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Validation of a Brief Screen to Identify Persons With Dementia at Risk for Behavioral Problems

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Abstract

OBJECTIVES: Clinical assessment of persons with dementia should include potential causes of behavioral problems, including pain, depression, and caregiver-patient relationship quality. Many validated assessment tools are available; however, a brief screening tool is needed, as administering a battery of instruments is impractical in most clinical settings. We evaluated 1) the construct validity of brief screens for pain, depression, and relationship strain by examining their associations with validated measures and medication use and 2) the predictive validity of each screen and the screens as a set by examining their associations with frequency of disruptive behaviors.

METHODS: Patient-caregiver dyads (n=228) in Aggression Prevention Training for Caregivers (Kunik et al., 2020) were examined.

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The authors declare that there are no conflicts of interest.

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RESULTS: There was evidence of good construct validity for each screen. The relationship screen and total number of screens endorsed were significantly associated with frequency of disruptive behaviors.

CONCLUSION: The brief screens show potential for use in clinical practice.

Keywords

Brief screens; Assessment; Dementia; Behavioral problems; BPSD; Neuropsychiatric symptoms; Pain; Depression; Relationship strain; Agitation; Aggression; Caregiver strain; Caregiver burden

Introduction

Dementia is a devastating syndrome characterized by progressive loss of memory and function that impacts individuals, families, and society as whole. Neuropsychiatric symptoms (NPS) are common in all stages and types of dementia (Lyketsos, et al., 2002, 2011) and have especially high costs in terms of quality of life (Banerjee, et al., 2006; Conde-Sala, et al., 2016;), caregiver burden and depression (Cheng, 2017), healthcare expenditures (Herrmann, et al., 2006), and nursing-home placement (Toot, Swinson, Devine, Challis & Orrell, 2017). NPS include depression, apathy, euphoria, anxiety, agitation, delusions, hallucinations, aggression, and circadian sleep-wake rhythm abnormalities (Lyketsos, et al., 2011). In a recent meta-analysis, the pooled prevalences of apathy, depression, and aggression were each in the 40% range; and the pooled prevalences of anxiety, night-time behavior disturbances, irritability, eating abnormalities, aberrant motor behavior and delusion were each in the 30% range (Zhao, et al., 2016).

Aggression, which can be verbal or physical, is among the most consequential of the NPS and is associated with increased use of psychotropic medication, injuries, and nursing-home placement (Kunik et al., 2010; O'Donnell et al., 1992). Pharmacologic therapies for aggression are modestly effective, but they are also associated with substantial morbidity and increased mortality (Reus, et al., 2016). Practice guidelines recommend nonpharmacologic interventions be considered prior to pharmacologic agents (Reus, et al., 2016).

Identifying and mitigating risk factors are central to nonpharmacologic interventions. Potentially mutable risk factors for aggression include pain, poor caregiver-patient relationship quality, and depression (Kunik et al., 2010; Lyketsos, et al., 1999; Morgan et al., 2013). Timely identification and management of these risk factors using nonpharmacologic or pharmacologic techniques may prevent the development of aggression, enabling patients to remain in their homes and increasing quality of life for both patients and caregivers. Current practice guidelines recommend that patients with dementia (PWD) be screened for these risk factors (Fazio, Pace, Maslow, Zimmerman & Kallmyer, 2018; Reus, et al., 2016; Sanders, et al., 2017; Veterans Healthcare Administration, 2016), and many validated quantitative measures are available (Gitlin, Marx, Stanley, Hansen & Van Haitsma, 2014) for PWD. However, no single measure addresses all relevant risk factors; and administering a battery of instruments is not practical in most clinical settings. Additionally, many measures require administration by a trained interviewer; and some require clinical expertise (Gitlin, et al., 2014). Clinical practice demands briefer screens that assess a variety of risk factors.

This study's goal was to examine the construct and predictive validity of brief screens for three risk factors for the development of aggression in PWD (pain, relationship strain, and depression) in a convenience sample of patients selected to participate in a clinical trial. Specific objectives were to examine 1) the construct validity (both convergent and discriminant validity) of brief screens for pain, relationship strain, and depression; and 2) the predictive validity of each of the three screens and a combined count of the number of positive screens. We hypothesized that the pain screen would be positively related to baseline overall pain and use of pain medications (convergent validity) but unrelated to depression scores, caregiver burden, mutuality, and use of depression medications at baseline (discriminant validity). We expected that the relationship strain screen would be positively related to baseline caregiver burden and negatively related to mutuality (convergent validity) but unrelated to overall pain and use of pain medications (discriminant validity) at baseline. We expected the depression screen would be positively related to both baseline depression scores and baseline use of depression medications (convergent validity) but unrelated to overall pain and use of pain medications at baseline (discriminant validity). Finally, we expected that each individual positive screen and a greater number of positive screens would be associated with increased frequency and reaction to disruptive behaviors

Methods

Participants

PWD-caregiver dyads (N=228), enrolled in a randomized, single-blind trial of a skills-based training program (Aggression Prevention Training for Caregivers; Kunik, et al., 2020) to prevent the onset of aggression in PWD, were examined in this analysis. To be eligible for the main trial, PWD must have had a documented diagnosis of dementia from one of three partner clinics (Baylor College of Medicine [BCM] Geriatric Medicine Clinic, BCM Alzheimer's Disease and Memory Disorders Center or Kelsey-Seybold Clinic). These clinics were selected based on their having appropriate expertise in assessing, diagnosing, and treating dementia. Patients with International Classification of Diseases-9 and International Classification of Diseases-10 codes for dementia were recruited through direct provider referral and from provider databases via partial HIPAA waiver. PWD were included if they were community dwelling; had an informal caregiver to participate in the study, with contact with the PWD for at least two days per week and for at least eight hours per week; and screened positive for at least one of three risk factors for the development of aggression (i.e., pain, caregiver-patient relationship strain, depression). PWD who exhibited aggression during the month prior to screening or baseline, based on Cohen-Mansfield Agitation Inventory (CMAI)—Aggression Subscale¹ (Cohen-Mansfield, 1986), were excluded, as were those with severe dementia, based on a Functional Assessment Staging Scale (FAST; Reisberg & Reisberg, 1988) score >6, inability to complete the Memory Impairment Screen—Telephone Version (MIS-T; Lipton, et al., 2003) or inability to rate their level of pain using a pain thermometer. Details of recruitment and enrollment for the main trial have

¹Aggression was measured on a 7-point Likert scale for frequency and a 5-point Likert scale for disruptiveness. Aggression was considered present if a participant scored a 2 (< once per week) or above on frequency and a 2 (a little) or above on disruptiveness on any of 13 aggressive behaviors

been reported in detail elsewhere (Kunik, et al., 2020). Baylor College of Medicine IRB protocol/human subject approval numbers H-33720 and H-33911.

Measures

Risk-factor screening.—Participants were screened by telephone. Both patients and their caregivers were asked a set of three to five similar questions to assess for the presence of the three aggression risk factors. The screening questions were vetted with an interdisciplinary panel of national leaders. PWD were considered to have screened positive for a risk factor if either the patient or the caregiver answered positively to the screen for that risk factor. Questions were well tolerated. Total administration time for each dyad was between five and ten minutes, depending on the patient's level of impairment. None of the individual screening questions has been previously validated in PWD, although some were taken from larger validated scales.

Pain screen.—The presence of clinically significant pain in the PWD was assessed with between one and three questions, as needed. Each dyad member was initially asked a question we have used previously: "During the past four weeks, did (you/your care recipient) often have physical pain, body aches, and/or discomfort?" (Judge, et al., 2011). If the dyad member answered negatively (a response of "no"), he or she was asked up to two additional questions taken from the Philadelphia Geriatric Pain Intensity Scale (Parmelee, Smith, & Katz, 1993). Pain intensity was assessed by asking: "Thinking about the past several weeks, please rate how bad your pain has been **overall**." A response of 2 (Moderate Pain) or higher was considered positive. If the dyad member's response to the pain intensity question was negative, pain interference was assessed with the following question: "To what extent does your pain interfere with your daily activities?" A response of 2 (Some) or greater was considered positive. PWD were considered to have clinically significant pain if either the caregiver *or* PWD answered positively to any of the three parts of the pain screening item.

Relationship strain screen.—Dyadic relationship strain was assessed with one question taken from the Caregiver Strain Instrument (Bass, McClendon, Deimling, & Mukherjee, 1994) and used in our prior work, "Do you have concerns about tension or strain in the relationship between you and your caregiver/person you care for?" (Bass, et al., 2012). This risk factor was considered positive if the PWD *or* his/her caregiver answered affirmatively.

Depression screen.—PWD were considered to have screened positive for depression if they *or* their caregiver answered affirmatively to the following single item from the Geriatric Depression Scale (GDS; Yesavage, et al., 1982): "Do (you/your care recipient) often feel downhearted and blue?"

Full baseline measures and administration.—Participants were assessed for pain, quality of caregiver-patient relationship (caregiver burden and mutuality), depression, pain and depression medications, and disruptive behaviors within 30 days of screening (i.e., at a baseline assessment) using commonly used and validated measures. Assessments were administered by telephone by a trained examiner. All assessments were based on caregiver

report, with the exception that the pain scale was also administered to the PWD. PWD and caregiver were interviewed separately but may have been in the room together during the interview.

Pain.—The Philadelphia Geriatric Pain Intensity Scale (Parmelee, et al., 1993) was administered to both the PWD and the caregiver to measure PWD pain. The extent to which PWD overall pain was bad over the last several weeks, as reported separately by the PWD and the caregiver (from 0 = no pain and 5 = almost unbearable), was used to assess pain severity.

Quality of caregiver-patient relationship.—The Mutuality Scale (Archbold & Stewart, 1986), a 15-item instrument measuring the positive quality of the relationship between caregiver and care receiver, was administered to the caregiver. Questions are answered on a 5-point Likert-type scale (0=never, 4=a great deal). Responses to each question are averaged, with total score ranging from 0-4, where higher scores indicate a relationship characterized by communication, shared pleasurable activities, common values, and reciprocity. Internal consistency reliability has been reported as greater than .90 among older adults (Lyons, Sayer, Archbold, Hornbrook & Stewart, 2007). The scale has been used with caregivers of PWD (Gallagher-Thompson, Dal Canto, Jacob & Thompson, 2001).

Caregiver burden.—The Zarit Burden Interview (Zarit & Zarit, 1982) is a 22-item instrument measuring perceived impact of caregiving on the caregiver's financial status, physical status, physical health, emotional health, and social activities. Questions are answered on a 5-point Likert-type scale (0=never, 4=nearly always). Responses to each item are summed, with total scale scores ranging from 0-88, and higher scores representing greater burden. The Zarit Burden Interview was specifically developed for caregivers of PWD and has been widely used for many years; its validity and internal consistency reliability are well established (Zarit, Anthony & Boutsellis, 1987).

Depression.—The 30-item Geriatric Depression Scale (GDS) – Collateral Version (CS-GDS; Nitcher, Burke, Roccaforte, & Wengel, 1993) was administered to the caregiver to measure PWD depression. Caregivers were instructed to “choose the best answer for how you think your loved one feels.” Items are answered with Yes/No. Total scores ranged from 0-30, with higher scores indicating greater depressive symptoms. The CS-GDS was adapted from the patient version of the GDS, which is widely used in older populations. This version was chosen due to the possibility that cognitive decline would affect the PWD's ability to complete the GDS during follow-up for the main trial. Chang, Edwards and Lach (2011) demonstrated that, in a sample of 132 PWD, the 30-item CS-GDS was internally consistent (α statistic 0.94) and, with a cut-point of 18, had a sensitivity of 78.2% (positive predictive value 68.3%) and a specificity of 74% (negative predictive value 82.6%) when compared to diagnosis of depression by *Diagnostic & Statistical Manual*, Fourth Edition diagnosis.

Medication use.—Caregivers reported each prescription and over-the-counter pain and depression medication currently used by the PWD, and a trained research assistant reviewed pill bottles at the participant's home after provision of written informed consent.

Medications were grouped by category (pain medication or dementia medication) and dichotomized as used or not used (yes/no).

Disruptive behavior.—The Revised Memory and Behavior Problems Checklist (RMBPC) (Teri, et al., 1992) is a 24-item, informant-based measure of observable behavior problems in PWD that includes subscales for memory-related, disruptive, and depressive behaviors. Subscales are internally consistent and distinct from each other (Teri, et al., 1992). Scores are computed for the presence/absence of each problem (i.e., “frequency”) and for caregiver “reaction,” or the extent to which caregivers were bothered or distressed by each behavior (0–4, with higher scores indicating more distress). Here, we used only the Disruption subscale, which includes eight disruptive behaviors, including agitated and aggressive behaviors (destroying property; doing things that embarrass you; waking you or other family members at night; talking loudly and rapidly; engaging in behavior that is potentially dangerous to self or others; making threats to hurt others; being aggressive to others verbally; and arguing, being irritable, and/or complaining). Total frequency scores for the subscale range from 0 to 8; and total reaction scores range from 0 to 32, with greater scores indicating greater caregiver reaction to disruptive behaviors.

Data Analyses

Descriptive statistics (i.e., counts and frequencies) were calculated to characterize the sample in terms of how many PWD and/or their caregivers endorsed the pain screen, the relationship strain screen, and the depression screen. We then examined descriptive statistics for each combination of positive screens.

To evaluate the convergent and discriminant validity of each of the screens (pain, relationship strain, and depression), a series of independent samples *t*-tests was conducted to compare mean differences in PWD-reported overall pain, caregiver report of the PWD’s overall pain, caregiver-PWD mutuality, caregiver burden, and PWD GDS between those who screened positive and those who screened negative on each of the three screens. Chi-square analyses were then conducted to examine associations between each screening item and 1) use of pain medications (yes/no) and 2) use of depression medications (yes/no).

Finally, to examine the predictive validity of each of the three individual screens, as well as the combination of the total number of positive screens, we conducted a series of independent samples *t*-tests (for individual screens) and one-way analyses of variance (ANOVAs; for the total number of positive screens) to examine associations between the screening instruments and 1) RBMPC disruption frequency and 2) RMBPC disruption reaction.

Results

The sample consisted of 228 PWD and their caregivers who responded positively to at least one of the screens and consented to be in the main study (see Table 1 for sample characteristics). PWD were mostly men and non-Hispanic White; 44.7% had a Bachelor or advanced degree. Caregivers were mostly spouses of the PWD, women, non-Hispanic White, and likely to have a high school diploma/GED or some college.

Almost two thirds of the dyads endorsed more than one screen; the pain screen was most frequently endorsed (see Figure 1). All three individual screens showed evidence of convergent validity (see Table 2). Specifically, both PWD- and caregiver-reported overall pain were greater among those who endorsed the pain screen than among those who did not ($t(166.55) = -10.61, p < 0.001$ and $t(172.96) = -11.89, p < 0.001$, respectively). Furthermore, those who screened positive for pain were more likely to report using pain medication (61.93%) than those who did not screen positive for pain (42.31%), $X^2(1) = 6.32, p = 0.01$. Additionally, burden was greater and mutuality scores were lower among those who endorsed the relationship strain screen than those who did not (burden: $t(226) = -5.78, p < 0.001$ and mutuality: $t(216.21) = 5.20, p < 0.001$). Finally, though GDS scores were greater among those who endorsed the depression screen than among those who did not ($t(225) = -5.20, p < 0.001$), depression medication use was not significantly different between those who screened positive and those who screened negative for depression ($X^2(1) = 0.09, p = 0.76$). There was also evidence of the discriminant validity for each of the three individual screens, such that the pain screen was not significantly related to mutuality, burden, depression, or use of depression medication (all $ps > 0.05$), the relationship strain screen was not significantly related to overall pain or pain medication use (all $ps > 0.05$), and the depression screen was not significantly related to overall pain or pain medication use (all $ps > 0.05$). Finally, as evidence of predictive validity, the total number of screens endorsed was positively associated with both RMBPC disruption frequency ($F(2, 225) = 5.50, p = 0.005$) and RMBPC disruption reaction ($F(2, 225) = 7.81, p = 0.0005$). Furthermore, although disruption frequency and disruption reaction did not significantly differ between those who did versus those who did not screen positive for pain and those who did versus those who did not screen positive for depression, disruption frequency and disruption reaction were both significantly greater among those who screened positive for relationship strain than among those who did not ($t(203.86) = -4.84, p < 0.0001$ and $t(163.08) = -5.68, p < 0.0001$, respectively).

Discussion

Each of our brief screens predicted scores on full validated measures corresponding to the appropriate construct (i.e., pain or depression or relationship strain). In addition, the pain screen was associated with use of pain medications, which strengthens its validity. We did not find a similar significant association between the depression screen and use of depression medication; however, the absence of an association may reflect a positive response to antidepressant therapy rather than a lack of convergent validity.

PWD who screened positive for relationship strain were more likely to exhibit disruptive behaviors than PWD who screened negative for relationship strain, and their behaviors were more bothersome to their caregivers. Moreover, as the number of positive screens (one, two or three) increased, PWD were more likely to exhibit disruptive behaviors; and the behaviors were more likely to illicit greater negative caregiver reactions.

Thus, the brief screens show potential for use individually (i.e., to identify PWD with depression or pain or caregiver patient relationship problems) and in combination to identify PWD who may be experiencing other behavior problems, such as aggression.

Strengths of the study include a large and varied sample of community-dwelling PWD from across the greater Houston area. Some participants were being followed in a memory disorders clinic, by other neurologists or by geriatricians. However, most attended primary care clinics and are, thus, more representative of the majority of PWD in the United States. Another strength is that the three screens took between five and ten minutes to administer to both PWD and caregiver, and our results show that it would be possible to further shorten the pain screen. Most participants who screened positive for pain were captured by the first pain question, making the second two questions unnecessary. In addition, the screens incorporate the perspectives of both the PWD and the caregiver. Memory failure, lack of insight, and communication difficulties may result in an underreporting of symptoms by PWD. In our study, a significant number of dyads were discordant in their responses to the screens: for 54 dyads (23.7%), the caregiver endorsed one or more of the screens when the PWD did not; for 9 dyads (4.0%), the PWD endorsed one or more of the screens when the caregiver did not. Therefore, PWD report should be supplemented with information from the caregiver (Burke, et al., 1998; Chang, et al., 2011; Lyketsos, 2015; Reus, et al., 2016). The brevity of these screens allows time to query both dyad members, giving providers a more complete picture on which to base their decisions. Finally, the screens require no training to administer, and ancillary staff could administer them in person or by telephone to reduce clinic time. Possibly they could even be completed by the caregiver and PWD on paper in the waiting room. Most importantly, we focused on aggression risk factors that are amenable to intervention (Nguyen, Love, & Kunik, 2008).

However, our study had several limitations. This is a secondary analysis and, because the original study intervention was designed to reduce depression, pain, and relationship strain, the sample does not include those who answered negatively to all three screens. Including such dyads would allow a stronger test of screen validity. Also, the second pain screen question, "Thinking about the past several weeks, please rate how bad your pain has been overall," was the same as the pain measure we used to examine construct validity, which may have artificially augmented the association between the pain screen and baseline pain. However, as mentioned above, most participants who screened positive for pain did so on the first pain question. Lastly, PWD with aggression in the past 30 days as measured by the CMAI aggression subscale were excluded from the original sample. We used the RMBPC Disruption Subscale, which includes agitated and aggressive behaviors, to establish predictive validity. However, our results may not be generalizable to more overtly aggressive patients.

This is a novel preliminary look at the validity of brief screens for three aggression risk factors among PWD. Studies designed to examine the validity of these screens that include participants who screen negative for all three risk factors are warranted. However, the current study suggests that these screens could be used in busy clinics to identify PWD and caregivers who may benefit from pharmacologic and nonpharmacologic interventions for pain, relationship strain, and depression. Identifying and treating each of these problems are essential to improving outcomes for PWD and their caregivers and may also prevent the development of aggression

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Figure 1.
Number (frequency) of dyads responding positively for each combination of screening questions.

Table 1.

Baseline characteristics of persons with dementia and their caregivers.

	Overall (N=228)	
<i>PWD Characteristics</i>		
Males, <i>N (%)</i>	131	(57.5)
Age (years), <i>mean (SD)</i>	77.6	(9.0)
Education, <i>N (%)</i>		
Less than high school/GED	26	(11.4)
High school/GED or some college	100	(43.9)
Bachelor or advanced degree	102	(44.7)
Race/ethnicity, <i>N (%)</i>		
Non-Hispanic White	153	(67.1)
Non-Hispanic Black	48	(21.1)
Hispanic	21	(9.2)
Other	6	(2.7)
Annual net income (N=193), <i>N (%)</i>		
<\$20,000	63	(32.6)
\$20,000-49,999	93	(48.2)
>=\$50,000	37	(19.2)
MIS-t Total, <i>mean (SD)</i>	3.9	(2.7)
FAST, <i>mean (SD)</i>	4.5	(0.9)
<i>Caregiver Characteristics</i>		
Males, <i>N (%)</i>	51	(22.4)
Age (years), <i>mean (SD)</i>	68.2	(11.3)
Education, <i>N (%)</i>		
Less than high school/GED	7	(3.1)
High school/GED or some college	118	(51.7)
Bachelor or advanced degree	103	(45.2)
Race/ethnicity, <i>N (%)</i>		
Non-Hispanic White	150	(65.8)
Non-Hispanic Black	46	(20.2)
Hispanic	24	(10.5)
Other	8	(3.5)
Annual net income (N=197), <i>N (%)</i>		
<\$20,000	58	(29.4)
\$20,000-49,999	77	(39.1)
>=\$50,000	62	(31.5)
Relationship to PWD		
Spouse	157	(68.9)
Other family	66	(28.9)
Nonfamily	5	(2.2)
<i>Baseline Outcome Measurements</i>		

	Overall (N=228)	
PWD Medication Use		
Any Pain meds, <i>N (%)</i>	131	(57.5)
Any Antidepressant, <i>N (%)</i>	87	(38.2)
PWD overall pain (CG assessment), <i>mean (SD)</i>	1.3	(1.1)
PWD overall pain (PWD assessment), <i>mean (SD)</i>	1.3	(1.2)
Mutuality, <i>mean (SD)</i>	3.0	(0.8)
Caregiver burden, <i>mean (SD)</i>	27.4	(15.1)
GDS-Collateral Version, <i>mean (SD)</i>	11.5	(6.4)
RMBPC Disruption Subscale-Frequency, <i>mean (SD)</i>	1.2	(1.3)
RMBPC Disruption Subscale-Reaction, <i>mean (SD)</i>	2.0	(2.9)

GED = Graduate Equivalency Degree; MIS-t = Memory Impairment Screen - Telephone Version ; FAST =Functional Assessment Staging Scale;
 PWD = person with dementia; CG = caregiver; GDS = Geriatric Depression Scale; RMBPC = Revised Memory and Behavior Problem Checklist

Table 2.

Results of independent samples t-tests and Chi-square tests comparing baseline measures between those with and without a positive screen on each of the screeners (and One-way ANOVAs comparing disruption frequency and reaction between those with one, two, or three positive screens).

Baseline Measures																		
Screen	PWD Overall Pain		CG Overall Pain		Mutuality		Burden		GDS		Pain Medication Use		Depression Medication Use		RMBPC Disruption - Frequency		RMBPC Disruption - Reaction	
	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	N (%)	p-value	N (%)	p-value	Mean (SD)	p-value	Mean (SD)	p-value
Pain Screen *																		
Yes/Positive (n = 176)	1.6 (1.2)	<.001	1.6 (1.1)	<.001	3.0 (0.80)	.74	26.6 (15.4)	.13	11.6 (6.6)	.56	109 (61.9)	.01	68 (38.6)	.78	1.2 (1.3)	.60	1.9 (2.9)	.96
No/Negative (n = 52)	0.2 (0.6)		0.3 (0.5)		2.9 (0.7)		30.2 (14.1)		11.0 (5.3)		22 (42.3)		19 (36.5)		1.1 (1.2)		2.0 (2.9)	
Relationship Strain Screen *																		
Yes/Positive (n = 120)	1.1 (1.2)	.08	1.2 (1.2)	.30	2.8 (0.8)	<.001	32.5 (14.3)	<.001	12.7 (6.6)	.001	69 (57.5)	.99	50 (41.7)	.25	1.6 (1.5)	<.0001	2.92 (3.48)	<.0001
No/Negative (n = 108)	1.4 (1.2)		1.4 (1.1)		3.3 (0.6)		21.7 (13.9)		10.1 (5.8)		62 (57.4)		37 (34.3)		0.8 (0.9)		0.94 (1.46)	
Depression Screen *																		
Yes/Positive (n = 136)	1.3 (1.2)	.28	1.3 (1.2)	.49	2.9 (0.8)	.79	27.9 (15.2)	.50	13.1 (6.8)	<.001	75 (55.2)	.39	53 (38.9)	.76	1.2 (1.2)	0.88	2.1 (2.9)	.44
No/Negative (n = 92)	1.2 (1.1)		1.2 (0.9)		3.0 (0.7)		26.6 (15.1)		9.1 (4.9)		56 (60.9)		34 (36.9)		1.2 (1.4)		1.8 (2.8)	
Number of positive screens *																		
1 (n = 80)											0.8 (0.9)	.005	1.1 (1.6)	.0005				
2 (n = 92)											1.3 (1.5)		2.2 (3.2)					
3 (n = 56)											1.5 (1.3)		3.0 (3.4)					

* Each screen was considered positive if either the PWD or the caregiver endorsed the screening question.

PWD = person with dementia; CG = caregiver; GDS = Geriatric Depression Scale; RMBPC = Revised Memory and Behavior Problem Checklist