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# Development of the 12-Item Expectations Regarding Aging Survey

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**Purpose:** This study describes the development of a short version of the Expectations Regarding Aging Survey (ERA-38), a 38-item survey measuring expectations regarding aging. **Design and Methods:** In 1999, surveys containing the ERA-38 were mailed to 588 adults aged  $\geq 65$  years who were recruited through physicians; 429 individuals (73%) returned completed surveys. The mean age of participants was 77 years; 76% were White. In 2001, we surveyed 643 adults aged  $\geq 65$  years recruited at 14 senior centers. The mean age of participants was 78 years; 37% were Latino and 16% were African American. With the 1999 data, we selected items for the shorter version of the ERA-38 by using qualitative criteria and by evaluating the items' factor structure, internal consistency reliability of scales, and correlations with age and self-reported measures of health. Then, using the 2001 data, we evaluated the selected items with confirmatory factor analysis, and we reevaluated the internal consistency reliability and associations of the scales with age and self-reported measures of health. **Results:** The factor analyses of the ERA-12

on both samples provided support for three 4-item scales (expectations regarding physical health, expectations regarding mental health, and expectations regarding cognitive function), and one global expectations regarding aging scale combining all 12 items. In both samples, internal consistency reliability estimates for all scales exceeded 0.74, and the 12 items together explained over 88% of the variance in the ERA-38 total score. We found comparable associations of the ERA-12 scales with age and self-reported health measures in both samples. **Implications:** The ERA-12 demonstrated acceptable reliability and validity to estimate expectations regarding aging.

*Key Words:* Measurement, Psychometrics, Factor analysis, Behavioral science, Attitudes toward health

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A growing body of literature supports the hypothesis that older adults' perceptions of aging influence their future health outcomes (Goodwin, Black, & Satish, 1999; Leventhal & Prohaska, 1986; Levy, Slade, Kunkel, & Kasl, 2002; Rakowski & Hickey, 1992). The Expectations Regarding Aging Survey (ERA-38) is a 38-item instrument that measures expectations regarding aging among older adults (Sarkisian, Hays, Berry, & Mangione, 2001). It is used by researchers to examine the relationship between perceptions of aging, health behaviors, and outcomes. The ERA-38 contains 10 scales, each representing a different domain of expectations regarding aging. Unlike instruments that measure attitudes toward aging or beliefs about aging, scores on the ERA-38 are not "positive" versus "negative" or "right" versus "wrong." Instead, higher scores on the ERA-38 are indicative of expecting achievement and maintenance of high physical and mental functioning with aging (for self and others), and low scores indicate expecting decline with aging. In addition, there are no cutpoints for what is optimal. We previously obtained support for the reliability and validity of the ERA-38 in a field test of 429

community-residing older adults (Sarkisian, Hays, Berry, & Mangione, 2001, 2002), and the ERA-38 is being used by investigators across the United States as well as in Ireland and Spain to examine the relationship between expectations for aging, health behaviors, and outcomes.

When one is measuring the health beliefs of older adults, there is great incentive to minimize response burden in order to increase participation rates and have time to measure other important domains of health. Though researchers with a primary aim of examining expectations for aging should use the full 10-domain ERA-38 whenever possible, because the ERA-38 takes 10–12 min to administer, it is not always practical to use if several other constructs are also being measured in the same study. For example, one might be interested in examining whether expectations regarding aging are an important effect modifier of patient-centered interventions, but adding 38 items to a survey that already includes the primary outcome measures plus covariates could compromise overall data quality. Survey length concerns have led to the development of short-form versions of other widely used health surveys (Mangione et al., 2001; Marshall & Hays, 1994; Ware, Kosinski, & Keller, 1996). The development of a shorter version of the ERA-38 would enhance the feasibility of measuring expectations regarding aging in studies of health behaviors, outcomes, and health services use.

The goal of this study is to develop a short version of the ERA-38 that preserves as much of the content, reliability, and validity of the full-length survey as possible. In this article we describe analyses designed to identify the best items to include in the shortened ERA survey.

## Methods

### Overview

To select items for the shortened survey, we analyzed data collected during a field test of the ERA-38 in 1999. We subsequently tested the reliability and validity of the reduced set of items by using data collected in 2001 from a second sample of older adults. This study was approved by the UCLA Institutional Review Board.

### 1999 Data Collection

As described in detail elsewhere (Sarkisian, Hays, Berry, et al., 2002), we used focus groups and cognitive interviews to develop items for the ERA-38. We mailed the ERA-38 in self-administerable surveys to 588 community-residing older adults cared for by UCLA-affiliated primary care physicians by randomly sampling 40 patients aged greater than 65 years from each practice. Before surveys were mailed,

physicians excluded patients who did not speak English or who were too physically or mentally impaired to complete a 30-min survey. Exclusion rates varied by practice from 3% to 60%, with dementia being the most common exclusion criterion. Of the 588 eligible patients who were mailed a survey, 429 (73%) completed and returned the survey.

We also administered several other items with the same mailing: (a) 7 demographic items; (b) the 12-item Short-Form Health Survey (SF-12; Ware et al., 1996); (c) the Charlson Comorbidity Scale modified for self-administration (Katz, Chang, Sangha, Fossel, & Bates, 1996); and (d) the 5-item Geriatric Depression Scale (GDS; Hoyl et al., 1999).

### 2001 Data Collection

The ERA-38 was translated forward and back into Mexican American–Central American Spanish by use of a professional translator service. We invited English- and Spanish-speaking adults aged 65 years and older at 14 Los Angeles County senior centers to complete a questionnaire that included the ERA-38 and the same sociodemographic items and health instruments already described. Eligibility criteria included being age 65 years or older and speaking English or Spanish. After making brief presentations about the project at senior center events such as bingo games and club meetings, we distributed questionnaires with \$5 incentives; approximately 15% of seniors invited to participate refused. Between 8 and 96 seniors completed surveys at each site, resulting in a sample size of 636 participants; 56 participants completed the survey in Spanish. In order to calculate test–retest reliability, we mailed the same survey 2 weeks later to a random 20% of participants.

### Item Selection and Scaling Evaluation

To select items and scales for the shortened ERA survey, we used the following criteria.

First, content validity assesses how well a measure represents the construct of interest (Hays, Anderson, & Revicki, 1998). To preserve the maximum amount of content validity, scales in the shortened survey should represent domains most highly valued by the focus groups conducted to identify content for the ERA survey (Sarkisian et al., 2001).

Second, the shortened ERA survey should capture 85% or more of the variance in the ERA-38 overall score.

Third, internal consistency reliability coefficients (Cronbach's coefficient alpha) for selected scales should exceed the 0.70 reliability standard for group level comparisons (Nunnally & Bernstein, 1994).

Fourth, items should correlate more strongly with items that measure the same thing than with other items (Nunnally & Bernstein, 1994). Thus, the

number of dimensions (factors) underlying the items should correspond to the number of scales, and uniqueness of scales should be supported by a simple factor structure in which the number of factors in the solution equals the number of scales, and each set of items in a scale defines a single factor.

Fifth, our goal was to create a shortened ERA survey that would measure the same construct as the ERA-38, namely expectations regarding aging. If we accomplished this goal, we would expect the shortened ERA survey to correlate with age and other self-reported measures of health with the same direction and magnitude as the ERA-38.

*Application of Criteria by Use of the 1999 Data.*—We accomplished item selection by using the following steps and the 1999 data: First, we conducted an exploratory principal components analysis of the ERA-38 to provide information on the number of dimensions (factors) underlying the 38 items. To address Criterion 1, we compared the content of each factor with the rankings from the previously conducted focus groups (Sarkisian et al., 2001), and we retained the dominant factors that overlapped with the five top-ranked domains of expectations regarding aging. To address Criterion 2, for the items loading on each retained factor, we used the MAXR option in the PROC REG function in SAS 8.0 (SAS Institute, 1999) to identify the 2, 3, 4, and 5-item (when applicable) subsets of items explaining the maximum amount of variation in the total ERA-38 score. To address Criterion 3, we estimated the internal consistency reliability for each of the item subsets. We selected final items to maximize the variation in ERA-38 score explained by each scale (Criterion 2) and the internal consistency reliability of each scale (Criterion 3).

To address Criterion 4, we performed a principal components analysis on the selected items, specifying the number of factors to extract, and we examined the structure of the rotated factor-loading matrix and communalities. To address Criterion 5, we measured associations between the shortened ERA survey with age and self-reported measures of health, and we compared these with those observed with the ERA-38.

We linearly transformed mean scores for the shortened ERA survey as well as each scale to a possible score of 0–100, with lower scores representative of expecting decline in health and functional status and higher scores more consistent with expecting aspects of the Rowe and Kahn model of successful aging (Rowe & Kahn, 1997). We computed the SF-12 Physical Component Summary (PCS-12) score and the Mental Component Summary (MCS-12) score (Ware, Kosinski, & Keller, 1995). We counted the total number of comorbidities reported on the modified Charlson

Comorbidity questionnaire. We calculated the percentage of participants who scored 2 or greater on the five-item GDS score; this cutpoint has a sensitivity and specificity of 97% and 85%, respectively, for detecting clinical depression (Hoyl et al., 1999). We then computed product-moment correlations of the ERA-12 and ERA-38 overall scores with each of the following: age, number of medical comorbidities, PCS-12, MCS-12, and GDS score.

*Testing the Shortened ERA Survey by Use of the 2001 Data.*—Using the 2001 data, we performed confirmatory factor analysis on the items selected for the shortened ERA survey, using the PROC CALIS command in SAS 8.0 (SAS Institute, 1999). We specified the hypothesized structure on the basis of the findings (and the resulting scales) from the exploratory factor analysis done on the 1999 data (already described), and we tested the fit between this structure and the data by using several goodness-of-fit indices. To further determine whether the instrument performs similarly in the different samples, we measured the amount of variation in ERA-38 score explained by each scale in the shortened ERA survey (Criterion 2) and measured the internal consistency reliability of each scale (Criterion 3). To ensure that results did not depend on inclusion of the Spanish-language surveys, we repeated these analyses by using only the English version ( $n = 587$ ) of the 2001 survey.

## Results

### *Description of 1999 and 2001 Samples*

Table 1 shows characteristics of the two samples of older adults we surveyed for this project. Among the 429 respondents to the 1999 survey, the mean age was 76 years; 54% of the participants were women. Most participants self-identified as White (76%), and over half of the sample (56%) reported an annual income greater than \$40,000. As illustrated, the 2001 sample was very different sociodemographically: 77% were women; 16% self-identified as African American, and 37% as Latino. Over half (54%) of the 2001 sample reported incomes less than \$20,000 per year.

### *Selection and Evaluation of Items by Use of the 1999 Data*

An exploratory principal components analysis of the 38 items from the ERA-38 revealed seven components (factors) with eigenvalues  $>1.0$ . To address Criterion 1 and maximize the content validity of the shortened ERA survey, we compared the exploratory factor analysis results with findings from the previously conducted focus groups (Sarkisian et al., 2001). Three of the identified factors—specifically, the first, second, and fifth factors with

**Table 1. Description of Samples**

Characteristic	Sample		<i>p</i> <sup>a</sup>
	1999 ( <i>n</i> = 429)	2001 ( <i>n</i> = 643)	
Age ( <i>M</i> ± <i>SD</i> )	76 ± 6.9	77.5 ± 6.5	.0009
Range	(65–100)	(65–100)	
% Female ( <i>n</i> )	54 (230)	77 (495)	< .0001
Ethnicity (%) <sup>b</sup>			< .0001
Non-Latino			
Caucasian ( <i>n</i> )	76 (327)	43 (278)	
African American ( <i>n</i> )	6 (25)	16 (102)	
Latino ( <i>n</i> )	8 (36)	37 (235)	
Asian American ( <i>n</i> )	5 (20)	2 (13)	
Total Annual Income: \$ (%) <sup>c</sup>			< .0001
< 5K ( <i>n</i> )	3.8 (15)	15.4 (99)	
5–20K ( <i>n</i> )	19 (75)	38.4 (247)	
20–40K ( <i>n</i> )	21 (83)	23.0 (148)	
> 40K ( <i>n</i> )	56 (221)	9.2 (59)	
PCS-12 score ( <i>M</i> ± <i>SD</i> )	42.8 ± 11.6	43.8 ± 10.5	.1490
MCS-12 score ( <i>M</i> ± <i>SD</i> )	52.5 ± 9.9	53.0 ± 9.2	.4496
% with inability to perform ≥ 1 ADLs ( <i>n</i> )	21 (92)	17.7 (114)	.1303
% with inability to perform ≥ 2 ADLs ( <i>n</i> )	14 (62)	8.7 (56)	.0032
% scoring ≥ 2 on 5-item GDS ( <i>n</i> )	22 (94)	20 (126)	.3577

Notes: K = 1,000; PCS-12 and MCS-12, Short-Form 12 Physical and Mental Component Summary, respectively; ADL = activity of daily living; GDS = Geriatric Depression Scale.

<sup>a</sup>This is for a test of difference between the two samples, using two-sided *t* tests for continuous variables and chi-squared tests for categorical variables.

<sup>b</sup>Item was missing for 21 participants (4.9% of sample) in 1999 and 15 participants (2.3% of sample) in 2001.

<sup>c</sup>Item was missing for 35 participants (8.2% of sample) in 1999 and 90 participants (14% of sample) in 2001.

eigenvalues of 13.9, 2.3, and 1.3 respectively—were noteworthy because they resembled the domains of expectations most highly valued by the focus group participants. The first of these factors was defined by the strong loadings of 4 general health items, 3 fatigue items, and 1 pain item from the ERA-38. In sum, this factor appeared to mainly represent expectations regarding physical health. The second of these factors was defined by the strong loadings of 8 mental health items and 1 urinary incontinence item from the ERA-38. This factor, therefore, appeared to mainly represent expectations regarding mental health. The third of these factors was defined by strong loadings of all 4 items from the ERA-38 cognitive function scale. As described previously (Sarkisian et al., 2001), physical function was the most frequently addressed domain of expectations regarding aging in the focus groups, followed by cognitive function. The focus group domains that were later collapsed to make up the ERA-38 scale of mental health (life satisfaction, loneliness, happiness, depression, anxiety, emotional well-being, and grief) were mentioned most frequently overall. Therefore,

we further explored these three factors representing expectations regarding physical health, expectations regarding mental health, and expectations regarding cognitive function as the scales of interest in the shortened ERA survey.

We selected 4 items for each scale because, on the basis of our previous work (Sarkisian, Hays, Berry, et al., 2002), 12 items was the maximum number that could be completed in less than 5 min by the majority of older adults surveyed. All 4 items in each selected scale maximized variance in the ERA-38 overall scale accounted for and internal consistency reliability with one exception: we retained 1 item from the ERA-38 pain scale in the expectations regarding physical health scale because pain was so frequently mentioned as an important domain of expectations regarding aging in our focus groups, as well as extensive literature documenting the importance of pain to older adults' quality of life (AGS Panel on Persistent Pain in Older Persons, 2002).

The shortened ERA survey, the ERA-12, consisted of 12 items representing three scales: expectations regarding physical health, expectations regarding mental health, and expectations regarding cognitive function (Appendix). To address Criterion 4, we conducted a principal components analysis on the 12 items with a three-factor promax rotation specified. We used promax rotation because we expected strong intercorrelations among the factors (Sarkisian, Hays, Berry, et al., 2002). Table 2 reports the rotated factor loadings, descriptive statistics, internal consistency reliability estimates, and percentages of variance in ERA-38 explained by each of the ERA-12 scales as well as the ERA-12 overall. The rotated factor loading matrix indicates a simple three-factor structure in which one factor is defined by the four expectations regarding physical health items, another is defined by the four expectations regarding mental health items, and the third factor is defined by the four expectations regarding cognitive functioning items. Product-moment correlations between factors were .52 for physical health with mental health, .59 for physical health with cognitive function, and .49 for mental health with cognitive function.

An examination of the scale scores showed that means on the three scales (possible range 0–100) ranged from 30.6 (physical health) to 53.3 (mental health). Cronbach's alpha exceeded  $\alpha = 0.75$  for each scale, and the overall ERA-12 itself had  $\alpha = 0.88$ . The expectations regarding physical health scale explained 70%, the expectations regarding mental health scale explained 62%, and the expectations regarding cognitive function scale explained 57% of the variance in the original ERA-38 score. The three scales together explained 88% of the variance in ERA-38 total score.

Table 3 shows the results of the analyses we did to address Criterion 5—correlations between age and self-reported measures of health, the ERA-12, and

Table 2. Factor Solutions, Internal Consistency Reliability Estimates, and Descriptive Statistics for the ERA-12

Item	Results of PCA With Promax Rotation on 1999 Sample				Results of CFA on 2001 Sample			
	Factor 1: Physical Health	Factor 2: Mental Health	Factor 3: Cognitive Function	Physical-Mental Health Summed	Factor 1: Physical Health	Factor 2: Mental Health	Factor 3: Cognitive Function	Physical-Mental Health Summed
1. When people get older, they need to lower their expectations of how healthy they can be.	.47	.08	.08	.56	.69	na	na	na
2. Having more aches and pains is an accepted part of aging.	.66	-.05	-.02	.67	.70	na	na	na
3. The human body is like a car: When it gets old, it gets worn out.	.60	.04	-.01	.64	.71	na	na	na
4. Every year that people age, their energy levels go down a little more.	.55	.03	.06	.61	.76	na	na	na
5. I expect that as I get older I will spend less time with friends and family.	.02	.58	-.08	.45	na	.47	na	na
6. Being lonely is just something that happens when people get old.	.01	.61	.11	.67	na	.71	na	na
7. As people get older they worry more.	-.01	.64	-.02	.57	na	.73	na	na
8. It's normal to be depressed when you are old.	.03	.62	.04	.65	na	.80	na	na
9. I expect that as I get older I will become more forgetful.	-.07	.02	.58	.50	na	na	.44	na
10. It's an accepted part of aging to have trouble remembering names.	.07	-.09	.65	.72	na	na	.66	na
11. Forgetfulness is a natural occurrence just from growing old.	.05	-.01	.65	.74	na	na	.79	na
12. It is impossible to escape the mental slowness that happens with aging.	.07	.12	.51	.64	na	na	.75	na
Internal consistency reliability <sup>b</sup>	.79	.75	.81	na	.80	.88	.76	.86
M (SD) <sup>c</sup>	30.6 (21.4)	53.3 (23.3)	35.4 (21.9)	na	41.7 (19.6)	39.7 (18.6)	50.3 (24.7)	40.4 (21.5)
R <sup>2</sup>	0.70	0.62	0.57	na	0.71	0.88	0.70	0.85

Notes: PCA = principal components analysis; CFA = confirmatory factor analysis; ERA-12 = 12-Item Expectations Regarding Aging Survey; na = not applicable; the R<sup>2</sup> value is when ERA-38 score regressed on these items. Blank column entries indicate loadings that were set to zero in the structural model tested with CFA.

<sup>a</sup>This is the communality estimate (the proportion of variance in an item explained by the factor solution).

<sup>b</sup>This is Cronbach's coefficient alpha for the scale.

<sup>c</sup>The possible range is 0-100, with lower scores more consistent with expecting decline in health and functional status and higher scores more consistent with the Rowe and Kahn model of successful aging.

**Table 3. Product-Moment Correlations of the ERA-12 and ERA-38 With Age and Self-Reported Measures of Health With the 1999 Sample**

Construct	ERA-12			Total Score	
	Physical Health Scale	Mental Health Scale	Cognitive Function Scale	ERA-12	ERA-38
	Age	-.23**	-.17**	-.17**	-.22**
Medical comorbidity	NS	NS	NS	NS	-.11*
PCS-12	.20**	.21**	.12*	.21**	.27**
MCS-12	.21**	.31**	.19**	.28**	.35**
Depressive symptoms	-.18**	-.35**	-.12*	-.26**	-.33**

Notes: ERA-12 and ERA-38 = Expectations Regarding Aging Survey, 12 items and 38 items, respectively; NS = not significant ( $p > .05$ ).

\* $p \leq .05$ ; \*\* $p < .001$ .

the ERA-38. The ERA-12 correlated in the same direction and with similar magnitude as the ERA-38 with all constructs. Specifically, expectations regarding aging are associated moderately with physical and mental health-related quality of life, and inversely with depressive symptoms and age, but they are not (or very minimally, in the case of the ERA-38) associated with medical comorbidity. The ERA-12 expectations regarding physical health scale correlated most strongly with age ( $r = -.23$ ,  $p < .001$ ), whereas the expectations regarding mental health scale correlated most strongly with depressive symptoms ( $r = -.35$ ,  $p < .001$ ), and the expectations regarding cognitive function scale correlated most strongly with the MCS-12 ( $r = .19$ ,  $p < .001$ ).

### Testing the Shortened ERA Survey by use of the 2001 Data

Next, we evaluated the structure of the selected set of 12 items in an independent dataset. We hypothesized that the data would fit a three-factor structure identical to the structure that was found in the 1999 sample. On the basis of the results of the factor analysis done on the 1999 sample, we also expected to find highly intercorrelated factors within this structure. Thus, we also included one general second-order expectations factor in our structural model, and we hypothesized that this factor would be defined by the three first-order factors.

In addition to the results from the 1999 data already described, Table 2 also shows the results of the confirmatory factor analysis performed with the 2001 data. Because the findings were essentially unchanged whether or not the 56 participants completing Spanish-language surveys were included, here we present the results from the analyses done on the entire sample of 643 participants. As with the 1999 data, the factor loading matrix indicates a three-

factor structure in which one factor is defined by the four expectations regarding physical health items, another is defined by the four expectations regarding mental health items, and the final factor is defined by the four expectations regarding cognitive functioning items. In addition, each of these first-order factors loaded highly on the one second-order expectations factor, with loadings of .98, .83, and .94 for the expectations regarding physical health, expectations regarding mental health, and expectations regarding cognitive functioning factors, respectively. The model was rejectable statistically by the conservative chi-square test ( $\chi^2 = 155.97$ ,  $p < .0001$ ,  $df = 51$ ), but this test is well known to be sensitive to small departures from fit. The model fit the data quite well according to practical fit indices: adjusted goodness-of-fit index = .94, comparative fit index = .97, normed fit index = .95, root mean squared error of approximation = .06.

Cronbach's alpha exceeded  $\alpha = 0.75$  for each scale, and, for the overall ERA-12 itself,  $\alpha = 0.89$ . The three scales together explained 89% of the variance in ERA-38 total score. Associations between each scale score, age, and each self-reported measure of health were also tested on the 2001 sample, and they were similar to the associations in the 1999 sample (data not shown).

Of the random 20% of participants who were mailed a follow-up survey 2 weeks after completing the original survey, 118 (90%) completed and returned the survey. The intraclass correlation coefficients were 0.78 for the expectations regarding physical health scale, 0.83 for the expectations regarding mental health scale, 0.81 for the expectations regarding cognitive function scale, and 0.94 for the total ERA-12 score.

### Discussion

The ERA-12 is a 12-item survey that measures expectations regarding aging with three 4-item scales (expectations regarding physical health, expectations regarding mental health, and expectations regarding cognitive function), and one global expectations regarding aging scale combining all 12 items. The ERA-12 scales demonstrated acceptable levels of reliability and construct validity in two very different samples of community-residing older adults ( $n = 429$  and  $n = 643$ ). Though substantially shorter, the ERA-12 captures 88% of the variation in the ERA-38 overall score. The ERA-12 should be useful to investigators who are interested in examining expectations regarding aging but who are not able to use the full 38-item ERA survey.

Some content is lost any time a survey is shortened, but it is not always practical to use the longer, original version. Therefore, to minimize the loss of content between the ERA-38 and the ERA-12, we selected scales and items that provide the most

information about the domains of expectations regarding aging most highly valued by older adults. The correlations with age, physical and mental health-related quality of life, and depressive symptoms are remarkably similar to the correlations of the ERA-38 with each of these measures, thereby providing support for the construct validity of the ERA-12.

It is well documented that one's attitudes toward aging may influence one's future health (Leventhal & Prohaska, 1986; Levy et al., 2002; Rakowski & Hickey, 1992) and health behaviors (Goodwin et al., 1999). Unlike previous instruments that measure positive or negative attitudes, however, the ERA surveys do not attempt to label health beliefs (in this case, expectations regarding aging) as either positive or negative, but rather higher or lower along a scale without cutpoints for what is optimal. Measuring expectations regarding aging may contribute to our understanding of the mechanisms by which attitudes toward aging influence health. For example, the ERA-38 is currently being used by investigators to examine whether differences in expectations for aging contribute to differences in health services utilization across cultural subgroups of older adults. Other investigators are using the ERA-12 to examine whether expectations for aging influence preferences for care among older adults with chronic illness. The current wave of the Baltimore Longitudinal Study of Aging includes the ERA-12 and therefore will provide a rich opportunity to examine the relationship between expectations for aging and a wide range of health outcomes.

In our previous work, we found that older adults who had very low expectations regarding aging were more likely to report that it is not important to seek health care for modifiable conditions such as urinary incontinence and depression, in models controlling for many potential confounders including demographic characteristics and health status (Sarkisian, Hays, & Mangione, 2002). This suggests that expectations regarding aging may be a causal factor in older adults' missing out on health care likely to improve their quality of life, and it warrants further investigation. Investigators can use the ERA-12 (or the ERA-38) to examine the relationship between expectations regarding aging, health behaviors, service use, and subsequent health.

There are a number of limitations to this study. Though the ERA-12 performed well in two very different sociodemographic samples, participants were recruited from a single geographic region of the country (greater Los Angeles). The psychometric performance of the ERA-12 should be tested in a more geographically diverse population. Likewise, with so few Spanish-speaking participants, it is impossible in this study to disentangle the potential roles that ethnicity, language, and acculturation might have on survey responses; it would be premature to claim that this instrument had been adequately tested among

Spanish-speaking Latinos. Though there is no a priori reason to speculate that the ERA-12 would perform differently when administered on its own instead of as part of the longer ERA-38, psychometric assessment should be repeated on the 12-item instrument when it is administered on its own, and not part of the larger instrument. Likewise, future studies could expand assessment of the construct validity of the ERA-12 by measuring the extent to which it correlates with previously tested instruments examining the different but related constructs of attitudes toward old people (Maxwell & Sullivan, 1980; Rosencranz & McNevin, 1969), ageism (Palmore, 2001), Rakowski's life-graph measure of future perceived health (Rakowski & Hickey, 1981), and locus of control (Wallston & Wallston, 1981). It is also important to point out that this report describes cross-sectional data; future studies should examine the ERA-12's ability to predict outcomes over time.

In summary, we have described the development of the ERA-12, a shorter version of the ERA-38, which demonstrated acceptable reliability and construct validity. Though much shorter, the ERA-12 captures most of the variation in the ERA-38. When using the ERA-38 is not practical, investigators should feel confident using the ERA-12 to examine expectations regarding aging among older adults.

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### Appendix: 12-Item Expectations Regarding Aging Survey (ERA-12)

Including expectations regarding physical health, expectations regarding mental health, and expectations regarding cognitive function scales.

- This survey has questions about what you expect about aging.
- Please check the **ONE** box to the right of the statement that best corresponds with how you feel about the statement. If you are not sure, go ahead and check the box that you think **BEST** corresponds with your feelings.

	Definitely True ▼	Somewhat True ▼	Somewhat False ▼	Definitely False ▼
1. When people get older, they need to lower their expectations of how healthy they can be.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
2. The human body is like a car: When it gets old, it gets worn out.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
3. Having more aches and pains is an accepted part of aging.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
4. Every year that people age, their energy levels go down a little more.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
5. I expect that as I get older I will spend less time with friends and family.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
6. Being lonely is just something that happens when people get old.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
7. As people get older they worry more.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
8. It's normal to be depressed when you are old.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

9. I expect that as I get older I will become more forgetful.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
10. It's an accepted part of aging to have trouble remembering names.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
11. Forgetfulness is a natural occurrence just from growing old.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
12. It is impossible to escape the mental slowness that happens with aging.	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

Scoring is as follows:

**Expectations Regarding Physical Health Scale.**—Sum the numbers at the bottom of each box for items 1–4. Take this integer and subtract 4, then multiply by 25 and divide by 3, to come up with the 0–100 range score. Higher scores indicate higher expectations regarding aging in the physical health domain, and lower scores indicate lower expectations regarding aging in the physical health domain.

**Expectations Regarding Mental Health Scale.**—Sum the numbers at the bottom of each box for items 5–8. Take this integer and subtract 4, then multiply by 25 and divide by 3, to come up with the 0–100 range score. Higher scores indicate higher expectations regarding aging in the mental health domain, and lower scores indicate lower expectations regarding aging in the mental health domain.

**Expectations Regarding Cognitive Function Scale.**—Sum the numbers at the bottom of each box for items 9–12. Take this integer and subtract 4, then multiply by 25 and divide by 3, to come up with the 0–100 range score. Higher scores indicate higher expectations regarding aging in the cognitive function domain, and lower scores indicate lower expectations regarding aging in the cognitive function domain.

**Total ERA-12 Score.**—Sum the numbers at the bottom of each box for items 1–12. Take this integer and subtract 12, then multiply by 25 and divide by 9, to come up with the 0–100 range score. Higher scores indicate higher overall expectations regarding aging, and lower scores indicate lower overall expectations regarding aging.