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Assessing psychologists' knowledge of geriatric depression: a validation study of the Later Life Depression Knowledge Questionnaire

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ABSTRACT

Objectives: Geriatric depression is an important mental health concern that generalist behavioral health clinicians are increasingly likely to encounter, yet the field lacks an adequate tool to assess providers' knowledge. This study evaluated the validity, reliability, and factor structure of the Later Life Depression Knowledge Questionnaire (LLD-KQ) as part of an ongoing effort to assess the psychometric properties of the scale.

Method: Psychologists ($N = 800$) from the southwestern United States were randomly selected to complete a survey that could be returned *via* postal service or online. Responses were used to examine the internal consistency, construct validity, divergent validity, and factor structure of the 25-item scale.

Results: Analysis of the returned surveys ($n = 250$) revealed that the LLD-KQ demonstrated adequate reliability and validity. Confirmatory factor analyses (CFA) supported a three-factor model with constructs of psychopathology, assessment/diagnosis, and treatment, although the differences between the three-factor and single-factor models were minimal.

Conclusion: The LLD-KQ demonstrates adequate psychometric properties and can be used in dissemination and implementation efforts, as well as in professional trainings, to assess clinical knowledge about later-life depression.

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Depression; mental health; aging; older adults; geriatrics; measurement; scale

Generalist mental health clinicians are increasingly called upon to provide care for older adults. The proportion of older adults reporting mental health concerns has remained relatively stable since 2005, at the same time that the reported mental health concerns for other age cohorts continue to grow (Weitzel et al., 2021). Still, about 20% of older adults experience a mental health concern that may involve specialized intervention (Lind et al., 2022). Although most older adults do not require mental health care, the current number of behavioral health providers who specialize in aging is insufficient to meet the needs of this population, resulting in an ever-widening treatment gap (Emery-Tiburcio et al., in press). Depression is one of the most common mental health concerns for older adults; age-related differences in clinical presentation require providers to have specialized knowledge for proper assessment, diagnosis, and treatment (Fiske et al., 2022; Steffen & Bergstrom, 2025).

Less than 2% of psychologists have specialty training in geropsychology, a specialized field of psychology that addresses the unique issues facing older adults and their families to enhance quality of life. Many generalist practitioners have not received adequate training in mental health and aging (Emery-Tiburcio et al., in press; Hoge et al., 2015), with a continuing decline in the number of trainee clinicians interested in geropsychology. Across clinical and counseling psychology, for example, there is a shortage of geropsychologists entering academia. This scarcity has led to fewer opportunities for trainees to be exposed to mental health and aging within graduate coursework and research training (Ma et al., 2023). Education and training in geriatric mental health are critically underdeveloped relative to urgent need, with depression assessment and intervention being an essential part of clinical practice with older adults.

Overview of later-life depression

Geriatric depression is characterized by depressive symptoms in individuals aged 65 years and older. Around 14.2% of older adults report being diagnosed with a depressive disorder, based on the severity and frequency of symptoms, and ranging from subsyndromal depression to major depressive disorder (Lee et al., 2023). Regardless of type, later-life depression is associated with poor daily functioning, difficulty

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completing activities of daily living, decreased quality of life, and increased healthcare service utilization and costs (Biella et al., 2019; Schousboe et al., 2019). There are unique characteristics in the presentation of depression in older adults compared to younger adults. Older adults are more likely to report somatic symptoms, sleep disturbance, memory changes, impaired cognitive functioning, and psychomotor features compared to younger adults (Bergua et al., 2023; Ly et al. 2021). The risk of completed suicide is higher among older adults with depression (especially White men aged 80+ years) compared to younger age cohorts, with lethal use of firearms as a prevalent means (Steffen & Bergstrom, 2025). Depression in older adults is also associated with physical health complications, including obesity, diabetes, reflux, metabolic syndrome, osteoarthritis, respiratory conditions, cancer, and Parkinson's disease, along with increased complications associated with polypharmacy and slower recovery for comorbid conditions (Agustini et al., 2020; Van Den Berg et al., 2021). The complex interplay of cognitive symptoms, medical illness, and geriatric depression presents significant diagnostic and therapeutic challenges, requiring specialized clinical knowledge.

Fortunately, there are several evidence-based treatments for later-life depression. The American Psychological Association's (2019) guidelines for the treatment of later-life depression recommend several treatments as research-supported for major and subsyndromal depressions, including cognitive behavioral therapy (CBT), problem-solving therapy, and life review. A combination of psychotropic and therapeutic interventions is one common approach, yet older adults tend to have poor response rates to some antidepressants (e.g. SSRIs) due to polypharmacy and medical complications (Alexopoulos, 2019). Psychotherapies developed for depression in younger adults are often adapted to better fit the needs of older clients. Modifications in session pace, between-session activity requirements, caregiver involvement, accommodations for physical impairments, and aging-friendly visual memory aids (Steffen et al. 2021a; 2021b) improve care. Further, case conceptualization benefits from incorporating gerontological theories and frameworks to understand symptom presentation (Emery-Tiburcio et al., in press; Lind et al., 2022).

Clinician knowledge of later life depression

Despite advances in research on later-life depression, some mental health practitioners continue to hold misguided beliefs about the disorder. Clinicians often overestimate the prevalence of geriatric depression (Haigh et al., 2018), while also being less likely to assess or diagnose depression in older adults compared to younger adults (Gregg et al., 2013). Providers who succumb to societal ageism may view depression as an understandable and reasonable response to aging (Gendron & Heck, 2013), attributing causes to primarily psychosocial processes (e.g. social isolation, bereavement, a loss of physical ability, and lack of purpose) while ignoring biomedical risks (Burroughs et al., 2006). Some clinicians also continue to believe that older adults cannot benefit from active psychotherapies (Garrison-Diehn et al., 2022), relying instead on supportive counseling strategies that have weaker outcomes. Inaccurate beliefs about mental health and aging interfere with clinicians' ability to provide unbiased and competent care to older adults (Emery-Tiburcio et al. in press; Kessler & Bowen, 2015). Because accurate knowledge improves clinical outcomes (McLeod et al., 2018), post-licensure education in mental health and aging must enhance understanding of common mental health disorders in later life. Rigorous, valid, and reliable assessments of clinical knowledge are essential for improving post-licensure training and evaluation (McLeod et al., 2018).

Development and initial validation of the LLD-KQ

In response to this need, the Later Life Depression Knowledge Questionnaire (LLD-KQ) was developed using best practices and utilizing three phases: 1) item development; 2) scale development; and 3) evaluation (Boateng et al., 2018); see (Laine et al., 2025) for details on scale development. Internal reliability was strong (K-R α=0.81). Construct validity was examined using differentiation by known groups of clinical social workers in a midwestern state. Social workers who worked with older adults and those with greater knowledge of aging attained significantly higher scores on the LLD-KQ. In contrast, there was no difference between social workers who had participated in post-licensure training and those who had not. Confirmatory factor analyses (CFA) compared a one-factor model to a three-factor model established *a priori* by content experts' sorting items into categories (i.e. psychopathology, assessment/diagnosis, and treatment). Both the single-factor (TLI=0.813, CFI=0.829) and three-factor (TLI=0.819, CFI=0.836) models demonstrated poor acceptability in terms of relative fit indices, but both demonstrated adequate acceptability on an index of absolute fit (RMSEA: Single-factor=0.041; Three-factor=0.040).

Purpose of the current study

The LLD-KQ requires additional study to establish its factor structure, validity, and reliability. Furthermore, assessing psychometric properties using various clinical groups is necessary to determine the scale's generalizability to different levels of professional education. The purpose of the current study was to continue documenting the reliability and validity of the LLD-KQ

and to examine its factor structure among practicing generalist psychologists.

Method

Participants

Licensed psychologists ($N = 800$) practicing in California ($n = 400$) and Texas ($n = 400$) were randomly selected from publicly available state licensure databases. Our planned confirmatory factor analysis required 250 participants for the 25-item LLD-KQ. We estimated a response rate of between 30% and 35%, based on previous research employing the recruitment measures used in this study (Laine & Steffen, 2023). This led to the invitation of 800 psychologists to participate. California and Texas were chosen to enhance sample diversity. According to the 2020 census, California and Texas are among the most ethnically heterogeneous states, with diversity indices (i.e. the probability of choosing two individuals of different ethnicities/races at random) of 69.7% and 67.0% respectively (U.S. Census Bureau, 2021). Within these states, psychologists were selected from counties with a Hispanic population of 50% or greater, which included 15 counties from Texas and 12 from California. Psychologists with licenses linked to residences in these counties were randomly selected from publicly available state licensure databases using a random number generator. A total of 400 participants were selected from a possible pool of 630 in Texas and 400 from a potential pool of 1,642 in California.

Procedures

The data used in this study were collected in conjunction with a larger survey of psychologists' professional practices (Band & Steffen, under review). All selected participants were mailed a cover letter explaining the purpose of the study, informed consent, a survey packet, and a stamped return envelope. In an effort to improve the response rate, a non-contingent inducement was provided to all participants (i.e. a $5 Starbucks gift card) regardless of their participation (Laine & Steffen, 2023). Participants were given the option to complete the survey online through a provided link or *via* paper-and-pencil with a stamped envelope. Two follow-up postcard reminders were sent with the survey link two and four weeks after the initial mailing.

Measures

Sample characteristics

Demographic information was collected, including race, ethnicity, age, gender, sexual orientation, educational background, and clinical background. Individuals could select multiple racial and ethnic identities. Pertinent to this study, participants were asked about their recent clinical practice with older adults and any previous training related to aging. Two items assessed clinical practice; one asked participants to indicate if they provided assessment, psychotherapy, care management, medication management, or other services to older adults in their clinical work in the preceding year. The other item asked participants to report the current number of hours per week spent providing clinical services to older adults. Previous training in aging-related topics was assessed by asking participants to indicate their participation in graduate coursework, practicum/internship placement, postgraduate formal training positions, workshop/continuing education units (CEUs), on-the-job training, informal experience, or no training specific to clinical work with older adults.

Clinical knowledge of later life depression

The Later-Life Depression Knowledge Questionnaire (LLD-KQ; Laine et al., 2025) is a 25-item true/false/don't know measure assessing factual knowledge of geriatric depression in the domains of psychopathology, assessment/diagnosis, and treatment. A total score is calculated by adding the total number of correct responses, where 'don't know' items are scored as incorrect. A higher score indicates greater clinical knowledge of later-life depression. The LLD-KQ demonstrates adequate internal consistency (K-R-20$\alpha = 0.81$) with support for construct validity (Laine et al., 2025).

Knowledge of aging

The Facts on Aging Quiz (FAQ; Breytsprakk & Badura, 2016) was developed in response to Palmore's (1988) Facts of Aging Quiz II to revise and update content. The new scale consisted of 50 true/false items addressing various facets related to aging and included all 25 items from Palmore's original scale. To reduce participant fatigue, 25 items were selected based on relevance to knowledge of aging. In addition, a 'don't know' response option was added to reduce the chance of guessing and improve validity (Courtenay & Weidemann, 1985). Total scores are calculated by summing all correct responses (where 'don't know' responses are scored as incorrect), with a higher score indicating greater knowledge of aging.

Acculturation

Ethnic heritage acculturation (i.e. the extent to which one identifies with their ethnic heritage within the context of their current culture) was used to evaluate divergent validity and measured using one subscale of the Abbreviated Multidimensional Acculturation Scale (AMAS-ZABB; Zea et al., 2003). Participants were asked to identify their ethnic heritage and rate on a 4-point

Likert scale the extent to which they agree with six statements related to their ethnic heritage acculturation (i.e. 'I think of myself as being _____ [a member of my ethnic heritage]). The six items from the ethnic heritage acculturation subscale were summed to create a total score in which a higher score indicated greater acculturation to one's ethnic heritage.

Planned analyses

Factor structure

Two CFAs examined the factor structure of the LLD-KQ. A CFA, as opposed to an exploratory factor analysis (i.e. a statistically driven analysis in which each observed variable is assessed on every factor to determine the strongest relationships; Rosellini & Brown, 2021), was selected as a theory-driven means to examine the relationship between factors and latent variables based on the categorization of items by context experts in the initial development of the LLD-KQ (Laine et al., 2025). The single-factor model was hypothesized to represent the construct of general clinical knowledge of later-life depression. The three-factor model was hypothesized to represent clinical knowledge of the psychopathology, assessment/diagnosis, and treatment of geriatric depression.

Given the dichotomous nature of the data and small sample size, weighted least squares mean and variance estimation (WLSMV) was applied. Measures of absolute and relative fit were examined and compared to assess the quality of fit. Examined measures of absolute fit, which are concerned with the overall goodness of fit, included the chi-square statistic and root mean square error of approximation (RMSEA). A significant chi-square value ($p < 0.05$) indicates a poor fit, suggesting differences between the predicted and observed data. RMSEA is a more robust absolute fit index and evaluates the approximation error of the model relative to the degrees of freedom of the model. An RMSEA < 0.06 is generally accepted as indicating appropriate model fit (Rosellini & Brown, 2021). Measures of relative fit, which evaluate the extent to which the specified model fits the data in relation to the independence model, were also examined with two fit indices. The comparative fit index (CFI) measures the improved fit of the specified model compared to the independence model, adjusting for model complexity. A CFI ≥ 0.95 indicates excellent fit (Rosellini & Brown, 2021). The Tucker-Lewis Index (TLI) compares the chi-square value of the model to the independence model. A TLI ≥ 0.95 indicates excellent fit (Rosellini & Brown, 2021). The factor loadings of each item were also examined. Factor loadings of 0.3 to 0.5 were considered acceptable, and loadings above 0.5 indicated a stronger relationship. All CFA analyses were conducted in R using the Lavaan package.

Internal consistency

A Kuder-Richardson-20 test was utilized to measure internal consistency as the most appropriate measure for dichotomous data. This applies a split-half methodology to all combinations of questions, with reliability ranges defined as: 0.3 = 'low'; 0.6 = 'moderate'; and 0.8 = 'high' (Foster, 2021).

Split-half reliability was calculated between odd and even numbered group items with the assumption that highly correlated halves indicate that the items are measuring a similar construct. Results may indicate low ($r < 0.50$), moderate ($r = 0.50 - 0.70$), or high ($r > 0.70$) correlation.

Construct validity

Construct validity was measured using differentiation by known groups (Boateng et al., 2018), and examined in three ways. Independent sample t-tests were conducted to compare the groups.

Clinical experience with older adults. Because individuals with frequent contact with older adults exhibit greater knowledge of aging (Lytle & Levy, 2019), it was assumed that psychologists who provide clinical work to older adults would perform better on the LLD-KQ compared to those with limited clinical experience with older adults. Psychologists who indicated that they provided clinical services to older adults in the previous clinical year (i.e. 2022) were placed into the Clinical Experience in 2022 group, and psychologists who responded that they did not provide clinical services to older adults in the previous clinical year were placed into the No Clinical Experience in 2022 group. In addition, psychologists were asked to report the average number of hours per week they currently provide clinical services to older adults. Participants who indicated that they provide one or more hours of clinical services to older adults per week were placed in the Current Clinical Services group and those who indicated that they did not provide services were placed in the No Clinical Services group.

Geropsychology training. Psychologists with previous formal training in mental health and aging were predicted to perform better on the LLD-KQ. Psychologists who indicated that they had completed graduate coursework, a practicum or internship placement, a postgraduate formal training position, or engaged in CEUs specific to aging were placed in the Formal Training group. Those who reported having on-the-job training, informal experience, or no training were placed in the Informal Training group.

Aging knowledge. Psychologists who have greater general knowledge of aging were predicted to perform better on the LLD-KQ. The mean score for the Facts on Aging Quiz was calculated, and

participants who scored above the mean were assigned to the High Aging Knowledge group, while those who scored below the mean were assigned to the Low Aging Knowledge group.

Divergent validity

A simple linear regression was conducted to assess divergent validity. It was predicted that there would be no relationship between self-reported ethnic heritage acculturation and LLD-KQ total scores.

Results

Response rate and demographics

Of the 800 mailed survey packets, 28 were returned as undeliverable. Of the 772 packets received by participants, 259 responses were obtained, yielding a response rate of 33.5%. Nine responses were removed for a high frequency of missing items, resulting in a final sample of 250.

Over half (57.6%) of the surveys were returned *via* mail, while the remaining were completed online *via* Qualtrics. There was no statistically significant difference in LLD-KQ total scores ($t(248) = 1.19$, 95% CI [–0.45, 1.80], $p = 0.24$, Cohen's $d = 0.15$) or Facts on Aging total scores ($t(248) = -0.10$, 95% CI [–0.80, 0.72], $p = 0.92$, Cohen's d = –0.01) between the response modalities.

Participants ranged in age from 31 to 93 years ($M = 54.81$, $SD = 14.71$) and primarily identified as heterosexual (86.8%) and female (61.2%). A third of the sample was ethnically diverse; most of the sample identified as non-Latine White (66.4%), followed by Latine (21.9%) and non-Latine BIPOC (12.0%). Regarding education, most obtained a Ph.D. (68.4%) followed by a Psy.D. (26%). Average time since licensure was 19.18 years ($SD = 12.85$). Most psychologists reported some weekly clinical work with older adults, spending an average of 7.82 h ($SD = 11.96$) per week. Demographic characteristics are presented in Table 1, and educational and career details are provided in Table 2.

Table 1. Demographic characteristics of respondents ($N = 250$).

Variable	*n* (%)	Range	Mean (SD)
Age		31–93	54.81 (14.71)
Race			
Asian	20 (8.1%)		
Black	13 (5.2%)		
American Indian	9 (3.6%)		
Native Hawaiian	1 (0.4%)		
White	210 (84.7%)		
Not listed	11 (4.4%)		
Ethnicity			
Latine	54 (21.7%)		
Non-Latine	194 (77.9%)		
Gender identity			
Female	153 (61.9%)		
Male	93 (37.7%)		
Gender Nonconforming	1 (0.4%)		
Sexual orientation			
Asexual	0 (0%)		
Bisexual	11 (4.5%)		
Gay	11 (4.5%)		
Heterosexual	217 (88.2%)		
Lesbian	5 (2.0%)		
Not listed	2 (0.8%)		

Table 2. Work characteristics of respondents ($N = 250$).

	Variable	*n* (%)	Range	Mean (*SD*)
Degree type	Ph.D.	171 (69.2%)		
	Psy.D.	65 (26.3%)		
	Ed.D.	1 (0.4%)		
	Not specified	10 (4.0%)		
Services*	Assessment	97 (39.3%)		
	Psychotherapy	131 (53%)		
	Care management	25 (10.1%)		
	Medication management	6 (2.4%)		
	Did not provide services	81 (32.8%)		
Licensure	Year of licensure		1967–2023	2004.82 (12.85)
	Years since licensure		1–57	19.18 (12.85)
Hours/week*			0–60	7.82 (11.96)

*Care provided to older adults

Factor structure

Due to the nature of CFA calculations, listwise deletion was employed, resulting in a sample of 238 observations, which is below the recommended threshold of 250 observations for the CFA to be sufficiently powered. First, a single-factor model was examined to observe the latent construct of knowledge of later-life depression in the observed data. Chi-square test was significant (χ^2 (275) = 322.88, $p = 0.025$), indicating discrepancies between the model-specified covariance matrix and the observed covariance matrix. While this suggests poor model fit, it is important to note that the chi-square is sensitive to small sample size and model complexity. In contrast, RMSEA indicated good fit (RMSEA = 0.027). Relative fit indices, including CFI (0.976) and TLI (0.973), indicate that the model provides a good fit to the data compared to the baseline model, as both exceed the threshold of 0.95. The latent construct of clinical knowledge of later-life depression appears to be well-defined by the items. All factor loadings were significant, ranging from 0.307 to 0.778. Eleven items exhibited factor loadings between 0.30 and 0.50, indicating acceptable fit, and 14 factor loadings were greater than 0.5, indicating good fit.

Next, a three-factor model was examined with latent constructs for knowledge of later-life psychopathology, assessment/diagnosis, and treatment. Absolute fit measures revealed a non-significant chi-square (χ^2 (272) = 307.64, $p = 0.068$), suggesting little discrepancy between the model-specified covariance matrix and observed covariance matrix. An

acceptable RMSEA (0.024) was also observed. Relative fit measures indicated good model fit (CFI = 0.982; TLI = 0.980). For the latent variable of psychopathology, factor loadings ranged from 0.351 to 0.634, with four items having acceptable fit and six items having good fit. For assessment/diagnosis, factor loadings ranged from 0.395 to 0.811, with four items in the acceptable range and seven in the good range. Finally, for treatment, factor loadings ranged from 0.315 to 0.731, with four items indicating acceptable fit and three items indicating good fit. Notably, the covariance among the latent variables of psychopathology and assessment (0.83) and assessment and treatment (0.84) suggests that these constructs are similar yet distinct. Covariance among psychopathology and treatment (0.99) indicates that these may be measuring the same construct. When directly comparing the two models based on fit statistics, the three-factor model showed a superior overall fit. Table 3 details model comparisons.

Internal consistency

The LLD-KQ demonstrated adequate internal consistency (K-R $\alpha = 0.80$) and moderate split-half reliability ($r = 0.64$, $p < 0.001$).

Construct validity

Construct validity was examined using differentiation by known groups. Table 4 summarizes the findings.

Table 3. Comparison of model fit between the single-factor and three-factor model.

	Single-factor model	Three-factor model
Number of model parameters	50	53
Number of observations	238	238
Test Statistic	322.88	307.64
Degrees of freedom	275	272
Measures of absolute fit		
Chi-Square (*p* value)	0.025	0.068
RMSEA	0.027	0.024
Measures of relative fit		
CFI	0.976	0.982
TLI	0.973	0.980

Clinical experience with older adults

A one-tailed independent samples t-test was conducted to compare mean LLD-KQ scores for psychologists who worked clinically ($n = 166$) and those who did not work clinically ($n = 81$) with older adults in 2022. The assumption of homogeneity of variances was violated (F (1, 245) = 5.80, $p = 0.017$); thus, the results were interpreted with equal variances not assumed. Psychologists with clinical experience in 2022 performed significantly better on the LLD-KQ ($M = 17.79$, $SD = 4.17$) compared to those with no clinical experience with older adults ($n = 81$, $M = 16.63$, $SD = 5.02$; $t(135.48) = -1.80$, 95% CI [–0.99, 0.68], $p = 0.037$, Cohen's d = –0.26).

A one-tailed independent samples t-test was also conducted to compare the difference in mean LLD-KQ scores between psychologists with and without current clinical experience with older adults, based on self-reported number of hours providing clinical care to older adults per week (i.e. 0 h vs. 1+ hours). The assumption of homogeneity was violated (F (1, 247) = 5.09, $p = 0.025$), and equal variances were not assumed. Psychologists who currently provide clinical services to older adults ($n = 178$, $M = 17.77$, $SD = 4.22$) performed significantly better on the LLD-KQ compared to those who do not ($n = 71$, $M = 16.62$, $SD = 5.02$; $t(111.48) = -1.71$, $p = 0.045$, [–1.31, 0.46], Cohen's d = –0.26).

Geropsychology training

A one-tailed independent samples t-test was conducted to assess the difference in LLD-KQ scores among psychologists with and without previous formal geropsychology training. Homogeneity of variances was violated (F (1, 246) = 11.12, $p < 0.001$), and equal variances were not assumed. Results revealed a statistically significant difference between the two groups, $t(72.31) = -1.87$, [–3.09, 0.10], $p = 0.032$, Cohen's d = –0.34. Participants with formal training ($n = 192$, $M = 17.81$, $SD = 4.01$) performed better on the LLD-KQ than those without formal training ($n = 56$, $M = 16.32$, $SD = 5.58$).

Individual training experiences were also examined. One-sided independent sample t-tests revealed statistically significant differences in mean LLD-KQ sores for participants with and without post-graduate

Table 4. Summary of independent sample T-test results to examine convergent validity.

		LLD-KQ total score		
Groups	Predictor variable	*n*	*Mean*	*SD*
2022 Clinical experience*	2022 Clinical Experience	166	17.79	4.17
	2022 No Clinical Experience	81	16.63	5.02
Current clinical experience*	Current Clinical Experience	178	17.77	4.22
	No Current Clinical Experience	71	16.62	5.02
Training*	Formal Training	192	17.81	4.01
	No Formal Training	56	16.32	5.58
Aging knowledge*	High Aging Knowledge	136	18.52	4.07
	Low Aging Knowledge	114	16.11	4.61

*$p < 0.05$, one-tailed.

Table 5. Sample size, mean, and SD for LLD-KQ scores by previous training type.

	Previous Training			No Previous Training		
Training type	*N*	Mean	*SD*	*N*	Mean	*SD*
Graduate coursework	113	17.95	3.86	135	17.08	4.85
Practicum/ internship placement	45	17.70	4.40	203	17.43	4.46
Post-graduate formal training*	40	18.69	3.82	208	17.24	4.52
Continuing education credits*	141	17.94	3.92	107	16.87	5.00
On-the-job training*	137	18.08	4.16	111	16.73	4.68
Informal experience	92	17.80	3.98	156	17.29	4.70

*$p < 0.05$, one-tailed.

formal training positions ($t(246) = -1.90$, [−2.95, 0.053], $p = 0.029$, Cohen's d = −0.34), continuing education courses ($t(195.92) = -1.83$, 95% CI [−2.22, 0.084], $p = 0.035$, −0.24), and on-the-job training ($t(246) = -2.39$, 95% CI [−2.45, −0.24], $p = 0.010$, Cohen's d = −0.31). Results were interpreted with equal variances not assumed for continuing education courses only, as the Levene's test was significant ($F(246) = 5.48$, $p = 0.020$). See Table 5 for details regarding geropsychology training.

Aging knowledge

A one-tailed independent samples t-test was conducted to compare psychologists with greater aging knowledge to those with less understanding of aging based on performance on the Facts on Aging Quiz (Breytsprakk & Badura, 2016). The mean aging knowledge score for all participants was 14.71 ($SD = 3.00$). A mean split was conducted, placing psychologists into a high knowledge group ($n = 136$, $M = 16.90$, $SD = 1.74$) and a low knowledge group ($n = 114$, $M = 12.08$, $SD = 1.88$). There was a statistically significant difference between the two groups ($t(248) = -4.39$, [−3.49, −1.33] $p < 0.001$, Cohen's d = −0.56) such that participants with greater aging knowledge scored significantly higher on the LLD-KQ ($M = 18.52$, $SD = 4.07$) compared to participants with less aging knowledge ($M = 16.12$, $SD = 4.61$).

Divergent validity

A simple linear regression was conducted to determine the relationship between ethnic heritage acculturation and LLD-KQ total scores. The regression was not significant ($F(1, 247) = 0.10$, $p = 0.758$, $r = -0.20$).

Discussion

The present study investigated the psychometric properties of the Later-Life Depression Knowledge Questionnaire (LLD-KQ) as part of an ongoing measurement validation process. The development of this 25-item questionnaire was in response to the field's lack of psychometrically valid tools to assess declarative clinical knowledge related to specific areas of mental health and aging. Similar scales have been developed to capture the clinical understanding of a broad range of psychological concerns in older adults (Wu et al., 2021). Although useful in some educational contexts, such measures are less helpful in assessing professional knowledge of specific mental health disorders that present differentially in older adults compared to younger generations. The LLD-KQ differs from general geriatric mental health knowledge assessments by its specificity to depression, one of the most common, yet underdiagnosed and misunderstood, mental health disorders that affect older adults (Haigh et al., 2018). The measure, which assesses three clinically relevant categories (i.e. psychopathology, assessment/diagnosis, treatment), demonstrated encouraging results for reliability and validity among psychologists as well as support for a three-factor model.

Scale applications

Demographic changes suggest that clinicians will increasingly provide services to older adults (Carpenter et al., 2022). There is considerable evidence to support both the importance and value of this work. Providers rate their clinical experiences with older adults as favorable as those with adults of other ages, and more favorable than their clinical work with children and adolescents (Band et al. 2025). With an ongoing need for training in mental health and aging (Emery-Tiburcio et al. in press), improving declarative knowledge is the first step in transmitting learning into practice (McLeod et al., 2018). Because post-licensure dissemination efforts occur through CEU courses (Frank et al., 2020; Washburn et al., 2019), the LLD-KQ may be used in the future to evaluate the extent to which continuing educational courses are improving clinical knowledge.

Many clinicians continue to hold false beliefs about aging and later-life depression (Haigh et al., 2018), along with exhibiting deficient skills in assessment and diagnosis (Gregg et al., 2013). The LLD-KQ can be utilized at a systems level to help organizations identify areas for growth among clinicians. Examining knowledge levels of clinicians within an agency provides insight into baseline levels of knowledge and elucidates training opportunities to improve patient services and outcomes. Improved training can address biases and false beliefs held by clinicians, with increased knowledge associated with lower ageist beliefs and biases (Lytle & Levy, 2019).

Limitations

The field lacks robust questionnaires that assess knowledge of mental health and aging; this limits our ability to evaluate construct validity appropriately. The Facts on Aging Quiz (Breytsprakk & Badura, 2016) was selected as an updated measure of Palmore's Facts on Aging Quiz II (Palmore, 1988), which includes some outdated questions. The Facts on Aging Quiz, however, has not been rigorously assessed for psychometric properties, and, in the present study, it demonstrated poor internal consistency (K-R-20α = 0.52). This may be due, in part, to the fact that the construct of aging is too broad to capture in the context of 25 items alone. Still, the development and validation of measures to assess topics related to aging will continue to be hindered due to the lack of already validated measures.

There are important limitations to this study, with the understanding that measurement validation is an ongoing research endeavor that is never fully addressed within the context of a single study. Although recruitment efforts were aimed at improving sample heterogeneity, participants were predominantly White (84%), female (61%), and heterosexual (87%). With 85 (34%) of our participants identified as non-majority in terms of their ethnicity and/or race, however, this sample is more diverse than U.S. psychologists generally are (Lin et al., 2022). Future research is needed to determine if these findings generalize beyond psychologists in California and Texas alone.

Future directions

Application of the scale to various populations, including individuals of different educational levels and backgrounds, is necessary to assess generalizability. Continued research on other forms of reliability (i.e. test-retest reliability) should be conducted to determine the extent to which the measure behaves consistently across time. Similarly, only construct and divergent validity were assessed; future studies should also evaluate other forms of validity, such as predictive validity, along with sensitivity to change following educational and professional training programs. The structure of the scale should also be examined to understand its dimensionality and test utility better.

Conclusion

The LLD-KQ fulfills a need in mental health and aging dissemination and implementation research for a psychometrically sound assessment of clinical knowledge of later-life depression. The present study supports the validity, reliability, and factor structure of the LLD-KQ with a sample of psychologists. The utilization of this measure in educational efforts and clinical practice will promote the development of effective training programs and enhance behavioral health services provided to older adults, a crucial task as our population ages.

Ethical approval

This study was approved by the university IRB (IRB Protocol #2096952).

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Data availability statement

For replication purposes, analytic methods, data, and survey tools are available to other researchers upon request emailed to steffena@umsystem.edu.

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