

Ethnic Differences in Perceptions of Alzheimer's Disease: Implications for Seeking Assistance in Caring for an Ill Parent

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Abstract

Purpose: To examine ethnic differences in ratings of 1) condition severity, 2) need for medical assistance, and 3) likelihood of hiring a Healthcare Advocate (HCA) for an ill, elderly parent as a function of 1) parent's cognitive state (Alzheimer's disease [AD] or cognitively healthy), 2) parent's physical malady (hip fracture or heart attack), and 3) distance (near or far from the parent), with an emphasis on the interaction between ethnicity and cognitive state. **Method:** Nine-hundred-seventy-four individuals who identified as White, Black, Hispanic, or Asian/Pacific Islander read a hypothetical vignette about an older man. The man's physical malady (heart attack or hip fracture), cognitive state (AD or no AD), and physical distance from a close family member were manipulated in the vignette. Participants rated the severity of the medical condition and their likelihood of hiring an HCA. **Results:** Black and Asian/Pacific Islander participants did not differ from White participants on any outcomes. Unlike White participants, Hispanic participants did not rate the older man's condition as more severe and were not more likely to seek assistance when he had AD than when he was cognitively healthy. **Conclusion:** Ethnic differences in perceptions of AD may be less extensive than previously thought. The medical severity of AD did not appear to be recognized among the Hispanic participants in our sample, suggesting that culturally-sensitive AD education may be particularly important in this subgroup.

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Alzheimer's disease (AD) is the most common cause of dementia (Desai & Grossberg, 2005). Five million Americans had a diagnosis of AD in 2012 (Alzheimer's Association, 2012); by 2050, it is expected that 13.2 million people in the United States (U.S.) will have a diagnosis of AD. In 2010, AD was reported to be the sixth leading cause of death overall and the fifth leading cause of death among adults who were 65 years and older (Miniño & Murphy, 2012). Those affected by AD experience gradual memory loss, impairment in judgment, changes in mood, and decreased functioning (Alzheimer's Association, 2012). People with AD are also more likely to have co-morbid medical conditions (e.g., contusions, pneumonia, cystitis, septicemia, pre-cerebral/cerebral arterial occlusion with infarction, ulcers, hemorrhage, or obstructions of the stomach or intestines, and joint and pain disorders), which greatly increases

the difficulty of symptom management (Zhao, Kuo, Weir, Kramer, & Ash, 2008). Healthcare costs related to AD totaled an estimated \$200 billion in the U.S. in 2012 (Alzheimer's Association, 2012). The prevalence and consequences of AD highlight the importance of recognizing the symptoms in early phases and seeking appropriate treatment to diminish its impact.

There is no cure for AD, and truly disease-modifying drugs are only in clinical investigational stages at this time. However by being aware of early stage warning signs families can help loved ones receive earlier diagnoses and treatment (DeKosky, 2003). Early detection of the illness can help change its course. Treatment for AD at present is limited, but options are best for early cases, including a few pharmacological options and

pharmaceuticals with concurrent cognitive-centered treatment (Ballard, Khan, Clack, & Corbett, 2011; Yiannopoulou & Papageorgiou, 2013). Evidence has shown that early intervention in AD is *critical*, as it can reduce caregiver burden (DeKosky, 2003), and delays in treatment can result in irreversible damage and deterioration that may be reduced by appropriate action (Leifer, 2009). Slowed disease progression resulting from early treatment can reduce cost, allow patients to make long-term care decisions, and give patients a longer period of independence—reducing caregiver burden (Leifer, 2009). For these reasons, even without a cure or true disease-modifying or disease-arresting treatments, early detection is imperative.

Ethnic Differences in Knowledge of and Assistance-Seeking for AD

Black and Hispanic individuals with AD generally wait longer to obtain medical treatment than White individuals, which allows the disease to progress and become more difficult to treat (Janevic & Connell, 2001). These delays may occur, in part, because ethnic minorities have less information about AD (e.g., Anderson, Day, Beard, Reed, & Wu, 2009; Ayalon & Aréan, 2004; Akinlete et al., 2011; Roberts et al., 2003; Tappen et al., 2011). In fact, lower levels of AD awareness in certain minority groups have been linked to a decreased likelihood of seeking early intervention than in White persons (Dilworth-Anderson & Anderson, 1994).

Research suggests that Black individuals who have family members with AD understand the disease less and have less perceived risk of developing the disease themselves compared to their White counterparts (Akinleye et al., 2011; Roberts et al., 2003). Furthermore African Americans, Afro-Caribbeans and Asian Americans (Tappen, Gibson, & Williams, 2011) and Asian Americans (Lee, Lee, & Diwan, 2010) are more likely to conceptualize the memory loss associated with AD as a part of normal aging compared to Whites. Older Asian Americans have been found to have less knowledge of AD than Whites (Ayalon & Aréan, 2004), and to hold both scientifically- and folk-

based beliefs about AD (Jones, Chow, & Gatz, 2006). Ethnic minorities may be less likely to seek treatment, because they view dementia as a process of “normal aging,” rather than as a treatable medical disorder (Hinton, Franz, Yeo, & Levoff, 2005; Piquart & Sörensen, 2005).

Cultural Beliefs Related to Differences in AD Care

Differences in perceptions of AD across ethnicities likely translate into attitudinal differences among caregivers. This is important to consider, because caregiver awareness contributes to health outcomes in AD patients (Dunkin & Anderson-Hanley, 1998). When comparing African American, Chinese, and Hispanic family caregivers, Mahoney, Clutterbuck, Neary, and Zhan (2005) found that all three groups lacked considerable knowledge regarding early signs of AD. African Americans were most likely to normalize AD symptoms, Chinese Americans were most likely to stigmatize those with AD, and acculturation was of most concern among Hispanics. Specifically, African Americans considered memory loss a normal part of aging, Chinese Americans feared public disclosure, and Hispanic caregivers worried that their children would forget the cultural value of caring for older family members and adopt the “American” way of institutionalizing older adults. In general, White caregivers accept a biomedical approach to dementia (Gray, Jimenez, Cucciare, Tong, & Gallagher-Thompson, 2009), whereas Black and Hispanic caregivers consider AD to be the result of living a difficult life (Connell & McLaughlin, 2007).

The Present Study

The objectives of the current study were to determine whether there were ethnic differences in 1) the ratings of severity, 2) the ratings of perceived need for medical assistance, and 3) the likelihood of hiring an HCA for an ill, elderly parent as a function of 1) family member’s cognitive state (AD or cognitively healthy), 2) family member’s physical malady (recent heart attack or hip fracture), and 3) distance (whether the adult child lived near or far from the ill parent). The primary interest of this study was to test and explore the interaction effect of

ethnicity and cognitive state to understand whether there are dissimilarities in perceptions related to AD. Our study is unique in that it examines various aspects of perception with respect to AD; that is, it considers general severity of illness, requirements for medical assistance, and the perceived acceptability of an HCA as a means for assistance as a function of ethnicity. Although other studies have examined perceptions of AD by ethnicity in general, to our knowledge none have considered all of these various aspects, which have implications for caregiving. Specifically, it was hypothesized that participants who identified as Black, Hispanic, or Asian/Pacific Islander would rate AD as less severe than White participants. Additionally, it was predicted that those who identified as Black, Hispanic, or Asian/Pacific Islander would indicate less need for medical assistance and less likelihood of hiring an HCA than those who identified as White.

Method

Study Design

The present study used a 2 (Cognitive State: AD v Cognitively Healthy) x 2 (Physical Malady: Hip Fracture v Heart Attack) x 2 (Distance: Near v Far) experimental design, in which participants were randomly assigned to one of eight conditions. Cognitive State, Physical Malady, and Distance from one's *imagined* parent, Daryl, were manipulated.

Participants

Participant demographics juxtaposed with San Diego County Census data are reported in Table 1. The proportions of demographic characteristics in our sample coincide well with the proportions that would be expected on the basis of census data from the population we drew from. For a review of demographic and other pertinent differences by ethnicity, which informed the decisions made with respect to covariates in the inferential models, see Table 2.

Table 1

Participant Demographics and Comparable Census Data

Item	Sample % (N = 974)	Census %
Gender		
Male	47.5	50.2
Female	52.5	49.8
Ethnicity		
White	74.2	77.0*
Black	5.8	5.6
Asian/Pacific Islander	8.4	12.0
Hispanic	11.6	32.5*
Age		
18 to 30 years	30.0	~27.4
31 to 50 years	31.0	~36.9
51 to 65 years	28.6	~21.6
66 years or older	10.4	~14.0
Relational Status		
Single	36.2	~35.0
Married or in a Domestic Relationships	53.1	~48.0
Widowed/Separated/Divorced	10.2	~17.0
Other	0.5	N/A
Number of Siblings		
None	11.9	--
One or Two	54.2	--
Three or Four	15.8	--
Five or More	18.1	--
Education†		
High School Graduate or Less	19.9	~34.0
Associate's Degree/Trade School	18.4	~31.8
Bachelor's Degree	36.1	~21.4
Graduate Level Degree	25.7	~12.8
Family Income		
Less than \$60,000	37.9	~39.9
\$60,000-\$119,999	36.5	~32.2
\$120,000 or more	25.6	~27.9
Health Insurance Status		
Yes	84.2	--
No	15.8	--
Been Primary Care Provider for Your Parent(s)?		
Yes	24.2	--
No	75.8	--

Note: Census data derived from San Diego County Estimates from 2007-2011, downloaded from <http://quickfacts.census.gov/qfd/states/06/060731k.html>.

*Estimates for Hispanic and White populations include those who identified as White and Hispanic. †Education estimates in the census are for adults 25 years of age and older, not 18 years of age and older. ~Estimates were computed from available census breakdowns.

Table 2

Demographic and Other Relevant Differences by Ethnicity

Variable	Levels	White	Black	Asian/Pacific Islander	Hispanic	<i>p</i>
Gender (%)	Male	322 (46.53)	32 (62.75)	35 (42.68)	56 (50.00)	.109
	Female	370 (53.47)	19 (37.25)	47 (57.32)	56 (50.00)	
Mean Age (SD)		47.10 (16.79)	38.38 (15.32)	36.17 (14.18)	35.60 (13.11)	<.001*
Relational Status (%)	Single	223 (31.02)	34 (60.71)	46 (56.79)	47 (41.96)	< .001◇
	Married	373 (51.88)	15 (26.79)	26 (32.10)	43 (38.39)	
	Partnership	42 (5.84)	1 (1.79)	4 (4.94)	10 (8.93)	
	W/D/S	77 (10.71)	5 (8.93)	5 (6.17)	12 (10.71)	
	Other	4 (0.56)	1 (1.79)	0 (0.00)	0 (0.00)	
Education (SD)		3.85(1.17)	2.89(1.11)	3.87(1.15)	3.21(1.14)	< .001•
Family Income† (SD)		3.56(1.84)	2.3(1.56)	3.29(1.78)	2.9(1.61)	.136
Health Insurance Status‡ (%)	Yes	614 (86.48)	40 (72.73)	70 (86.42)	82 (73.87)	.414
	No	96 (13.52)	15 (27.27)	11 (13.58)	29 (26.13)	
Comprehension of an HCA (SD)		7.04(2.4)	7.23(2.23)	7.01(2.28)	7.12(2.33)	.94
Primary Care Provider for Your Parent(s)? (%)	Yes	178 (24.93)	14 (25.45)	17 (20.99)	23 (20.91)	.715
	No	536 (75.07)	41 (74.55)	64 (79.01)	87 (79.09)	

Note. ANOVA was used for continuous outcomes and χ^2 (Fisher's when expected counts were less than 5) was used for categorical outcomes except where otherwise noted. *Dunnnett comparisons for age demonstrated that White participants were significantly older than participants from all other ethnic groups ($ps < .001$). ◇ White participants were more likely to be in a relationship ($OR = 2.13$) and less likely to be single ($OR = .43$) than those from other ethnic groups. •Dunnnett comparisons for education demonstrated that White participants were significantly more educated than Black and Hispanic Participants ($ps < .001$), but not Asian/Pacific Islander participants ($p = .91$). †Differences in income by ethnicity were assessed with the inclusion of education as a covariate. ‡Differences in insurance status by ethnicity were assessed in a logistic regression model that included education and income as covariates.

Procedures

Participants ($N = 974$) were selected randomly and approached by research assistants in Balboa Park, located in San Diego, between April, 2010 and October, 2011. Balboa Park is the nation's largest urban cultural park. More than 500,000 visitors come to Balboa Park each year (Balboa Park, 2011). It was selected as a data collection site primarily because its popularity among visitors allows for convenient acquisition of a fairly diverse sample. In order to obviate selection bias on the part of interviewers (e.g., recruiting only volunteers to participate), a random number sequence was used to implement random selection within this convenience sampling method. Research assistants approached potential participants and asked them whether or not they would be willing to participate in a study investigating healthcare advocacy, only if that participant was the n th apparently eligible (e.g., 18 years or older)

individual to pass them, where n was defined by a random number between 1 and 5. Each n was used only once; then a new one was generated for the next selection.

Participants were required to understand written and spoken English to complete the study. Participants were told that their participation would take 5 to 10 minutes and that they would be given \$5 as a token of appreciation for their participation. Interested participants were asked whether they would be able to read two short paragraphs and complete a brief survey. Participants who met the criteria were given a cover letter explaining the purpose of the study, a vignette, and a brief questionnaire to complete. The questionnaires were anonymous and completed individually.

Table 3

Summary of Univariate Statistical Effects from Omnibus MANCOVA

Predictor (N df)	Type	Outcome								
		Severity			Medical Assistance			Hiring an HCA		
		F	p	Effect	F	p	Effect	F	p	Effect
Omnibus (17)	Model	9.924	< .001	$R^2 = .155$	5.714	< .001	$R^2 = .096$	6.774	< .001	$R^2 = .113$
Educ (1)	Cov	1.670	.197	-	1.201	.273	-	18.494	< .001	$sr^2 = .018$
ConHCA (1)	Cov	23.218	< .001	$sr^2 = .057$	33.813	< .001	$sr^2 = .021$	59.08	< .001	$sr^2 = .033$
Eth (3)	PV	6.159	< .001	$sr^2 = .017$	2.265	.08	-	1.687	.168	-
PM (1)	IV	21.484	< .001	$sr^2 = .020$.423	.516	-	.872	.351	-
CS (1)	IV	10.631	.001	$sr^2 = .010$	5.500	.019	$sr^2 = .005$.447	.504	-
Eth x PM (3)	Int	.119	.949	-	.737	.53	-	2.873	.035	$sr^2 = .008$
Eth x CS (3)	Int	3.567	.014	$sr^2 = .010$	3.469	.016	$sr^2 = .010$	3.225	.022	$sr^2 = .009$
PM x CS (1)	Int	1.277	.259	-	1.983	.159	-	.947	.331	-
Eth x PM x CS (3)	Int	.521	.668	-	.403	.751	-	.367	.777	-

Note. Significant findings are in bold. N df = Numerator df; Educ = Educational Attainment; ConHCA = Understanding the Concept of an HCA; Eth = Ethnicity; PM = Physical Malady; CS = Cognitive State; Cov = Covariate; PV = Participant Variable; IV = Independent Variable; Int = Interaction.

Vignettes

The vignettes described a fictitious person named Daryl Smith. Daryl was described as being a 75-year-old, retired, widowed man who was informed recently that he would need surgery for a physical condition (i.e., either heart bypass or hip replacement surgery). Participants were instructed to *imagine* they were James Smith, Daryl’s 42-year-old son. James was portrayed as being a well-to-do engineer with a busy schedule. He was married, and his wife was a successful lawyer who also had a demanding schedule. Each of the aforementioned aspects was held constant in all vignette conditions. Participants were assigned randomly to read one of eight vignettes that described a combination of two levels of *distance* (James lived near or far from parent), two levels of *physical malady* (Daryl had a heart attack or hip fracture), and two levels of *cognitive state* (Daryl was cognitively healthy or had AD).

Measures

After reading the vignette, participants were asked to assume that they were James Smith and to indicate, using a 10-point Likert-type scale ranging from 1 (Extremely Unlikely) to 10 (Extremely Likely), how likely they would be to hire an HCA to perform eight, diverse assistive duties in caring for Daryl. These duties included: 1) staying with Daryl while in the hospital, 2) accompanying him to medical visits, 3) dealing with insurance issues, 4) coordinating medical

appointments, 5) coordinating between healthcare professionals, 6) researching Daryl’s treatment options, 7) assisting him with daily symptom management, and 8) maintaining his medical record. Participants also were asked to rate how severe they believed Daryl’s medical condition was on a 10-point Likert-type scale ranging from 1 (Not at all Severe) to 10 (Extremely Severe) and how much medical assistance he would require given his condition(s) from 1 (None) to 10 (A Great Amount). Participants also were asked to report with which ethnicity they identified: 1) White, 2) Black, 3) Asian/Pacific Islander, or 4) Hispanic. The survey aggregated Hispanic, Latino, and Mexican. However, it is important to note that 84% of the Hispanic community in San Diego is Mexican (U.S. Census Bureau, 2011). Lastly, participants provided personal demographic information (e.g., educational attainment, income, etc.) and a rating of their confidence that they understood the concept of an HCA.

Statistical Analyses First, a reliability analysis was performed to examine the internal relationships among the eight questions designed to assess participants’ likelihoods of hiring an HCA. Cronbach’s α for the eight hiring questions was .884; thus, an aggregated mean of likelihood of hiring was created to serve as one of the dependent variables: Likelihood of Hiring an HCA.

A 2 (Distance) x 2 (Physical Malady) x 2 (Cognitive State) x 4 (Ethnicity) multivariate analysis of covariance (MANCOVA) was performed using IBM SPSS 19.0 to examine the effects of Daryl's cognitive state and participants' own ethnicity on participants' 1) perceptions of severity of Daryl's medical condition, 2) ratings of Daryl's need for medical assistance, and 3) overall likelihood of hiring an HCA for Daryl if they were James Smith. Participants' ratings of their understanding of the concept of an HCA and education were entered as covariates.

A priori-specified interaction contrasts were performed to compare the results from participants who identified as 1) Black, 2) Asian/Pacific Islander, or 3) Hispanic to participants who identified as White, because previous findings indicated that disparities exist between White and other ethnic groups (for a review, see Anderson, Day, Beard, Reed, & Wu, 2009). Because these interaction contrasts, which were designed to probe the ethnicity by AD effect, were each of specific, theoretical interest, each ethnicity-specific pair of contrasts was evaluated at $\alpha = .05$. Thus, using a Bonferroni correction to adjust for the inflation of Type I Error rates in the presence of multiple, a priori comparisons, the per-comparison $\alpha = .025$ was used. Based upon the peripheral, post hoc nature of the contrasts used to examine the interaction of ethnicity and physical malady, Scheffé's correction was applied, where the Scheffé critical F equals the original critical F for the given degrees of freedom at $\alpha = .05$, multiplied by $(a-1)(b-1)$, where a and b equal the levels of physical malady and ethnicity, respectively.

Results

Upon initial inspection, distance was not found to produce any significant main or interaction effects with ethnicity, cognitive state, assistance ratings, or likelihoods of hiring an HCA, $ps > .05$. Therefore, it was excluded from subsequent analyses. Both main and interaction effects involving physical malady were found; thus, it was included in subsequent analyses (hence, the

2 x 2 x 4 model with interest in cognitive state and ethnicity).

The MANCOVA omnibus tests were statistically significant. See Table 3 for a summary of all statistical effects in the model).

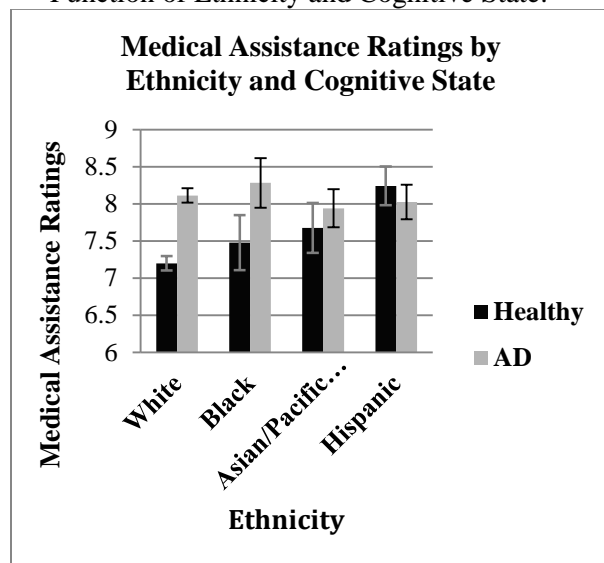
Severity

Ethnicity, cognitive state, the interaction of ethnicity by cognitive state, and physical malady all were statistically significant. Simple contrasts to probe the ethnicity effect showed that, on average, both the Asian/Pacific Islander and Hispanic groups rated the severity of Daryl's condition significantly higher than the White group, $\hat{\Psi}_2 = .729$, $t(920) = 3.439$, $p = .001$, $d = .2268$; $\hat{\Psi}_3 = .535$, $t(920) = 2.94$, $p = .003$, $d = .1939$, respectively. The main effect of cognitive state showed that, on average, participants rated Daryl's condition as significantly more severe when he had a co-morbid diagnosis of AD than when he was cognitively healthy. The main effect of physical malady demonstrated that Daryl's condition was rated as more severe when he had a heart attack than when he had a hip fracture. No other effects on severity were statistically significant.

The interaction between cognitive state and ethnicity, which was statistically significant, was the aspect of the analysis of particular, a priori interest. Interaction contrasts, specified in a 2 (Cognitive State) x 4 (Ethnicity) model, demonstrated that the differential ratings of severity as a function of cognitive state were statistically different between the Hispanic and White groups, $\hat{\Psi}_3 = 1.016$, $t(929) = 2.776$, $p = .006$, $d = .1822$. Participants who identified as White rated Daryl's medical condition as significantly more severe when he had AD than when he was cognitively healthy; however, for those who identified as Hispanic, there were no statistically significant differences in the AD and cognitively healthy conditions. See Figure 1.

Figure 1

Medical Assistance Required by Daryl as a Function of Ethnicity and Cognitive State.



Note. Covariates appearing in the model are evaluated at the following values: level of education = 3.73, How well understand concept of HCA = 7.05; graph not shown from intercept.

Medical Assistance

Cognitive state and the interaction of ethnicity by cognitive state on medical assistance ratings were statistically significant. The main effect of cognitive state showed that, on average, participants rated Daryl’s need for medical assistance as significantly greater when he had a co-morbid diagnosis of AD than when he was cognitively healthy. None of the other main or interaction effects on medical assistance ratings were statistically significant.

Interaction contrasts demonstrated that the differential ratings of required medical assistance as a function of cognitive state were statistically different between the Hispanic and White groups, $\Psi_3 = 1.073, t(937) = 2.894, p = .004, d = .1894$. Participants who identified as White rated Daryl’s need for medical assistance was greater when he had AD than when he was cognitively healthy; however, those who identified as Hispanic rated Daryl’s need for medical assistance when he had co-morbid AD lower than when he was cognitively healthy (See Figure 1).

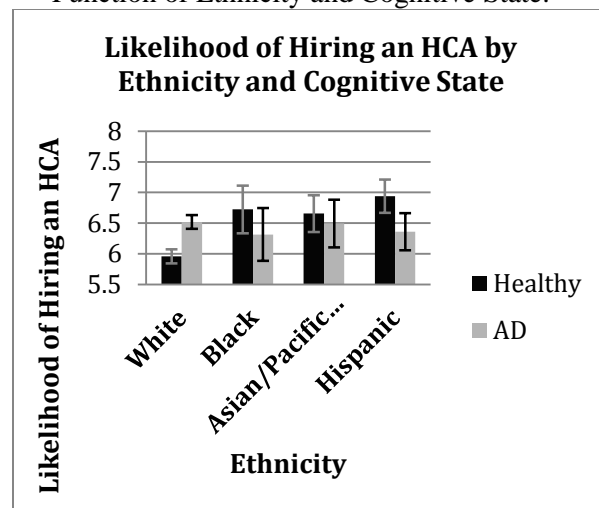
Hiring an HCA

The main effects of cognitive state, ethnicity, and physical malady on likelihood of hiring an HCA were not statistically significant. The interaction of cognitive state by ethnicity was statistically significant, as was the interaction of physical malady by ethnicity. The remaining interaction effects on likelihood of hiring an HCA were not statistically significant.

Because unique, a priori interaction contrasts were the analyses of particular interest, the results from these tests were examined in a 2 (Cognitive State) x 4 (Ethnicity) model. As was true of severity ratings, the differential likelihoods of hiring an HCA as a function of cognitive state were statistically different between the Hispanic and White groups, $\Psi_3 = .997, t(943) = 2.319, p = .021, d = .151$. Participants who identified as White were significantly more likely to hire when Daryl had co-morbid AD than when he was cognitively healthy; however, those who identified as Hispanic were less likely to hire when Daryl had co-morbid AD than when he was cognitively healthy (See Figure 2).

Figure 2

Likelihood of Hiring an HCA for Daryl as a Function of Ethnicity and Cognitive State.



Note. Covariates appearing in the model are evaluated at the following values: Concept of HCA = 7.07, Education = 3.73; graph not shown from intercept.

The post hoc interaction contrasts were performed to examine the physical malady by ethnicity effect on likelihood of hiring an HCA. Based upon the post hoc nature of these contrasts and the lack of a theoretical premise for these conditional differences, the group that appeared to have the most differential trend was chosen as the reference against which to compare the other groups. In this case, the Asian/Pacific Islander group appeared to have the most disparate pattern and, therefore, was selected as the reference group. However, as noted above, for these analyses, Scheffé's more conservative corrective method was employed for the 2 (Physical Malady) x 4 (Ethnicity) design [critical $t(943) = 3.399$, or $\alpha = .0007$]. No statistically significant differences were identified.

Discussion

Differences between White and Hispanic Participants

The purpose of the study was to determine whether there were ethnic differences in the perceptions of AD, as measured by ratings of severity, need for medical assistance, and likelihood of hiring an HCA for an imagined parent. The findings indicated that Hispanic participants, on average, rated Daryl's condition as more severe, his need for medical assistance as higher, and were more likely to endorse hiring an HCA to assist him than Whites in the absence of AD. They expressed a high level of general concern and desire for seeking assistance via an HCA. This suggests that those who identified as Hispanic 1) were concerned with their parents' health and recognized the importance of medical treatment in general, and 2) did view HCA's as viable means for seeking additional assistance in caring for an ill parent (see Figures 2 and 3).

White participants perceived Daryl's condition to be more severe and requiring more assistance when AD was included in the vignette description than when he was described as cognitively healthy. In contrast, Hispanics rated the severity and medical assistance requirement ratings in the absence of AD higher than in the presence of AD. This is consistent with previous research indicating that Hispanics are less

knowledgeable about AD than Whites and may wish to avoid medicalizing as a result of certain cultural values (Anderson et al., 2009; Ayalon & Aréan, 2004; Akinlete et al., 2011; Roberts et al., 2003; Tappen et al., 2011).

White participants were significantly more likely to hire an HCA than Hispanic participants when Daryl was said to have AD (see Figure 2). Overall, White participants indicated a higher likelihood of hiring an HCA when Daryl had AD than when he was cognitively healthy. Conversely, Hispanic persons were less likely to hire an HCA for Daryl when he had co-morbid AD. This, particularly coupled with the medical assistance ratings, suggests that Hispanics may not understand the extent of care required for an individual suffering from AD. On the other hand, Mahoney and colleagues (2005) found that Hispanics place great value on filial piety and the importance of younger family members taking care of older adults. Thus, participants may have been less likely to hire, not merely because of a lack of knowledge of AD, but because of underlying, deeply held cultural beliefs and values regarding the importance of personally caring for loved ones. It is likely that cultural, as well as informational, differences contribute to these results. However, given the putative utility of early detection and intervention (Leifer, 2009), culturally-sensitive education regarding the symptoms and management of the disorder, may prove useful in the Hispanic community (DeKosky, 2003; Desai & Grossberg, 2005).

Taken together, these results emphasize the need for educational and interventional efforts to be culturally aware and sensitive. Emphasizing that medical treatment and personal care are complementary (i.e., one can take a loved one for medical treatment as a way to care for them, not *in place of* personal care) may be beneficial to communicate to Hispanic communities. The high ratings given by Hispanics for likelihood of hiring an HCA in the absence of AD demonstrate that the relatively lower values in the presence of AD are more than just perceived undesirability of HCA services in general or merely cultural values dictating caring for older loved ones at home only. Rather, it suggests that the specific nature of AD bears upon the

decision for those in the Hispanic community. This emphasis on synergistic medico-familial care in the Hispanic community is an important component of the ongoing development and optimization of AD treatments (Yiannopoulou & Papageorgiou, 2013).

Differences between White and Black and Asian/Pacific Islander Participants

There were no significant differences in the likelihood of hiring an HCA as a function of Daryl's cognitive state between Black and White or the Asian/Pacific Islander and White participants. This finding differs somewhat from previous findings that Blacks are more likely to view AD as a normal part of aging (Anderson et al., 2009). However, differences in knowledge of AD between White and Black participants in previous research may be explained largely as a function of disparities in medical knowledge or education; these differences were held constant in our analyses. However, examining these groups' differential trends (see Figure 2) suggests that a lack of power may have been, at least in part, responsible for the absence of a significant difference. Black participants did report being *less* likely to hire an HCA when Daryl was diagnosed with AD than when he was cognitively healthy, whereas White participants were *more* likely to hire an HCA when Daryl was diagnosed with AD than when he was cognitively healthy.

The lack of differences between Asian and White participants is somewhat surprising, because research suggests that Asian culture encourages an expectation that younger generations care for elders (Jones et al., 2006). However, this expectation could produce either a greater or a lesser likelihood of hiring—depending on which type of resource one felt obligated to provide (e.g., time or money). For example, Ying Ng, Phillips, and Lee (2002) noted that, in Hong Kong, many view the responsibility of an adult child to an older parent as an obligation to provide monetary resources. However, others emphasize adult children's duty to provide direct assistance to older parents with activities of daily living (Ying Ng, Phillips, & Lee, 2002). These authors noted that some of these differences in opinion result from the

demands of modern urban living. Complicating the issue more, a high level of concern over the stigma associated with AD is thought to be present in Asian culture (Lee et al. 2010; Laditka et al., 2011), suggesting that concern over stigma may serve as a deterrent to seeking professional healthcare services for AD victims. Nevertheless, the Asian/Pacific Islander sample in our study rated Daryl's need for medical assistance higher when he had co-morbid AD, suggesting that other factors outweigh the concern about stigma within our sample.

Limitations

In interpreting these findings, a few caveats are required. First, it is important to consider the location of data collection (i.e., Balboa Park). The participant pool was not significantly different in income from the general population of San Diego County. However, on average, participants in this study were more educated than the general population of the County, which could limit generalizability to other populations. However, education, as a covariate, only related to likelihood of hiring an HCA; it was not related to severity or medical assistance ratings, which provides a degree of confidence in the robustness of the present findings. Nevertheless, some bias may have been introduced by the nature of the vignette. For example, the names of the individuals in the vignette are more typical of White or Black persons than of Asian/Pacific Islander or Hispanic persons. Thus, our groups may have differed in their ability to identify with the vignette, which may have affected their responses to it. Second, since our study included only those who identified only with a single ethnicity (i.e., it did not include individuals who reported multiple ethnic group affiliations), its generalizability may be limited, as many Hispanic residents of San Diego County identify as both Hispanic *and* White. Future research should explore this more thoroughly by considering multiple ethnic and racial identifications and seeking to determine how much primary ethnic identification determines cultural values related to such medical and caregiving decisions.

Conclusion

The attitudes of prospective caregivers about AD have implications for disease management and health outcomes. Our research suggests that greater alignment may exist between diverse ethnic communities with respect to AD perspectives than was previously recognized. Although past research has indicated that people from Black or Asian/Pacific Islander cultures have deficits in knowledge regarding AD and fail to appreciate its true severity, our findings show that these groups probably have assessed its deleterious effects appropriately. However, this was not the case for Hispanics. Understanding the causes of these perceptual

differences and raising awareness of the effects of AD in the Hispanic community and the ability to combine family care and professional care could increase the likelihood of early medical intervention and better prognoses for those affected by AD (Leifer, 2009) and likely reduce disease burden on families and society. Without redress, these effects should only become more pronounced as the search for disease-modifying or curative treatments advances (Yiannopoulou & Papageorgiou, 2013) and the Hispanic population continues to grow in the U.S. (Administration on Aging, 2010).

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