moving into new congregate living situations.

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