

Memory Aging Knowledge and Memory Self-Appraisal in Younger and Older Adults

Katie E. Cherry

Department of Psychology, Louisiana State University, Baton Rouge, Louisiana, USA

Susan Brigman

Department of Psychology, East Central University, Ada, Oklahoma, USA

Celinda Reese-Melancon

Department of Psychology, Oklahoma State University, Stillwater, Oklahoma, USA

Allison Burton-Chase

*Department of Behavioral Science, The University of Texas MD Anderson Cancer Center,
Houston, Texas, USA*

Kayla Holland

School of Social Work, Louisiana State University, Baton Rouge, Louisiana, USA

The purpose of this study was to examine relationships among memory aging knowledge and memory self-appraisal in college students and community-dwelling older adults. Participants completed the Knowledge of Memory Aging Questionnaire ([KMAQ] Cherry, Brigman, Hawley, & Reese, 2003) and the Memory Functioning Questionnaire ([MFQ] Gilewski, Zelinski, & Schaie, 1990). We hypothesized that poorer performance on the KMAQ stereotype scale, suggesting an ageist response bias, would be associated with more negative self-appraisals of memory. Results confirmed that responses on the KMAQ stereotype scale were significantly associated with responses on the MFQ Frequency of Forgetting scale and two shorter scales derived from the full MFQ, the memory self-efficacy scale (Zelinski & Gilewski, 2004), and a revised Seriousness of Forgetting scale after controlling for age and educational level. Implications of these findings for the development of instructional materials to improve memory aging knowledge and memory self-appraisal in adulthood are discussed.

This research was funded by a National Institute on Aging grant to the first author (1R03 AG18034-01). This support is gratefully acknowledged.

We thank Karri Couch, Penelope Walker, Jennifer Knapp, Jenna Traylor, Marshall Smith, and Karen Ledet for their help with the research effort. We are grateful to Fr. Gerald Burns and Jean MacIntosh of St. Aloysius Catholic Church for their assistance in recruiting participants and for providing space for testing.

Address correspondence to Katie E. Cherry, Professor, Department of Psychology, Louisiana State University, 236 Audubon Hall, Baton Rouge, LA 70803-5501. E-mail: pskatie@lsu.edu

Memory aging knowledge refers to one's understanding of normative, age-related changes in memory functioning and nonnormative memory deficits that may be indicative of a serious health condition, such as dementia. Behaviors characteristic of normal memory aging include misplacing one's glasses, wallet or purse, among other benign lapses of memory. In contrast, behaviors that are suggestive of pathological memory aging include, but are not limited to, confusion in space and time, forgetting friends and loved ones, and forgetting how to carry out simple tasks such as unlocking a door with a key (see Cherry & Smith, 1998, for discussion). Developmental trajectories also differ for normal and pathological memory aging, with noteworthy implications for self-care and independent living. Isolating variables that influence people's knowledge of memory aging and understanding how one's memory knowledge relates to other aspects of life, such as memory self-appraisal, is an important challenge for psychology.

Prior research documents variations in memory aging knowledge assessed with the Knowledge of Memory Aging Questionnaire ([KMAQ], Cherry et al., 2003) across diverse samples and age groups including community-dwelling persons (Mol, de Groot, Willems, & Jolles, 2006); police officers (Hawley, Garrity & Cherry, 2005); undergraduate students and mental health professionals (Jackson, Cherry, Smitherman, & Hawley, 2008); social work students and professionals (Cherry, Allen, Jackson, Hawley, & Brigman, 2010); caregivers and senior service providers (Cherry, Allen, Boudreaux, Robichaux, & Hawley, 2009); older adults (Cherry et al., 2003; Reese, Cherry, & Copeland, 2000); and very old adults (Hawley, Cherry, Su, Chiu, & Jazwinski, 2006). Recently, we have focused on the KMAQ stereotype scale, which is comprised of four normal memory aging items that tap ageist views of adult cognition (Hawley et al., 2006). Correct responses on these items contradict commonly held stereotypes of diminished cognitive competence in late life, so poorer performance on the KMAQ stereotype scale can be interpreted as reflecting an ageist response bias. In Cherry et al.'s (2009) study, senior service providers and caregivers were more accurate than their younger counterparts on knowledge of pathological memory aging, suggesting that greater contact and experience working with elderly persons translates into greater knowledge of pathological memory aging issues. However, only the senior service providers showed greater accuracy on the KMAQ stereotype scale. This finding implies that a deeper understanding of the complexity of memory aging may lessen the likelihood of an ageist response bias. Further research is necessary to confirm the reliability and generality of this result and shed new light on the implications of such a bias.

The present study was designed to address two objectives with respect to the study of memory aging knowledge and memory self-appraisal in younger and older adults. The first objective was to provide new evidence to evaluate hypothesized relationships among memory aging knowledge and appraisals of one's own memory functioning. In particular, we test the hypothesis that one's memory aging knowledge is related to his or her self-evaluation of memory, where those with greater knowledge of adult cognition may be less likely to view their own everyday memory lapses as a sign of cognitive dysfunction or impending dementia compared to those who are less knowledgeable. Further, we expected that those with a reduced likelihood of an ageist response bias (indicated by greater accuracy on the KMAQ stereotype scale) would evaluate their own forgetfulness as less frequent and, when forgetfulness does occur, as less serious. Despite the intuitive appeal, very few studies have examined memory aging knowledge in relation to memory self-appraisal and those that have reported contrasting results.

Reese and Cherry (2006, Exp 2) provided initial evidence of associations among memory aging knowledge and self-rated memory in a study that focused on age and ability level

influences on prospective and retrospective memory. Younger and older adults who varied in educational attainment completed laboratory-based measures of prospective and retrospective memory. They also completed the KMAQ and the Memory Functioning Questionnaire ([MFQ] Gilewski et al., 1990), which yields memory self-evaluations in four areas: frequency of forgetting, seriousness of forgetting, retrospective memory functioning, and mnemonics usage. They found that the KMAQ pathological memory aging scores were correlated with MFQ Seriousness of Forgetting (SoF) ratings, implying that the more knowledge one has of non-normative memory aging factors, the less serious one's forgetting is perceived. KMAQ normal memory aging scores were correlated with MFQ Retrospective Functioning (RF) and Mnemonics Usage (MU) ratings. Note, however, that Reese and Cherry collapsed over the individual difference variables in their study (i.e., age, educational attainment, verbal ability) to provide a larger and more heterogeneous sample with increased power to detect significant relationships. As a result, it is not clear whether variations in age and/or educational attainment and verbal ability may have been driving the observed correlations in their study.

Brigman and Cherry (2010) examined interrelationships among memory aging knowledge (indexed by the KMAQ) and memory self-appraisals (indexed by the MFQ) on attribution judgments people make and opinions people have regarding forgetfulness in fictitious characters using a person-perception paradigm. Results indicated that pathological memory aging knowledge, as well as some aspects of self-perceived memory functioning (e.g., Frequency and Seriousness) were correlated with select attribution and memory opinion ratings. This result suggests that what we know about nonnormative memory deficits and how we perceive our own memory functioning play at least a modest role in how we evaluate forgetfulness in others (see also Cherry & Brigman, 2005). However, in contrast to Reese and Cherry's (2006) earlier findings, the KMAQ scores were not significantly correlated with responses on the MFQ scales. Methodological differences between the two studies may be responsible for the contrasting outcomes. Note, too, that neither study utilized the KMAQ stereotype scale. Conceivably, ageist response biases may have differentially affected the reported outcomes in these studies. In the present research, we include the KMAQ stereotype scale to assess possible ageist response biases. Partial correlation analyses were also conducted to statistically control for age and educational differences among participants. This provided a stronger test of the hypothesized relationships among memory aging knowledge and memory self-appraisal.

The second objective in the present study was to provide new evidence concerning the utility of shorter versions of the original Frequency (FoF) and Seriousness (SoF) scales derived from the MFQ. Zelinski and Gilewski (2004) reduced the original 33-item FoF scale to a 10-item scale based on Rasch analyses. They found that the 10-item version was strongly correlated with the full Frequency scale ($r = .94$), confirming the content validity of the shorter version with suggestions for use as an index of memory self-efficacy in clinical or research settings. We conducted similar correlation analyses in the present research to replicate this result. We also tested the hypothesis that memory aging knowledge would be associated with self-appraisals of memory using both the original 33-item FoF scale and a revised scale (FoF-Revised) based on the earlier Zelinski and Gilewski work.

Review of the MFQ in its original form reveals that the SoF scale is comprised of the same 18 items as the FoF scale for the question, "How often do these present a problem for you?" In order to create a shorter version of the Seriousness scale, we conducted follow-up analyses on 5 items drawn from the original 18-item SoF scale that directly correspond to the same items

in the FoF-Revised scale (see Figure 1). As previously noted, Zelinski and Gilewski (2004) found that the full and reduced versions of the FoF were highly correlated. We expected to replicate this outcome and extend their findings to show a comparable correlation for the full and reduced SoF versions in the present research. Such outcomes would provide further evidence of the content validity of Zelinski and Gilewski’s (2004) shortened FoF scale, which reflects memory self-efficacy. Importantly, these findings would also demonstrate the content validity of a shorter Seriousness scale, implying that SoF-Revised may be a useful companion measure in experimental or clinical studies of memory self-appraisal.

Frequency of Forgetting-10 Scale^a

How would you rate your memory in terms of the kinds of problems that you have?

major problems some minor problems no problems
 1 2 3 4 5 6 7

How often do these present a problem for you?

	<u>always</u>			<u>sometimes</u>			<u>never</u>
a. names	1	2	3	4	5	6	7
b. faces	1	2	3	4	5	6	7
c. where you put things (e.g., keys)	1	2	3	4	5	6	7
d. directions to places	1	2	3	4	5	6	7
e. beginning to do something and forgetting what you were doing	1	2	3	4	5	6	7

As you are reading a novel, how often do you have trouble remembering what you have read?

	<u>always</u>			<u>sometimes</u>			<u>never</u>
a. the paragraph just before the one you are currently reading	1	2	3	4	5	6	7
b. the sentence before the one you are currently reading	1	2	3	4	5	6	7

How well do you remember things that occurred?

	<u>very bad</u>			<u>fair</u>			<u>very good</u>
a. between 1 and 5 years ago	1	2	3	4	5	6	7
b. between 6 and 10 years ago	1	2	3	4	5	6	7

Seriousness Scale (SoF-Revised)

When you actually forget in these situations, how serious of a problem do you consider the memory to be?

	<u>very serious</u>			<u>somewhat serious</u>			<u>not serious</u>
a. names	1	2	3	4	5	6	7
b. faces	1	2	3	4	5	6	7
c. where you put things (e.g., keys)	1	2	3	4	5	6	7
d. directions to places	1	2	3	4	5	6	7
e. beginning to do something and forgetting what you were doing	1	2	3	4	5	6	7

^aFrom Zelinski and Gilewski (2004). Reprinted with permission.

FIGURE 1 The Frequency of Forgetting-10 scale and Seriousness of Forgetting-Revised scale.

METHOD

Participants

The study sample consisted of 192 adults. There were 96 Louisiana State University (LSU) undergraduate students ($M = 20.3$ years, $SD = 2.0$ years) who participated in exchange for extra credit in a psychology course. The majority of younger adults (95%) reported attending college: 80% had at least one year of college or specialized training, and 15% held a college degree. There were 96 community-dwelling older adults ($M = 71.4$ years, $SD = 5.1$ years) who were paid \$5.00 each for their participation. The majority (92%) of older adults reported attending college: 32% had at least one year of specialized training, and 31% held a college degree and 29% a graduate degree. Participants' responses to a demographic questionnaire containing a subset of self-perceived health questions (Duke University Center for the Study of Aging and Human Development, 1975) indicated that most rated their health as "good" to "excellent." Two younger adults and 13 older adults rated their health as "fair" and 1 older adult rated his/her health as "poor." On a measure of verbal ability (Gardner & Monge, 1977), older adults ($M = 20.3$) scored significantly greater than the younger adults ($M = 12.9$), $t(190) = -10.27$, $p < .001$, a typical finding in the cognitive aging literature.

Materials and Procedure

To assess knowledge of memory aging, participants completed the KMAQ (Cherry et al., 2003), a 28-item true/false assessment of a layperson's knowledge of normal and pathological age-related memory changes. For each participant, separate proportion scores were calculated by dividing the number of correct normal and pathological memory aging items by the total in each category (14) minus the number of "don't know" (dk) responses in each category. Higher scores suggest more accurate knowledge of normative changes associated with age (KMAQ-Normal) and nonnormative memory changes associated with disease (KMAQ-Pathological). Research evaluating the psychometric properties of the KMAQ yields evidence of convergent and discriminant validity (Cherry, West, Reese, Santa Maria, & Yassuda, 2000); content validity (Jackson et al., 2008); and satisfactory internal consistency reliability (.79) Cherry et al., 2010). A separate stereotype score (KMAQ—Stereotype) was computed from a subset of four normal memory aging questions from the KMAQ, after Hawley et al. (2006). Higher scores suggest more accurate information regarding age-related memory changes and less of an ageist response bias.

To measure self-perceived memory functioning, participants completed the MFQ (Gilewski et al., 1990). This is a 64-item assessment with four scales; Frequency of Forgetting, Seriousness of Forgetting, Retrospective Functioning, and Mnemonics Usage. Means were computed by averaging responses to the seven-point Likert scales for each subscale. Higher scores suggest a more positive evaluation and less frequent use of memory aids or strategies. Past research with the MFQ confirms high internal consistency and reliability (Gilewski et al., 1990) and adequate concurrent validity with other measures of memory (Zelinski, Gilewski, & Anthony-Bergstone, 1990).

Zelinski and Gilewski's (2004) new Frequency of Forgetting scale has been shown to have good reliability and high correlations with the original MFQ. This provides the clinical

advantage of an assessment with fewer items while maintaining construct validity with the original scale. The FoF-Revised score used in this study was calculated by averaging a subset of nine questions from the MFQ. A sizeable number of participants did not respond to the one MFQ question which asked them to rate their general memory functioning (25% of younger adults and 15% of older adults). Consequently, the FoF-Revised score was calculated using a subset of 9 rather than 10 questions in Zelinski and Gilewski (2004). Higher scores suggest a more positive perception of one's memory functioning (i.e., less forgetting). The SoF-Revised score was calculated by averaging a subset of 5 items that directly correspond to the FoF-Revised items for the question stem, "How often do these present a problem for you" (see Figure 1). Higher scores suggest a less serious view of forgetting when it occurs.

Participants completed the KMAQ and MFQ as part of another research project. All were tested in small groups (no more than four individuals) in either the laboratory at LSU or in a designated room at an off-campus testing center.

RESULTS

A mixed ANOVA on the KMAQ scores yielded a significant main effect of age, $F(1, 190) = 20.51, p < .001$, favoring older adults. Means for younger and older adults, in order, were 0.72 and 0.79. The main effect of KMAQ question type was also significant, $F(1, 190) = 36.77, p < .001$. Response accuracy was higher for pathological compared to normal memory aging items, with means of 0.78 and 0.72, respectively. The interpretation of these effects was qualified by a significant Age x Question Type interaction, $F(1, 190) = 5.90, p = .016$. Pairwise comparisons (t tests) confirmed that the age groups differed significantly on proportion correct for both the normal and pathological memory aging items (p 's $< .05$). The significance of the interaction is attributable to the magnitude of the age difference for pathological memory aging items (a 0.09 difference) compared to normal memory aging items (a 0.04 difference). In both cases, older adults scored better (see Brigman & Cherry, 2010, for a similar result).

The KMAQ stereotype scale is comprised of four normal memory aging items that tap ageist views of adult cognition (see Table 1). A follow-up ANOVA on the KMAQ stereotype scores yielded a nonsignificant age group effect, $F(1, 190) = 1.75, p = .188$. This aspect of the data replicates the earlier Hawley et al. (2006) report.

We conducted a MANOVA (using Wilks' Lambda criteria) on the mean ratings of the four MFQ scales (see Table 1, bottom panel). Because younger adults in this study ranged in age from 18 to 29, their scores to the retrospective functioning subscale were calculated omitting responses to the question, "How is your memory compared to the way it was 20 years ago?" The main effect of age, $F(4, 187) = 13.75, p < .001$, was significant. Follow-up univariate analyses revealed age differences in two scales: Retrospective Functioning (RF), $F(1, 190) = 44.07, p < .001$, and Mnemonics Usage (MU), $F(1, 190) = 6.38, p = .01$. On the RF scale, younger adults ($M = 4.27$) reported better current memory functioning compared to years passed, whereas older adults ($M = 3.29$) reported worse current memory functioning compared to years passed. On the MU scale, younger adults ($M = 3.06$) reported using memory aids slightly less often than did the older adults ($M = 2.66$).

With respect to the two revised MFQ scales under investigation in this study, t tests confirmed that younger and older adults' ratings did not differ. For the FoF-Revised, means for

TABLE 1
Mean Proportion Correct on KMAQ and Mean MFQ Ratings as a Function of Age Group.

Measure	Participant age			
	Young		Old	
	M	SD	M	SD
KMAQ ^a				
Normal	0.70	0.15	0.74	0.13
Pathological	0.74	0.12	0.83	0.11
Stereotype	0.79	0.24	0.84	0.22
MFQ ^b				
Frequency of forgetting	5.13	0.72	5.10	0.72
Seriousness of forgetting	4.16	1.09	4.44	1.04
Retrospective functioning	4.27	1.06	3.29	1.00
Mnemonics usage	3.06	1.12	2.66	1.05

^aKnowledge of Memory Aging Questionnaire.

^bMemory Functioning Questionnaire.

the younger and older adults, in order, were 4.93 and 4.94 ($p = .90$). For the SoF-Revised, means for the younger and older adults were 4.39 and 4.53 ($p = .80$).

Next, we conducted partial correlations to examine relationships among memory aging knowledge and self-perceived memory functioning, statistically controlling for age and educational level because age differences were found on the KMAQ and on two of the four MFQ scales in this study. Other evidence has shown that differences in education level and verbal ability influence both KMAQ and MFQ outcomes (Reese & Cherry, 2006). Consequently, we controlled for the variance associated with age and education level to examine the interrelationships among the KMAQ and MFQ scales with greater precision than in our previous work. Inspection of Table 2 indicates the Frequency scale was significantly correlated with the Seriousness scale ($r = .18$, $p = .02$) and the Retrospective scale ($r = .33$, $p < .001$). Additionally, RF was

TABLE 2
Means, Standard Deviations, and Partial (Controlling for Age and Education Level) Correlation Coefficients for the MFQ and KMAQ Subscales.

	M	SD	1	2	3	4	5	6	7	8	9
MFQ FoF (1)	5.11	0.72	–								
MFQ SoF (2)	4.30	1.07	0.18*	–							
MFQ RF (3)	3.78	1.1	0.33**	0.11	–						
MFQ MU (4)	2.86	1.10	0.05	0.14	0.16*	–					
MFQ FoF-Revised (5)	4.93	0.79	0.90**	0.17*	0.34**	0.04	–				
MFQ SoF-Revised (6)	4.48	1.16	0.26**	0.91**	0.15*	0.16*	0.25**	–			
KMAQ Normal (7)	0.72	0.14	0.13	0.03	0.03	–0.01	0.12	0.05	–		
KMAQ Pathological (8)	0.78	0.13	0.06	0.04	–0.09	<0.00	0.07	0.09	0.29**	–	
KMAQ Stereotype (9)	0.82	0.23	0.19**	0.06	–0.03	–0.06	0.15*	0.15*	0.57**	0.23**	–

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

significantly correlated with MU ($r = .16, p = .03$). The KMAQ normal and pathological scores were significantly correlated ($r = .29, p < .001$) with one another, but not with any of the MFQ scales, replicating Brigman and Cherry's (2010) results. Of greater interest are the associations among KMAQ stereotype scores and self-perceived memory functioning. As shown at the bottom of Table 2, the KMAQ stereotype score was positively correlated with FoF ($r = .19, p = .008$), suggesting that less ageist views of memory aging are associated with less perceived frequency of forgetting.

To address the second objective of the study, we examined the utility of the two shorter versions, FoF-Revised and SoF-Revised, which were derived from the full MFQ. As shown in Table 2, FoF-Revised was significantly correlated with the original Frequency scale ($r = .90, p < .001$), replicating Zelinski and Gilewski (2004). SoF-Revised was also significantly correlated with the original Seriousness scale ($r = .91, p < .001$). Importantly, these data confirm the content validity of the shortened FoF-Revised and SoF-Revised scales. Further, FoF-Revised and SoF-Revised were more strongly correlated ($r = .25, p < .001$) with one another than the original FoF and SoF scales ($r = .18, p < .02$), most likely due to the decreased number of questions and increased similarity of question types in the two revised scales (see Figure 1). With respect to the primary hypothesis under investigation in this study, both the FoF-Revised and the SoF-Revised were significantly correlated with the KMAQ stereotype score ($r's = .15, p's = .04$), suggesting a reduced ageist response bias is associated with more positive evaluations of one's frequency and seriousness of forgetting.

GENERAL DISCUSSION

The principle new findings that emerge from this research can be summarized as follows. First, the KMAQ stereotype score was significantly correlated with the MFQ Frequency scale and the two shorter scales derived from the full MFQ, the FoF-Revised and SoF-Revised, after controlling for age and educational level. This pattern of correlations confirms our hypothesis that select aspects of one's memory aging knowledge are related to memory self-evaluation. Second, our results confirm the content validity of the FoF-Revised, replicating Zelinski and Gilewski (2004). Third, we found that a reduced version of the Seriousness scale from the original MFQ was strongly intercorrelated with the full Seriousness scale, implying that the newly derived SoF-Revised scale is content valid. These findings and their implications for the development of programs to increase memory aging knowledge are discussed in greater detail next.

The first finding of interest was that higher scores on the KMAQ stereotype scale were positively correlated with scores on the Frequency scale from the full MFQ, and the FoF-Revised and SoF-Revised scales, confirming our hypothesis. One explanation for this outcome is that individuals who are more knowledgeable about normal changes in memory with age may find it easier to dismiss ageist stereotypes that portray a poor image of cognitive competence in late life. As a result, they were more accurate on the four KMAQ stereotype items that contradict ageist views of adult cognition. Alternatively, positive self-evaluation of memory may drive memory knowledge, where those with higher memory self-efficacy experience memory successes in daily life and are less likely to mistakenly assume that older adults have a poor memory or that they would not benefit from memory remediation programs. These alternatives raise the question of bidirectionality in metamemory phenomenon, where memory beliefs may influence

memory performance and the experience of remembering may, in turn, shape one's beliefs about memory (see Dixon, 1989, for a related discussion). Future research that incorporates a longitudinal assessment would be desirable for a more definitive analysis of the dynamic and bidirectional relationship between memory knowledge and memory beliefs in late life. With respect to applied implications, our results suggest that programs or materials designed to address common stereotypes of memory aging in healthy older adults may be particularly useful for enhancing memory aging knowledge and promoting more positive memory self-evaluations, an exciting direction for future research.

Contrary to expectation, the KMAQ normal and pathological scales were not significantly correlated with any of the MFQ scales, replicating Brigman and Cherry's (2010) results. In contrast, Reese and Cherry (2006) reported the KMAQ pathological memory aging scores and MFQ Seriousness ratings were correlated, implying that the more knowledge one has of nonnormative memory aging factors, the less serious one's forgetting is perceived. They also found that KMAQ normal memory aging scores were correlated with MFQ Retrospective Functioning and Mnemonics Usage ratings. Note that Reese and Cherry had a more diverse sample with a wide range of educational attainment and verbal ability. In particular, they included comparison groups of younger students enrolled in an adult education center and older adults in a governmental program for lower income seniors and undergraduate college students and older adults recruited from church groups and civic organizations which are more typical of the cognitive aging literature, as was the case in this study and Brigman and Cherry's (2010) study. It seems likely that these differences in subject characteristics, among other methodological differences between the studies, may have contributed to the contrasting outcomes, although further research is necessary.

The second interesting finding concerns the reliability and generality of the FoF-Revised scale. The present results demonstrate that the FoF-Revised scale was correlated with the original Frequency scale, replicating Zelinski and Gilewski (2004). Moreover, the correlation coefficient we observed in this study ($r = .90$) was strikingly similar to Zelinski and Gilewski's ($r = .94$). The pattern of correlations observed also indicates that those with higher scores on the FoF-Revised have more positive appraisals of their own memory, including Retrospective Functioning ($r = .34$) and Seriousness ($r = .25$; see Table 2). These findings are consistent with the notion that the FoF-Revised reflects memory self-efficacy. Overall, our findings join others in the literature where reduced versions of the MFQ Frequency scale have been used as a proxy for memory self-efficacy in applied (Schulz & Roßnagel, 2010); basic (Chung, 2010); and clinical (Archer et al., 2007; Yurko-Mauro et al., 2010) research contexts.

The third finding of interest in this study concerns the pattern of correlations observed for the SoF-Revised scale. Importantly, SoF-Revised was significantly correlated with the original Seriousness scale ($r = .91$, $p < .001$). This aspect of the data confirms the content validity of the SoF-Revised. Note, too, that ratings on the SoF-Revised were also significantly correlated with the Frequency scale (full and reduced versions), RF and MU scales, suggesting that the SoF-Revised may provide a more sensitive index of participants' perceived seriousness of forgetting than does the full version, where correlations with RF and MU were nonsignificant. The findings that emerge from the partial correlation analyses confirm the FoF-Revised as a valid indicator of memory self-efficacy (Zelinski & Gilewski, 2004). To our knowledge, the present results are also the first to show that the SoF-Revised appears to be a valid and useful index of perceived seriousness of forgetting when it occurs. Taken together, the findings from this study

suggest that the FoF-Revised—along with the SoF-Revised as a companion measure—may be valuable for future experimental or clinical research.

Several methodological limitations of this study warrant brief mention. First, the age ranges selected to define the younger (e.g., 20s to 30s) and older (e.g., 60s to 70s) adult groups were narrow. As a result, the observed correlations may have been attenuated due to range restriction. Future research with a broader range of ages sampled would be desirable to provide a more definitive test of the hypothesized associations among these indicators of memory knowledge and memory self-appraisal. Second, we did not account for personality trait or affective influences on memory self-ratings. Future work with a more complete assessment of noncognitive variables, such as measures of conscientiousness, neuroticism, and symptoms of depressed mood, would be desirable. Finally, we have suggested that performance on the KMAQ stereotype scale reflects an ageist response bias, although we did not include a direct measure of ageism in this study (but see Jackson et al., 2008). Future research should incorporate a direct measure of ageism to permit more precise inferences on the contribution of ageist views of adult cognition to memory aging knowledge and memory self-appraisal.

In closing, the present results demonstrate that greater memory aging knowledge and a reduced ageist response bias are associated with a more positive self-appraisal of memory, where fewer failures of memory are noted. And when such failures occur, they are deemed less serious. Additionally, our findings confirm the utility of the FoF-Revised and SoF-Revised for use in studies on memory self-appraisal in later life. Future research to explore the generality of these findings seems warranted.

REFERENCES

- Archer, H. A., McFarlane, F., Frost, C., Cutler, D., Fox, N. C., & Rossor, M. N. (2007). Symptoms of memory loss as predictors of cognitive impairment? The use and reliability of memory ratings in a clinic population. *Alzheimer Disease and Associated Disorders*, *21*(2), 101–106. doi: 10.1097/WAD.0b013e318065bfc2
- Brigman, S., & Cherry, K. E. (2010). Perceptions of forgetfulness in adulthood: Does memory knowledge matter?. In L. C. Eklund & A. S. Nyman (Eds.), *Learning and memory developments and intellectual disabilities* (pp. 105–128). Happague, NY: Nova Science.
- Cherry, K. E., Allen, P. D., Boudreaux, E. O., Robichaux, M. L., & Hawley, K. S. (2009). Knowledge of memory aging in students, caregivers and senior service providers. *Educational Gerontology*, *35*, 541–552. doi: 10.1080/03601270902821343
- Cherry, K. E., Allen, P. D., Jackson, E. M., Hawley, K. S., & Brigman, S. (2010). Knowledge of normal and pathological memory aging in college students, social workers and health care professionals. *Educational Gerontology*, *36*, 281–297. doi: 10.1080/03601270903323950
- Cherry, K. E., & Brigman, S. (2005). Memory failures appraisal in younger and older adults: Role of individual difference and event outcome variables. *The Journal of Genetic Psychology*, *166*, 435–450.
- Cherry, K. E., Brigman, S., Hawley, K. S., & Reese, C. M. (2003). The knowledge of memory aging questionnaire: Effects of adding a 'don't know' response option. *Educational Gerontology*, *29*, 427–446. doi: 10.1080/713844360
- Cherry, K. E., & Smith, A. D. (1998). Normal memory aging. In M. Hersen & V. B. Van Hasselt (Eds.), *Handbook of Clinical Geropsychology* (pp. 87–110). New York, NY: Plenum.
- Cherry, K. E., West, R. L., Reese, C. M., Santa Maria, M. P., & Yassuda, M. (2000). The knowledge of memory aging questionnaire. *Educational Gerontology*, *26*, 195–219. doi: 10.1080/036012700267204
- Chung, C. (2010). Effects of view of life and selection bias on emotional memory in old age. *GeroPsych*, *23*(3), 161–168. doi: 10.1024/1662-9647/a000019
- Dixon, R. A. (1989). Questionnaire research on metamemory and aging: Issues of structure and function. In L. W. Poon, D. C. Rubin, & B. A. Wilson (Eds.), *Everyday cognition in adulthood and late life* (pp. 394–415). New York, NY: Cambridge University Press.

- Duke University Center for the Study of Aging and Human Development. (1975). *OARS: Multidimensional Functional Assessment Questionnaire*. Durham, NC: Author.
- Gardner, E. F., & Monge, R. H. (1977). Adult age differences in cognitive abilities and educational background. *Experimental Aging Research*, 3, 337–383. doi: 10.1080/03610737708257116
- Gilewski, M. J., Zelinski, E. M., & Schaie, K. (1990). The memory functioning questionnaire for assessment of memory complaints in adulthood and old age. *Psychology and Aging*, 5, 482–490. doi: 10.1037/0882-7974.5.4.482
- Hawley, K. S., Cherry, K. E., Su, L. J., Chui, Y., & Jazwinski, S. (2006). Knowledge of memory aging in adulthood. *The International Journal of Aging and Human Development*, 63, 317–334. doi: 10.2190/09 × 3-LGJN-K4TE-GL7U
- Hawley, K. S., Garrity, A. W., & Cherry, K. E. (2005). Knowledge of normal versus pathological memory aging in police officers. *Educational Gerontology*, 31, 1–17.
- Jackson, E. M., Cherry, K. E., Smitherman, E. A., & Hawley, K. S. (2008). Knowledge of memory aging and Alzheimer's disease in college students and mental health professionals. *Aging and Mental Health*, 12, 258–266. doi: 10.1080/13607860801951861
- Mol, M. M., de Groot, R. M., Willems, D., & Jolles, J. (2006). Public education about memory and aging: Objective findings and subjective insights. *Educational Gerontology*, 32, 843–858. doi: 10.1080/03601270600846527
- Reese, C. M., & Cherry, K. E. (2006). Effects of age and ability on self-reported memory functioning and knowledge of memory aging. *Journal of Genetic Psychology*, 167, 221–240. doi: 10.3200/GNTP.167.2.221-240
- Reese, C. M., Cherry, K. E., & Copeland, A. L. (2000). Knowledge of normal versus pathological memory aging in younger and older adults. *Aging, Neuropsychology, and Cognition*, 7, 1–8. doi: 10.1076/anec.7.1.1.809
- Schulz, M., & Roßnagel, C. S. (2010). Informal workplace learning: An exploration of age differences in learning competence. *Learning and Instruction*, 20(5), 383–399. doi: 10.1016/j.learninstruc.2009.03.003
- Yurko-Mauro, K., McCarthy, D., Rom, D., Nelson, E. B., Ryan, A. S., Blackwell, A., . . . Stedman, M. (2010). Beneficial effects of docosahexaenoic acid on cognition in age-related cognitive decline. *Alzheimer's & Dementia*, 6(6), 456–464. doi: 10.1016/j.jalz.2010.01.013
- Zelinski, E. M., Gilewski, M. J., Anthony-Bergstone, C. R. (1990). Memory Functioning Questionnaire: Concurrent validity with memory performance and self-reported memory failures. *Psychology and Aging*, 5, 388–399. doi: 10.1037/0882-7974.5.3.388
- Zelinski, E. M., & Gilewski, M. J. (2004). A 10-item Rasch modeled memory self-efficacy scale. *Aging & Mental Health*, 8, 293–306. doi: 10.1080/13607860410001709665