Motivational and Cognitive Pathways to Medical Help-Seeking for Alzheimer's Disease: A Cognitive Impairment Response Model

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Objectives. Relationships among cognitive and motivational factors in predicting medical help-seeking for Alzheimer's disease (AD) symptoms were tested.

Method. Community residents awaiting jury service (N = 280) completed questionnaires, including responses to a vignette depicting prototypical early symptoms of AD in a hypothetical mother. Cognitive responses to the vignette included AD symptom identification and AD attribution. Affective-motivational responses to vignettes were symptom impact and behavior appraisals. General knowledge of AD was assessed. Intention to seek medical help was the dependent variable.

Results. The impact and identification of AD symptoms, appraisals of risk, and attribution of the scenario to AD were modest, yet all contributed to prediction of medical-help-seeking intentions. The best fitting model had distinct but interrelated cognitive and motivational paths explaining 49% of the variability in medical help-seeking. Motivational variables had particularly important direct and indirect effects on help-seeking.

Discussion. Findings are interpreted as evidence of the importance of motivational as well as cognitive aspects of perceptions of illness behavior in another person. The substantial impact of the tested variables on the desired outcome of medical help-seeking may suggest options for public health efforts to enhance early medical help-seeking for AD that sets the stage for early intervention.

Key Words: Aging—Alzheimer's disease—Cognitive impairment—Help-seeking—Families.

ALZHEIMER'S disease (AD) rarely is diagnosed in its earliest stages despite heightened awareness of the disease in western culture (Knopman, Donohue, & Gutterman, 2000; Ross et al., 1997). Yet the benefits of early detection of a problem that is growing rapidly in prevalence (Brookmeyer, Johnson, Zeigler-Graham, & Arrighi, 2007; Plassman et al., 2007) are myriad and thus are a public health priority (Borson et al., 2013). Early detection might be expected to be accomplished by the person with the disease, family members, or health professionals but persons with Alzheimer's disease typically do not recognize the scope or impact of the early signs, and deny having any significant problem (Lopez, Becker, Somskal, Dew, & Deskosky, 1994). Even if asked, patients have impaired ability to report symptoms accurately to their health providers (Agnew & Morris, 1998; Harwood, Sultzner, & Wheatley, 2000; Lopez et al., 1994).

Observers of early signs of AD, including families, delay help-seeking for months or years (Knopman et al., 2000), later recognizing that they overlooked behavioral indicators during the slow insidious onset (Knopman et al., 2000; Ross et al., 1997). The delay was caused by uncertainty about how to conceptualize the signs they were seeing as normal or abnormal (Knopman et al., 2000; Oppenheim, 1994; Ross et al., 1997; Streams, Wackerbath, & Maxwell, 2003). The signs of AD are not familiar illness presentations such as skin aberration, lumps, or fever; rather, AD appears as subtle, diverse behavioral deficits in multiple domains of everyday function that are particularly ambiguous as to the appropriateness of categorizing them as symptoms of an underlying problem (Almkvist, 1996). Even direct inquiries to families elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002). As is true with other illnesses, changes that are not categorized by patients or families as symptoms of an underlying problem elicit under-reporting as compared with patient's actual performance on cognitive testing (Kemp, Brodaty, Pond, & Luscombe, 2002).

Illness representations drive medical help-seeking as demonstrated in a substantial body of research on the commonsense model of illness representations (commonsense model; Diefenbach & Leventhal, 1996; Leventhal, Leventhal, & Contrada, 1996). The model was applied to illness representations of AD of persons in early stage AD by Clare, Goater, and Woods (2006), but no one has examined how family members’ representations influence their help-seeking, which is critical for this particular illness. Nor has anyone investigated the relationship between cognitive and affective or motivational aspects of the illness representation. For example, a daughter visiting her mother observes behavioral errors that the daughter knows are symptoms of AD. A sufficient accumulation of observations of symptoms leads to labeling or attribution of illness. The more salient the symptoms, the greater the likelihood of an appraisal of risk that increases urgency to act. The CIRM proposes that her emotional responses and cognitive understanding of the observed behavior may independently, or together, lead her toward medical evaluation.

**Cognitive Pathways to Medical Help-Seeking**

The commonsense model states that prior to diagnosis, cognitive representations of illness influence the ways in which changes in body, behavior, and function are interpreted as either symptomatic or normal variation (Cameron, Leventhal, & Leventhal, 1993; Leventhal, Forster, & Leventhal, 2007). Family experience forms the basis for schema that relies upon heuristics that, although inaccurate, guide help-seeking behavior (Leventhal et al., 2007; Roberts & Connell, 2000). Factual knowledge about AD prevalence or cause is not expected to influence this process as much as knowledge of symptom presentation. Thus, this study uses a vignette to present early AD symptoms to lay persons, with inquiry about the extent to which those specific behaviors are rated by respondents as characteristic of AD.

Two key cognitive factors in an illness representation are symptom identity and attributions, both of which impact help-seeking (Leventhal, Meyer, & Nerenz, 1980). Symptom perception can be conceptualized as a comparison process labeled *symptom identity* (Baumann, Cameron, Zimmerman, & Leventhal, 1989; Diefenbach & Leventhal, 1996). An observation of daily behavior (e.g., forgotten names, lost keys, apathy, or perseveration on one topic of conversation) is labeled as *symptom* only if it is believed to reflect an illness process. The causal explanation also influences help-seeking (Cameron et al., 1993). In order for AD symptoms to lead to help-seeking, the illness representation would need to link an observed deficit in routine daily behavior to an illness condition rather than nonillness attributions such as personality, contextual variables, or even normal aging that might have been used commonly throughout their relationship history.

Laypersons recognize that mental illness and AD symptoms represent a health problem, suggesting that accuracy at the categorical level may be possible (Link et al., 1999; Werner & Davidson, 2004). Previous studies of symptom attribution in AD document variability, with almost one-fourth of participants labeling the condition something completely unrelated (e.g., stress or normal aging) that would not likely lead to medical help-seeking (Polk, 2005; Werner & Davidson, 2004). Indeed, observers witness AD behaviors that could be caused by multiple conditions, all of which can be viable attributions for the problem.

**Affective-Motivational Paths to Medical Help-Seeking**

Affective or motivational aspects of symptom interpretation also contribute to help-seeking choices (Cameron et al., 1993; Leventhal et al., 2007). Emotional responses related to the threat posed by the symptoms and by the illnesses with which the symptoms are associated (Cameron et al., 1993) offer a distinct set of factors influencing the choice of when and where to seek assistance (Leventhal et al., 1980). Indeed, perceptions of health threats are strong predictors of coping activation (Folkman & Lazarus, 1988) and medical help-seeking (Cameron et al., 1993). The affective components of illness representation may have particular importance in detection of early AD because symptoms typically are identified by loved ones of the person showing symptoms who is unlikely to agree with those perceptions. A high threshold of risk appraisal is probably needed in order to generate action in this complex interpersonal context.

Two affective or motivational factors are considered in this study: symptom salience or impact and the risk appraisal of the situation. Help-seeking rates are high for novel symptoms of other illnesses, with definable location or pattern, and pose a safety risk (Cameron, Leventhal, & Leventhal, 1995), a pattern that has been demonstrated with AD (Nichols & Martindale-Adams, 2006). The accumulation of symptoms that are perceived to have strong impact on the observer enhances risk appraisals that are hypothesized to increase medical help-seeking.

**Social Cognitive Model of Response to Early Signs of AD**

The present study investigated the impact of cognitive and affective responses to AD in predicting medical help-seeking and the relationships between them by testing the Cognitive Impairment Response Model (CIRM; see Figure 1). This model postulates that cognitive and affective paths influence an observer’s processing of observed symptoms, and tests whether those influences are independent or have mutual influences between cognition and affect. The interplay of cognitive aspects of the illness representations (symptom identification and attribution) and affective...
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aspects (symptom salience and appraisals of risk) are not well understood. At this time, no specific theoretical model has been outlined for the direction(s) of influence nor have those relationships been explored empirically.

In this study, cognitive and affective paths are postulated to proceed from the person’s level of general knowledge about symptoms of AD, toward medical help-seeking. The “cognitive path” presumes that basic knowledge of AD symptoms influences the observer’s ability to identify daily behavior as symptomatic of AD. Symptom identification of the early signs as consistent with AD then is predicted to influence the extent to which the situation as a whole is likely to be attributed to AD. An attribution for AD is postulated to drive medical help-seeking. The “emotional/motivational path” also builds from basic knowledge of AD symptom presentation. Based on knowledge of AD symptoms, an observer will view symptoms as having an impact on their understanding of the situation; that is, symptoms become figure against the ground of typical or normal behavior. AD symptoms that have an impact lead to appraisals that the situation as a whole is concerning. Those appraisals offer a driving force toward medical help-seeking that is distinct from the cognitive path. Thus, the variables in the CIRM incorporated key aspects of previous illness schema models such as symptom salience and illness identity, cause, and consequences (Diefenbach & Leventhal, 1996). We test first the hypothesis that these pathways operate independently, and then explore how they may influence one another in predicting help-seeking.

METHOD

Participants

Participants included 280 adults recruited from the jury pool in a midsized western city who were paid $5 for participation while they were waiting up to 2 hr to hear about being called for jury participation. The jury pool includes all registered voters, which offers a subject pool that approximates the surrounding community. Two-thirds of the participant sample were female with a mean age of 40.74 (standard deviation [SD] = 13.22, range 18–74). Only 17% were never married, with 71% married or cohabiting, and 11% widowed, separated, or divorced. Over 78% had children and 58% currently have dependents. Consistent with the surrounding community, the majority identified themselves primarily (78%) as Caucasian, with 11% Hispanic, 3% African-American, 3% Asian American, and 1% Native American. Approximately 17% of the sample reported education at or below high school graduation, 33% had some college education, 27% had a college degree, and 22% had postgraduate education. Annual incomes were below $40,000 for 36% of the sample, with 22% reporting $40,000–59,999, 15% reporting $60,000–79,999, and 27% reporting $80,000+. Contact with older adults within their families was common; 44% of the sample reported seeing older adults more than once a week and another 28% reported seeing older adults 2–4 times a month. Only 6% reported no family contact with older adults. Contact rates with parents was also common, with 61% reporting contact once a week or more, 20% at least monthly, 14% several times a year, and 5% once a year or less.

Materials

A vignette was developed and piloted to depict signs of deterioration in everyday functioning due to early stage memory impairment. The vignette depicts a story in which a person whom respondents are to imagine is their mother was observed to experience functional problems during a recent visit. The vignette included two memory problems.
and two executive dysfunction problems, as would be typi-
cal in early stage AD, which were clearly distinct from her
previous high level of functioning that are described in the
early sentences of the vignette. The symptoms are italicized
below but were not presented in italics. Participants were
given the following instructions preceding the vignette.

The study in which you are about to participate involves
decisions families sometimes must make regarding care
for their members. Please read the following scenario and
respond to the questions below as if the woman described
is your mother.

Your mother, Doris, is 76 and enjoys her life in a small
community away from the “big city life” where you and
your family live. She has lived alone since your father died
10 years ago. Doris is a retired accountant who enjoys
entertaining guests and participating in many activities. The
last time you visited your mother she showed you that the
roof had a slight leak as soon as she invited you in. You told
her that you would call someone to fix it, but she stayed
upset despite your reassurance that it would be repaired.
You and your mother sat down to visit, and you conversed
for a long time. She told you all about her weekly bridge
games and how much fun she had been having with her
friends. Your mother mentioned that she needed some items
from the grocery store, so she grabbed her grocery list and
the two of you left. She retrieved the mail from the mailbox
and then drove to the grocery store. After the two of you
finished shopping at the grocery store, your mother said she
wanted to go to the department store to look for clothes.
You spent an hour at the store and then returned to your
mother’s house. Upon arriving she stopped to check the
mail and you reminded her that she had already gotten it.
She became angry with you and said that no one is perfect,
and stormed into the house. You went inside and began put-
ting the groceries away while your mother started cooking
dinner. While she was cooking you began clearing the table
and talked with her. Your mother told you about her bridge
games again and you continued setting the table. When the
meal was ready you and your mother sat down to eat and
had a good conversation.

After reading the vignette, respondents answered questions
about the vignette that provided the following measures in
the order listed.

Appraisals.—The appraisal ratings were the responses
to the following questions: “to what extent is the woman
in the story experiencing a problem?,” “to what extent is
she unsafe?,” and “how anxious would you be if the situa-
tion were real?.” Responses were marked on a 7-point rat-
ing scale labeled at the low end with 1 (not at all likely)
and 7 labeled extremely likely.

Symptom Impact.—Each symptom cue in the vignette was
rated as to how much it influenced the respondent’s overall
understanding of the situation on a 1 (did not influence me)
to 7 (influenced me greatly) scale and the four ratings were
summed for a total score (Cronbach’s alpha = .78).

Alzheimer’s Disease Symptom Questionnaire.—
Knowledge was measured as a sum score of nine ratings of
common signs of AD, each of which was rated as to “whether
you think the following behaviors are signs of Alzheimer’s
disease” on 7-point rating scales (1 = Definitely not a sign;
7 = Definitely is a sign) (Cronbach’s alpha = .85).

Procedure
Each participant received a questionnaire packet that
included an informed consent document, vignette with
follow-up questions and scales in order described above,
the knowledge questionnaire, and a background informa-
tion form. Participants were instructed to read the vignette
only once and not refer back to it when completing any
of the measures. Completion of the packet took approxi-
mately ½ hr and occurred in the jury pool waiting area. The
Institutional Review Board at the University of Colorado
Colorado Springs approved the study.

RESULTS
Item statistics are provided in Tables 1 and 2 and total
scores statistics are given in Table 3 along with the cor-
correlations between variables. Respondents were not highly
knowledgeable about symptoms of AD, as assessed on the
symptom knowledge scale. The mean certainty rate for

Help-Seeking Action.—Respondents were asked to rate
the likelihood they would take each of nine possible actions
presented in the following arbitrary order: consulting with

family and friends; observing, but doing nothing further;
insisting upon an evaluation; talking with mother about
observations; making an evaluation appointment without
Mother’s permission; doing nothing; calling the doctor to
express concerns; encouraging an evaluation; and checking
in more often to monitor her behavior. Ratings ranged from
1 (not at all likely) to 7 (extremely likely). The four actions
that led toward medical evaluations (italicized above) were
summed into a Medical Help-seeking variable (Cronbach’s
alpha = .85)

Attribution.—Attribution ratings for the likelihood that
the woman has Alzheimer’s disease were rated using a
single item with 1 labeled not at all likely and 7 labeled
extremely likely.

Institutional Review Board at the University of Colorado
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AD knowledge items was slightly above the midpoint of the scale \( M = 4.56, \text{SD} = 0.99 \); item means ranged from 3.61 to 5.50 with full range of scale options used. Best recognized as symptoms of AD were advanced memory symptoms (forgetting names of familiar people; forgetting how to do a skill) and least recognized were loss of initiation (not starting conversations), loss of inhibition (saying or doing things that are socially unacceptable), and misplacing items.

The symptoms embedded in the vignettes also were not well recognized as characteristics of AD (overall \( M = 2.58 \), see Table 2). Symptoms were fully or mostly identified with AD by less than half of the sample even on the best recognized symptom (repeated story) for which 35\% rated it as mostly or fully consistent with AD. Less well recognized were the poor emotion regulation symptom (remaining upset) and memory error (rechecking mail). The overall situation also was attributed to AD with uncertainty or ambivalence. Approximately one-quarter of the sample was confident the problem was AD (rated 6 or 7) whereas 56\% rated that attribution near the midpoint of the scale (3–5), and 18\% rated it as unlikely (1–2) to be the cause of the problem.

The Symptom Impact items’ average rating was 4.58 (see Table 2). Approximately half of the sample rated each symptom with a 3–5 rating (46–56\% across four items); although three symptoms were rated by over one-third of the participants as having large impact; only a small percentage viewed poor emotion regulation (remaining upset) as important to their understanding of the situation.

Medical help-seeking items elicited varied responses, with encourage mother to have an evaluation being the most commonly selected, and make an evaluation without permission being least endorsed (Table 1).
were tested to determine the interrelationships between the cognitive and affective paths (see Figure 2). Because the literature does not provide guidance on the expected direction of the relationships, these were tested in two steps using an exploratory strategy. The paths in Figure 1 were included in all models. In the first step of the exploratory phase, four models were tested to see if there was statistical support for the direction between the cognitive and affective paths by testing directional paths between symptom identification and symptom impact (paths 4a and 4b in Figure 2) as well as between appraisals and attribution (paths 5a and 5b). In the second step of the exploratory phase, cross relationships between the cognitive and affective variables were added (paths 6 and 7) as well as additional direct paths to medical help seeking (paths 8 and 9).

To conduct an exploratory test, models were tested using the specification search procedure. All possible models were not tested. Two theory-based strategies reduced the total number of models tested. All paths depicted in Figure 1 were kept in all models because these paths are hypothesized by the literature. The direction of the relationships among variables moves from left to right in Figure 1 because action is presumed to derive from application of basic information to specific observations from which are derived more global aspects of the schema that drive the action.

To select a model, the following arbitrary criteria were used to help minimize selecting a model based purely on chance characteristics of the sample. Models were selected that were (a) not statistically significant at the .05 level using the chi-squared goodness of fit test; and (b) had the fewest parameters (parsimony principle). Models were considered to have good fit if the comparative fit index (CFI) was greater than .95, the root mean square error of approximation (RMSEA) estimate was less than .10, and if the chi-squared statistic was not statistically significant. These criteria, related to both theory and standards of model fit, are recommended when modifying and selecting models to help address concerns related to obtaining a model due to chance alone (e.g., Boomsma, 2000; Weston & Gore, 2006). Additionally, the expected cross validation index (Brown & Cudeck, 1998) is presented with smaller values indicating higher likelihood of being cross-validated; however, no known cutoffs could be found within the literature.

Model Results. —The variables were inter-correlated at .3 or better (see Table 3). Maximum likelihood estimation was used for the path analyses and no major problems with normality were noted. Table 4 provides parameter estimates for each hypothesized path for selected models; the explained variance for each variable is provided in Table 3. For the distinct path model depicted in Figure 1 (model A), all paths had statistically significant parameter estimates (at $p < .01$); however, the model fit was poor ($\chi^2[df = 8] = 188.26, p < .001$; CFI = .71; RMSEA = .29, 90% confidence interval [CI] = 0.25–0.32; ECVI = .82, 90% CI = 0.67–1.0) indicating possible model misspecification. The model explained 36% of the variance in help-seeking.

The assumption that the cognitive and affective models were not independent paths was tested first with models linking symptom identification and symptom impact (paths 4a and 4b in Figure 2) as well as linking appraisals and attributions (paths 5a and 5b). Varying these parameters provided four different models; however, within this set of models there are equivalent models (equally good fit although parameter estimates change based on tested direction of relationships). The models using path 5a showed better fit ($\chi^2[6] = 47.87, p < .01$; CFI = .93; RMSEA = .16, 90% CI = 0.12–0.20); ECVI = .33, 90% CI = 0.26–0.42) than models estimated with path 5b ($\chi^2[6] = 109.87, p < .01$; CFI = .83; RMSEA = .25, 90% CI = 0.21–.29; ECVI = .55, 90% CI = 0.44–0.69) indicating better support for appraisals as the influencer rather than the reverse. There is no statistical or design evidence to help decide the directional relationship between symptom identification and impact. These models that included linkages between cognitive and affective pathways had improved fit (e.g., lower chi-square, larger CFI, smaller RMSEA, smaller ECVI) than the distinct model but still demonstrated inadequate fit indices suggesting that further modifications were

### Table 3. Correlations and Summary Statistics for Variables in Path Model Analysis

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<tr>
<th>Knowledge</th>
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Notes. AD = Alzheimer’s disease; Sx = symptom. All correlations were statistically significant at $p < .001$. 

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<td>$R^2$ based on model C2</td>
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<td>.23</td>
<td>.15</td>
<td>.37</td>
<td>.51</td>
</tr>
</tbody>
</table>
HELP-SEEKING FOR ALZHEIMER’S DISEASE

Figure 2. All paths for model of interrelationships between cognitive and affective paths. Path depicted by 1a–1b–1c is the cognitive path. Path depicted by 3a–3b–3c is the cognitive path. Dotted lines represent paths that were tested to assess direction of relationship. Paths 6, 7, 8, and 9 were included within a model specification search within AMOS. Thicker lines are paths included in the final model, all of which were statistically significant at .01 except for 1b which was statistically significant at .05 level.

Table 4. Model Parameter Estimates for Selected Models

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Model A</th>
<th>Model B1</th>
<th>Model B2</th>
<th>Model C1</th>
<th>Model C2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( b ) (( SE ))</td>
<td>( p, \beta )</td>
<td>( b ) (( SE ))</td>
<td>( p, \beta )</td>
<td>( b ) (( SE ))</td>
</tr>
<tr>
<td>1a</td>
<td>0.13 (0.02)</td>
<td>( p &lt; .001, .46 )</td>
<td>0.10 (0.02)</td>
<td>( p &lt; .001, .31 )</td>
<td>0.13 (0.02)</td>
</tr>
<tr>
<td>1b</td>
<td>0.19 (0.03)</td>
<td>( p &lt; .001, .34 )</td>
<td>0.08 (0.03)</td>
<td>( p &lt; .001, .34 )</td>
<td>0.08 (0.03)</td>
</tr>
<tr>
<td>1c</td>
<td>1.29 (0.16)</td>
<td>( p &lt; .001, .38 )</td>
<td>1.29 (0.22)</td>
<td>( p &lt; .001, .34 )</td>
<td>1.29 (0.22)</td>
</tr>
<tr>
<td>2</td>
<td>0.11 (0.03)</td>
<td>( p &lt; .001, .18 )</td>
<td>0.11 (0.03)</td>
<td>( p &lt; .001, .16 )</td>
<td>0.11 (0.03)</td>
</tr>
<tr>
<td>3a</td>
<td>0.26 (0.03)</td>
<td>( p &lt; .001, .39 )</td>
<td>0.43 (0.04)</td>
<td>( p &lt; .001, .39 )</td>
<td>0.22 (0.03)</td>
</tr>
<tr>
<td>3b</td>
<td>0.43 (0.04)</td>
<td>( p &lt; .001, .59 )</td>
<td>0.23 (0.03)</td>
<td>( p &lt; .001, .53 )</td>
<td>0.43 (0.04)</td>
</tr>
<tr>
<td>3c</td>
<td>0.59 (0.08)</td>
<td>( p &lt; .001, .38 )</td>
<td>0.59 (0.10)</td>
<td>( p &lt; .001, .35 )</td>
<td>0.59 (0.10)</td>
</tr>
<tr>
<td>4a</td>
<td>NA</td>
<td>NA</td>
<td>0.10 (0.04)</td>
<td>( p = .003, .18 )</td>
<td>NA</td>
</tr>
<tr>
<td>4b</td>
<td>NA</td>
<td>NA</td>
<td>0.30 (0.10)</td>
<td>( p = .003, .17 )</td>
<td>NA</td>
</tr>
<tr>
<td>5a</td>
<td>NA</td>
<td>NA</td>
<td>0.28 (0.02)</td>
<td>( p &lt; .001, .62 )</td>
<td>NA</td>
</tr>
<tr>
<td>6</td>
<td>NA</td>
<td>NA</td>
<td>0.28 (0.02)</td>
<td>( p &lt; .001, .62 )</td>
<td>NA</td>
</tr>
<tr>
<td>7</td>
<td>NA</td>
<td>NA</td>
<td>0.10 (0.02)</td>
<td>( p &lt; .001,.30 )</td>
<td>NA</td>
</tr>
</tbody>
</table>

Notes. \( \beta \) = standardized path coefficient; \( b \) = unstandardized path coefficient; \( p = p \) value of path coefficient; \( SE = \) standard error of path coefficient estimate. Model A is the distinct path model; Models B1 and B2 (equivalent models) testing linkages between cognitive and affective paths; Models C1 and C2 (equivalent models) add parameters 6 and 7 from Figure 2 and use paths from models A and B.

needed. Path parameter estimates for these models (B1 and B2 in Table 4) were statistically significant. The variance the cognitive and affective explained in help-seeking increased when including links between paths to 48%. In the third phase of model testing, paths 6, 7, 8, and 9 were added to the model that included all paths from Figure 1 and paths 4a, 4b, and 5a. Models with paths 4a or 4b were equivalent; fit statistics were similar and the same basic model was kept regardless of whether path 4a or 4b was used. The final model included paths 6 and 7 but no statistical basis for selection between equivalent models is possible, and absence of theoretical basis for selecting renders the conclusion that 3a and 3b offer equivalent basis for future research. Nonsignificant models including paths 8 and 9 were not selected due to the parsimony rule. All path parameter estimates were statistically significant and are provided in Table 4 (for models C1 and C2). The percentage of explained variance in help-seeking was 49% for this final model.

Background Characteristics as Predictors

To check for background characteristics that might shape these particular social cognitive processes, correlations of age, education, income category, and contact with older adults (as an indicator of experience with aging issues) with the variables in the model were computed. Only two variables in the model had any relationship with these background characteristics, and those had small effect sizes: intent to seek a medical evaluation correlated with age (\( r = −.17, p = .01 \)) and income (\( r = −.14, p = .04 \)). Symptom identification in the vignette also correlated with age (\( r = .15, p = .036 \)). These variables were not determined to be sufficient in scope or strength to warrant inclusion as covariates in the model.

DISCUSSION

The schema for responding to everyday presentation of AD in a loved one has cognitive and motivational components that influence one another in the prediction of other variables.
medical help-seeking intentions. Although AD symptoms usually are identified by observers rather than patients, this study documents that similar social cognitive processes are involved in perception and interpretation of symptoms as those previously demonstrated for physical illness in one’s own body (Leventhal et al., 1998, 2007). The hypothesized Cognitive Impairment Response Model accounted for almost half of the variance (49%) in medical help-seeking intention, offering significant information for clinical and public health efforts to boost the rate of early detection. Descriptive information about respondents’ perceptions of each component of the model also provide valuable information about how early signs of AD as depicted in everyday life are perceived and understood.

As hypothesized, both cognitive and motivational paths added to the power of factual knowledge of AD symptoms to predict medical help-seeking intention, a critical public health goal. Factual knowledge of AD symptoms is correlated with medical help-seeking, but it is only weakly predictive as a direct effect. When viewing a situation of everyday behavioral signs of AD, the development of a schema that includes both an attribution for AD and an appraisal of threat produces the strongest prediction of medical help-seeking intention. Efforts to increase medical help-seeking thus will need to influence both cognitive and motivational or affective aspects of the illness schema for AD.

The Pathways

The strength of relationships among the steps of the two pathways provides useful information about how best to build this two-component schema. Before examining the relationships between the cognitive and affective pathways, two key findings need to be highlighted. First, each path builds a stronger basis for predicting medical help-seeking than factual knowledge alone. Knowledge is foundational to cognitive and affective variables that actually predict help-seeking intentions, but lacks sufficient power to suggest that efforts to teach about AD will increase lay persons’ proclivity toward medical help-seeking. Second, as has been demonstrated in the health literature for other illnesses that are self-recognized (Leventhal et al., 2007), medical help-seeking responses to AD recognition by another person involves both cognitive and motivational variables.

Knowledge of AD is foundational to recognizing the everyday forms in which cognitive errors present themselves but its primary function is to enhance the probability that everyday behaviors that are symptomatic of AD are experienced as salient and accurately recognized as symptoms. Knowledge only indirectly increases likelihood of accurate labeling of symptoms and appraisals of risk.

The cognitive and motivational pathways operate as hypothesized with the cognitive process of interpreting a witnessed behavior as a symptom enhancing the likelihood of accurate attribution of the problem to AD, and symptom salience enhancing overall risk appraisal.

Linkages between the pathways also add to prediction of help-seeking. Without being able to determine direction of the effects, the analysis verified mutual effects of symptom salience and identification. However, this analysis found that that appraisal of risk is likely to influence the cognitive interpretation of the identified symptoms, based on statistical criteria for pathway selection. Clearly, this study found that stronger sense of threat was directly and indirectly related to the proclivity to seek medical help.

The process of perceiving and interpreting early signs of AD is indeed a cognitive-motivational one, that requires symptoms to be understood cognitively and viewed as impactful in order to generate an appraisal of threat and a cognitive attribution that are both associated with help-seeking. The strength of effects of motivational variables and paths through them on help-seeking has been less salient in the research literature than the assumption that improving knowledge will improve lay persons’ likelihood of recognizing AD accurately.

Limitations

Several study limitations require caution in the acceptance of the CIRM as a complete model. Although sampling from the jury pool afforded access to a representative population, the final sample was somewhat positively skewed in age. Yet age did not correlate strongly with the variables in the model which minimizes concern that the findings would have been different with an older sample who might be expected to have more personal experience (Erber, Szuchman, & Prager, 2001; Hummert, 1999). Other sample characteristics reflect the makeup of the local community (race, ethnicity, education) but not of the entire United States. Vignette studies inevitably have limitations in ecological validity as respondents are instructed to “act as if” with no way to know whether that is what they would actually do. Help-seeking intention is not the same as action, so study of these processes in clinical settings would be useful. Furthermore, any interpretation of another person’s behavior almost inevitably includes comparisons with previous moments in time, and comparison against previous observations of particular behavior patterns. The vignette described the target person as previously high functioning, implying decline in function, but without the detailed observations of nuanced behavior we observe in our families. The measures were simple ratings, summed across a few items except for the single attribution item, limiting measurement stability and thus generalizability. The model testing process had less theoretical guidance than is desirable, and thus could control statistical risk only through a carefully planned exploratory process with explicitly defined assumptions and standards for statistical significance. Exploratory analyses that involve multiple steps increase the probability of overall type I error, even when following prescribed strategies. The model must be cross-validated in larger samples.
in order to demonstrate that the findings are robust and replicable, not due to chance sample characteristics.

Implications for Future Research
This study affirms that future research on early detection of AD needs to incorporate variables that reflect both cognitive and motivational/affective components of the illness representation. In addition to their direct effects, the motivational variables also had indirect effects on medical help-seeking through their influence on attributions; research designs which are better able to understand these causal directions are needed. The fact that symptom impact and situational threat influence cognitive aspects of the schema is intriguing, raising questions about the operational mechanism of those pathways.

The disconnection between mean level of knowledge about AD and the ability to identify symptoms accurately or respond with medical help-seeking also calls for additional research on the processing of realistic symptom presentations. The ability to identify memory as a symptom of AD is a far simpler task than identifying a particular behavior as a memory error of the type seen in AD. With its presentation of both memory and executive dysfunction symptoms, this vignette study evoked a more nuanced assessment of the social cognitive framework for understanding responses to observed early signs of AD than can be accomplished with studies of factual knowledge of AD. Psychometrically sound measures of AD or dementia symptom knowledge, recognition, and responsiveness, is needed to support future research.

The impact of the human relationship in which patient and observer are embedded warrants further investigation. The vignette method used in this study afforded the option of investigating one relationship within which AD is commonly observed (aging parent, adult child). Of course, vignette methods cannot induce the richness or familiarity of the interpretive frame built over decades that characterizes real parents and children. Relationship structures as well as personal history need to be investigated as meaningful factors that are likely to influence any person’s perspective on notable behaviors of a family member. In particular, the effects of experience living or working with persons with AD on schema and responses to observed cognitive errors would be useful.

Cognitive aspects of AD schema are not to be ignored. Consistent with previous findings on confusion about AD, participants in this study also exhibited considerable confusion about the identity of AD symptoms on the knowledge scale with the mean near the midpoint of the scale. Variability was notable, however, with scores ranging from recognition of no symptoms to accurate identification of all symptoms. The fact that this variability proved useful in predicting medical help-seeking suggests that building knowledge of symptoms of AD as exhibited in everyday behavior can contribute to medical help-seeking and is thus a relevant, albeit not primary, strategy for early detection. Future studies need to examine other aspects of the schema, including potential attributions for the observed behaviors that may lead to different responses.

Application of Findings
Family observers of early signs of dementia may need motivational interventions at least as much as they need cognitive interventions (e.g., education). Raising symptom salience and appraisals of concern may be a critical strategy to increase the rate of medical help-seeking for AD that would lead to evaluation. Thorough evaluation is such a critical starting point because the findings chart the course for the person and family in fundamental ways. Evaluations may find reversible causes of behavior problems that can be addressed before permanent damage is done. Benign causes of behavior problems can be identified that set the family at ease and direct their attention to a very different set of interventions than would be pursued for AD. If AD is evident or likely, patients and families have the option of considering a variety of interventions including completion of advanced directives, future planning for finances and care structures, as well as consideration of pharmacological agents, day programs, respite care, and other psychosocial interventions that benefit patients and caregivers.

In conclusion, public health efforts to achieve early detection through earlier medical help-seeking need to consider the joint effects of cognitive and motivational interventions. Lay persons cannot be expected to label the problem correctly before seeking assistance. Families need to know primarily that something is troublesome about someone’s behavior, and that behavior problems can be harbinger of important problems that should be checked out. Indeed, public health benefits may be greater from encouraging help-seeking by worried families rather than by knowledgeable families.

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References