

2023

Gender and race influence young adults' impressions of people with dementia

Angel Collie

University of North Florida, angelcollie@hotmail.com

Follow this and additional works at: <https://digitalcommons.unf.edu/etd>



Part of the [Social Psychology Commons](#)

Suggested Citation

Collie, Angel, "Gender and race influence young adults' impressions of people with dementia" (2023). *UNF Graduate Theses and Dissertations*. 1175.
<https://digitalcommons.unf.edu/etd/1175>

This Master's Thesis is brought to you for free and open access by the Student Scholarship at UNF Digital Commons. It has been accepted for inclusion in UNF Graduate Theses and Dissertations by an authorized administrator of UNF Digital Commons. For more information, please contact [Digital Projects](#).
© 2023 All Rights Reserved

Gender and Race Influence Young Adults' Impressions of People with Dementia

Angel Collie

Department of Psychology, University of North Florida

Table of Contents

List of Tables	3
Abstract	4
Introduction	5
Phase 1 Method and Results.....	12
Phase 2 Method and Results.....	17
Discussion	23
References	31

List of Tables

Figure 1	14
Figure 2	15
Figure 3	16
Table 1	17
Table 2	17

Abstract

Alzheimer's Disease and Related Dementias (ADRD) are becoming more common among older adults around the United States, including African Americans, who are twice as likely to be clinically diagnosed with Alzheimer's Disease. Though it is counter-intuitive, young adults are important when examining the future projections of ADRD because they will be the future caretakers of older adults. The current study investigated whether impressions of people with dementia are influenced by the interaction of gender and race among young adults. In Phase 1, young adults (N = 157, ages 18-25, median age = 20) completed a reverse correlation task where they were randomly assigned to select over many trials one face among 12 presented that most looked like either a person, a man, a woman, a black man, or a black woman diagnosed with dementia. Their choices were used to generate classification images of people diagnosed with dementia. Consistent with the intersectional invisibility hypothesis, men were the default when imagining people diagnosed with dementia. In Phase 2, MTurk participants (N = 108, ages 23-64, median age = 35) rated classification images of people with dementia generated by Phase 1 participants. Inconsistent with the multiple jeopardy hypothesis, attitudes toward dementia were not more negative for Black men, Black women, or women compared to people with dementia. In fact, Black women were rated more competent than Black men and race not specified women and men. The current research highlights the need for intersectional approaches to understanding attitudes and stereotypes related to dementia.

Gender and Race Influence Young Adults' Impressions of People with Dementia

Alzheimer's Disease and Related Dementias (ADRD) are becoming more prevalent among individuals aged 65 and older within the United States as over 7 million older adults were diagnosed in 2020 (Banquero & Martin 2015; Population Reference Bureau, 2021; Vicki et al., 2021). By 2060, this number is expected to increase to 13.9 million (Matthews et al., 2018). However, members of some social groups are at a higher risk for the disease. For example, women account for about two thirds of individuals diagnosed with Alzheimer's Disease Dementia (Alzheimer's Association, 2017; Carter et al., 2012) and African Americans have higher incidence rates than White Americans. As the United States becomes more diverse, it is important to address problems faced by specific subgroups of older adults.

Receiving a dementia diagnosis may change how a diagnosed individual is perceived within society resulting in discrimination, stigmatization (Goffman, 1963), and worse well-being (Prince et al., 2005). For example, persons diagnosed with ADRD face many challenges including feelings of shame, depression, and decreased quality of life due to their age, symptoms, and stigma because of a lack of education about the disease (Luleci & Hidiroglu, 2021). But members of some groups face additional problems because of their race and gender. For example, men are perceived as more competent compared to women (Sontag, 1972) and African Americans are less likely to receive a diagnosis for dementia (Stephenson, 2001). Therefore, it is important to study the impressions young adults have of persons with dementia and whether those impressions differ based on the race and gender of the individual (Herrmann et al., 2018).

Dementia Stigma

Dementia stigma, defined as negative social attitudes and discrimination toward dementia and individuals who are living with dementia (Joachim & Acorn, 2000; Stites et al., 2018), is

prevalent among young adults (Kane et al., 2018; Piver et al., 2013) and impacts persons with dementia on many levels. For example, people with dementia may experience feelings of isolation due to family and friends not wanting to discuss the disease (Alzheimer's Association, 2022; Devlin et al., 2006). Dementia-related stigma also creates a barrier to individuals seeking help and receiving an appropriate diagnosis (Blay & Peluso, 2019). For example, persons with early symptoms of dementia often feel shame (Swaffer, 2014; Urbańska et al., 2015), perhaps in part because others are uncomfortable around and fearful of people with dementia (Kane et al., 2018; Knesebeck et al., 2014).

It is important to study specific biases of young adults toward people with ADRD because they are often the caregivers of people with the disease and in the future, many will receive ADRD diagnoses. In fact, research using the Dementia Attitudes Scales demonstrated that both young adults and dementia care workers shared favorable views toward healthy adults but unfavorable attitudes toward adults with dementia (DAS; O'Connor & McFadden, 2010; Kane et al., 2018). However, older adults have fewer stigmatizing attitudes compared to young adults (Piver et al. 2013). Thus, the current research recruited a sample of young adults to further understand their biases.

Intersectional Invisibility Hypothesis

The intersectional invisibility hypothesis argues that being a part of more than one minority or subordinate group renders one metaphorically invisible in society (Purdie-Vaughns & Eibach, 2008). Invisibility is a unique form of discrimination resulting in members of subordinate groups being treated as interchangeable and less visible when compared to members of other groups.

An example of the intersectional invisibility of Black women is that Black women are viewed as too masculine to be included in the category ‘women’, but when people imagine a Black person, they tend to imagine a Black man (Coles & Pasek, 2020). Furthermore, stereotypes about Black men but not Black women were related to attitudes toward Black people (Phills et al., 2018) and when statements made by Black women were remembered, people could not remember that a Black woman said it when compared to Black men, White men, and White women (Sesko & Biernat, 2010).

Invisibility can negatively impact African Americans with ADRD through misdiagnosis, delayed diagnosis, and medical maltreatment (Stephenson, 2001). African Americans are more likely than non-white Hispanic Americans to be misdiagnosed and mistreated by physicians and nursing homes. When caregivers expressed memory loss concerns about African American patients to doctors, physicians were dismissive and suggested that symptoms were due to ‘old age’ (Mahoney et al., 2005).

One reason that dementia diagnoses among African Americans can be missed or delayed may be that African Americans do not look like how the ‘typical’ dementia patient is imagined to look. When people imagine someone with dementia, they may not imagine an African American. Thus, the current research tested the intersectional invisibility hypothesis to examine whether differences or similarities emerged between a person diagnosed with dementia and men, women, or Black men diagnosed with dementia.

Multiple Jeopardy Hypothesis

Rather than focus on issues related to invisibility, the double jeopardy hypothesis argues that older adults in minority populations are affected by a double disadvantage due to their race and age (Dowd & Bengton, 1978; Markides, 1983; Ferraro & Farmer, 1996). Being categorized

as an elderly person and being a member of a minority group creates a double disadvantage for African Americans. Further, dealing with discrimination throughout life and being newly discriminated again throughout later life negatively affects the health of African Americans in addition to other current health problems (Cummings et al., 2000). Among African Americans, double jeopardy was found on variables including income and self-assessed health (Dowd & Bengton, 1978). Although income and health decreased as persons aged among non-Hispanic whites and minority populations, African American older adults' incomes and health were significantly lower compared to non-Hispanic whites which can be related to experiences of blatant acts of avoidance, verbal harassment, and physical attacks which can accumulate over time (Feagin, 1991).

Older women are also affected by the double jeopardy hypothesis as they experience discrimination based on their age and gender. Although negative attitudes toward older adults affect both men and women, negative attitudes impact women more than men (McConatha et al., 1999). Specifically, older women were perceived as having greater cognitive decline and being more passive and dependent compared to older men (Canetto et al., 1995). Further, compared to women, older men are depicted as more competent and intelligent (Sontag, 1972). This may be because social standards are more accepting of men's aging processes, allowing men to age without experiencing negative attitudes based on gender (Sontag, 1972).

Because the double jeopardy hypothesis suggests that being a member of two or more stigmatized groups can place persons at a higher disadvantage, including older African American men and women, they are expected to experience triple or multiple jeopardies (Essed, 1991; Cummings et al., 2000). As such, the stigmatizing effects of ADRD are greater for ethnic and racial minorities (Herrmann et al., 2018). For example, Chinese Americans experience stigma

because of their dementia diagnosis, ethnic status, and age, including feelings of shame and isolation due to reported seclusion within their families (Eng et al., 2015). As a result of isolation, people with dementia in the Chinese American population tend to delay seeking help, preventing an official dementia diagnosis (Liu et al., 2008). However, while studies have examined stigma among ethnic and immigrant minorities, little empirical work has examined attitudes toward African Americans with dementia (Herrmann et al., 2018) even though, compared to non-Hispanic white populations, African Americans are two times more likely to be clinically diagnosed with Alzheimer's Disease (Alzheimer's Association, 2021). Experiencing multiple jeopardies is expected to lead to additional negative attitudes toward African Americans diagnosed with dementia. The current research tested the multiple jeopardy hypothesis to determine whether persons with dementia would be evaluated more negatively based on gender and race.

Young Adults

The United States has experienced significant growth in the elderly population due to people living longer. Unfortunately, society holds numerous negative beliefs about older adults (e.g., they are incompetent, dependent, unpleasant, and mentally inactive (Seefeldt & Ahn, 1990; Fineman, 1994; Cuddy et al., 2005). Young adults are an essential age group when thinking about future aging projections because they will play an important role in taking care of older adults, including family members and friends (Herbert et al., 2003; Lundquist & Ready, 2008).

Although there is limited research on young adults' perceptions of dementia, young adults' generally express unfavorable attitudes toward older adults and aging (Gellis et al., 2003; Moley, 2003; Bodner & Lazar, 2008). For example, college students in Israel typically avoid physical contact with older adults (Bodner & Lazar (2008). In addition, third-year undergraduate

nursing students in the United States associated aging with frailty, physical decline, and mental decline (Moley, 2003).

Young adults' unfavorable views of older people are primarily due to age anxiety which refers to worries related to losses associated with aging (Lasher and Faulkender, 1993; Cummings et al., 2000). Specifically, age anxiety may result from young adults believing they will experience similar issues older adults encounter as they age (Cummings et al., 2000). These feelings manifest early in life and are caused by a lack of knowledge about aging and societal stereotypes about older adults (Gellis et al., 2003; Towner, 2006). Though research has supported young adults' negative attitudes toward older adults, the current study will expand the literature on attitudes toward aging by studying young adults' attitudes toward people with dementia in a novel method.

Using reverse correlation to study impressions of people with dementia

The current study utilized the reverse correlation procedure to examine the mental representations of and impressions of people with dementia. Reverse correlation has been used to study biases based on facial appearances of states and traits, including race and ethnicity (Dotsch et al., 2008), gender (Brooks et al., 2018; Degner et al., 2019), age (Albohn & Adams, 2020), personality (Lin et al., 2018; Oliveira et al., 2019), love and attraction (Gunaydin & DeLong, 2015), and stereotypes and prejudices (Brown-Iannuzzi et al., 2018). The benefits of this method include reduced social desirability since participants do not know how their responses will be used in the study, and it does not force participants to focus on a set of stereotypes we choose. Specifically, the method captures a person's expectation about a target (e.g., what does a person diagnosed with dementia look like?). Because of this, it not only allows researchers to study

stereotypes and attitudes that influence how participants imagine targets but also to test invisibility by comparing how similar or dissimilar people imagine various groups to appear.

Overview

The current study investigated whether impressions of persons diagnosed with dementia are influenced by the interaction of gender and race among young adults. In this two-phase study, seven hypotheses were tested on young adults' mental representations of persons diagnosed with dementia.

Hypotheses

Phase 1. Based on the intersectional invisibility hypothesis, Phase 1 tested two hypotheses which are pre-registered (<https://aspredicted.org/sr24w.pdf>):

Hypothesis 1. Classification images of people with dementia will be more similar to classification images of men with dementia than women with dementia.

Hypothesis 2. Classification images of people with dementia will be more similar to classification images of men with dementia than Black men with dementia.

Phase 2. Based on the multiple jeopardy hypothesis, Phase 2 tested five hypotheses which are pre-registered (<https://aspredicted.org/sr24w.pdf>):

Hypothesis 1: There will be a main effect of gender such that women with dementia will be evaluated more negatively than men with dementia.

Hypothesis 2: There will be a main effect of race such that African Americans will be evaluated more negatively than race not specified people.

Hypothesis 3: There will not be an interaction between race and gender.

Hypothesis 4: Race not specified women will be evaluated more negatively than Race not specified men and Race not specified people.

Hypothesis 5: Black men will be evaluated more negatively than Race not specified people and Black women will be evaluated more negatively than black men.

Phase 1

Method

Participants

One hundred and fifty-six undergraduate students were recruited through the University of North Florida's SONA Research Participation System. Participants were compensated with partial course credit. Demographics revealed that the median age of participants was 20 (age range = 18-25). The racial/ethnic composition of the sample was 72.4% White, 18.8% Black, 5.9% Asian, 4.6% Mixed, 2.6% Hispanic, and 0.7% Filipino. The gender composition of the sample was 85.3% Female, 9.6% Male, 3.2% Nonbinary Trans, and 1.9% Other.

Procedure

After providing electronic consent, participants completed a reverse correlation (RC) task to generate a classification image (CI) of a person diagnosed with dementia. Following the RC task, participants answered questions about their attitudes toward dementia, completed demographics questions, and read a debriefing screen. The study went through the process of approval with the University of North Florida Institutional Review Board (IRB), ensuring that the rights of the participants were protected.

Reverse Correlation (RC) Task. A base image was created as a morph of an African American man, African American woman, non-Hispanic white man, and non-Hispanic white woman with superimposed random noise (see Figure 1). 3,000 stimuli were produced by adding

and subtracting a sinusoidal noise pattern from the base image. Participants were presented with 12 noisy faces at a time arranged in a 3x4 grid. On each trial, participants were randomly assigned to select the face that most looked like either a person diagnosed with dementia (N = 28), a man diagnosed with dementia (N = 36), a woman diagnosed with dementia (N = 32), a Black man diagnosed with dementia (N = 28), or a Black woman diagnosed with dementia (N = 33). Although there are no specific guidelines on sample size determination for the RC task, 28 participants per condition have been used in previous designs (Dotsch et al., 2008; Schmitz et al., 2021). Participants repeated this task for 250 trials. The recommended number of trials is 90 to produce an accurate CI (Schmitz et al., 2021). Following the completion of the RC task, participant's CI was generated using the rcicr R package (Dotsch, 2015). Each participant's individual CI was computed by averaging the noise extracted from their selections and superimposing it onto a base image.

Figure 1.

The base image used in the reverse correlation task.



Dementia Attitudes Scale (O'Conner & McFadden, 2010). Participants completed a 20-item questionnaire that measured attitudes toward dementia among college students and

caregivers ($\alpha = 0.83 - 0.85$). Participants responded to items on a 7-point Likert scale from 1 to 7 (1 = Strongly Disagree, 7 = Strongly Agree). Higher scores indicate more positive attitudes. Example items are “I am afraid of people with ADRD” and “We can do a lot now to improve the lives of people with ADRD”. All items are presented in Table 1.

Data Analysis

Based on the reverse correlation task, we generated 3,000 images of noisy faces utilizing the `rcirc` R package (Dotsch, 2015). The noisy faces comprised of a base image (see Figure 1) with superimposed random noise. A different noise pattern was generated for each trial. For each stimulus presentation, one image consisted of the base image with random superimposed random noise, and the other images consisted of the opposite noise pattern ensuring. A gray background was added to each image and was converted to grayscale slightly blurring the image.

To test differences and similarities between classification images of a person and men, women or Black men diagnosed with dementia, the `cocor` R package (Diedenhofen, 2022) was used. Specifically, the `cocor` package tested for differences in correlation size between the classification image pixel luminance.

Total sum scores of responses to the Dementia Attitudes Scale (DAS; O’Conner & McFadden, 2010) were then calculated to determine attitudes toward dementia further. The current study.

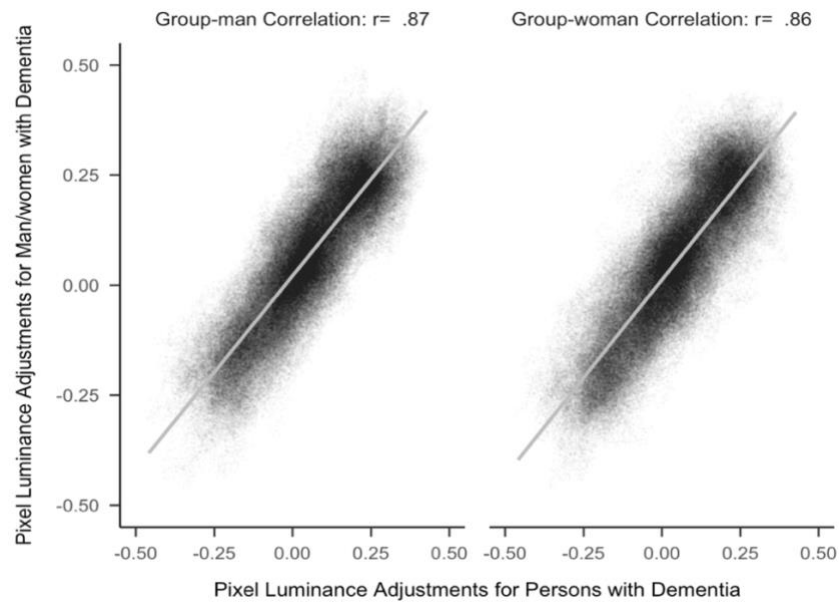
Results

Hypothesis 1: Classification images of people with dementia will be more similar to classification images of men with dementia than women with dementia

As predicted, classification images of people with dementia were more like classification images of men with dementia than women with dementia ($r = -0.88$, $z = -29.16$, $p = < .001$, 95% CI $[-0.013, -.012]$). See Figure 2.

Figure 2.

Side by side comparison of representations a person with dementia with race not specified men and race not specified women.

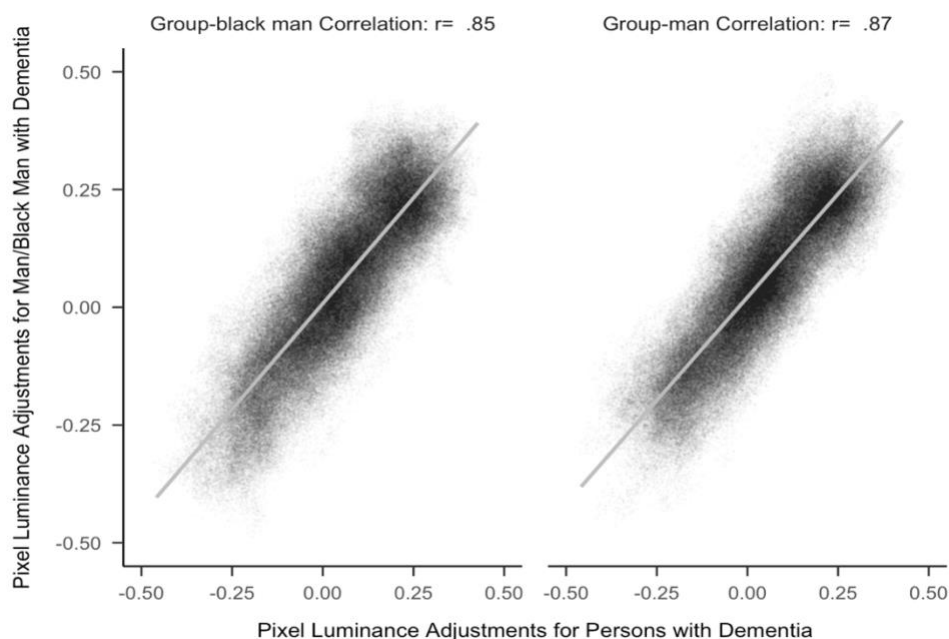


Hypothesis 2: Classification images of people with dementia will be more similar to classification images of men with dementia than Black men with dementia.

Like Hypothesis 1, hypothesis 2 was supported in that classification images of people with dementia were more similar to classification images of men with dementia than Black men with dementia ($r = 0.90$, $z = -47.97$, $p < .001$, 95% CI $[-0.021, -.018]$). See Figure 3.

Figure 3.

Side by side comparison of representations a person with dementia with Black men and race not specified men.

**Table 1.**

Descriptive statistics for Phase I DAS items.

		<i>Total</i>	
		<i>N = 156</i>	
		<i>Mean</i>	<i>SD</i>
<i>Social Comfort</i>			
	1. It is rewarding to work with people who have ADRD.	3.97	1.26
	2. I am afraid of people with ADRD. *	1.77	1.43
	4. I feel confident around people with ADRD.	3.56	1.08
	5. I am comfortable touching people with ADRD.	3.67	1.43
	6. I feel uncomfortable being around people with ADRD. *	2.30	1.58
	8. I am not very familiar with ADRD. *	3.66	1.91
	9. I would avoid an agitated person with ADRD. *	3.80	1.48
	13. I feel relaxed around people with ADRD.	3.14	1.05
	16. I feel frustrated because I do not know how to help people with ADRD. *	3.56	1.31
	17. I cannot imagine caring for someone with ADRD. *	3.09	1.64
Mean Score		32.52	14.17
<i>Dementia Knowledge</i>			
	3. People with ADRD can be creative.	4.34	1.20

7. Every person with ADRD has different needs.	5.19	0.94
10. People with ADRD like having familiar things nearby.	4.36	1.09
11. It is important to know the past history of people with ADRD.	4.77	1.17
12. It is possible to enjoy interacting with people with ADRD.	4.62	1.44
14. People with ADRD can enjoy life.	4.63	1.34
15. People with ADRD can feel when others are kind to them.	4.62	1.26
18. I admire the coping skills of people with ADRD.	4.47	1.01
19. We can do a lot now to improve the lives of people with ADRD.	4.52	1.15
20. Difficult behaviors may be a form of communication for people with ADRD.	4.37	1.00
Mean Score	45.89	11.6
Overall attitude score	78.41	25.77
<i>ADRD, Alzheimer's disease and related dementia. * Reversed scored item.</i>		

Phase 2

Method

Participants

Participants (N = 108) were recruited through Amazon Mechanical Turk (MTurk) who were compensated \$3.50. Demographics revealed that the median age of participants was 35 (age range: 23-64). The racial/ethnic composition of the same was 79.6% Non-Hispanic White, 6.5% More than one race, 2.8% American Indian or Alaskan Native, 1.9% East Asian, 1.9% Black/African American, 0.9% Other, and 6.5% Missing. The gender composition of the sample was 63% Male and 37.3% Female. In addition to demographics, participants responded to two questions about their familiarity with ADRD. 57.4% (n = 62) reported that they knew someone with ADRD and 62% (n = 67) reported that they were familiar with ADRD.

Procedure

After giving electronic consent, participants completed an image rating task. The image rating task aimed to measure impressions of people with dementia. Following the rating task, participants completed a discrimination scenario task. The purpose of this task was to evaluate discriminatory behaviors toward persons with dementia. Finally, participants answered questions about their attitudes toward dementia and demographics and were shown a debriefing screen. The study went through the process of approval with the University of North Florida Institutional Review Board (IRB), ensuring that the rights of the participants were protected.

Classification image rating. Participants were presented with 20 classification images one at a time. Participants rated subgroups (four photos each) from each condition evaluated in Phase 1 (i.e., a person diagnosed with dementia, a man diagnosed with dementia, a man diagnosed with dementia, a black man diagnosed with dementia, and a black woman diagnosed with dementia). Cone et al. (2020) provided support for utilizing subgroup CIs as they reduce Type 1 errors to assess group differences in Phase 2 of the reverse correlation task. Participants rated the classification image sub-conditions computed from Phase 1 on several dimensions (i.e., race, gender, happiness, likeability, age, competency, sociability, and disorientation). Specifically, each image was rated on a 6-point Likert scale. Participants rated the image on race (1 = definitely African American, 6 = definitively White American), gender (1 = definitely male, 6 = definitely female), happiness (1 = extremely unhappy, 6 = extremely happy), likeability (1 = extremely unlikeable, 6 = extremely likable), age (1 = extremely old, 6 = extremely young), competency (1 = extremely incompetent, 6 = extremely competent), sociability (1 = extremely unsociable, 6 = extremely sociable), disorientation (1 = extremely disoriented, 6 = extremely oriented).

Discrimination scenario. Participants were presented with a vignette adopted from Blay et al. (2008) and responded to two questions. The vignette summarized a case of a 70-year-old individual presenting symptoms of Alzheimer's Disease which were consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). For this task, participants were randomly assigned to evaluate a classification image of a Black woman ($N = 59$) or a person ($N = 49$). To prevent any response biases gender neutral pronouns were used and age was omitted from the scenario. Specifically, participants rated how likely they would be to spend the evening socializing with the person (Link et al., 1999) and how likely they would recommend the person in the CI to be admitted into an assisted living home for 24-hour supervision on a 6-point Likert scale (1 = not at all disagree, 6 = completely). Participants were presented with the following vignette:

The person below has been a family friend for several years. A few months ago, their family noticed that they have been getting very forgetful. The person tends to forget facts that have just happened, like what they ate for lunch or who called on the telephone. They also forget to turn off the television or the stove, with serious consequences. Sometimes, they lose important objects like their wallet or house keys. In addition, they also have difficulty recognizing and identifying the names of common things like chairs, tables, and food. All of this is affecting their ability to carry out daily tasks alone, like taking a bath, dressing or grocery shopping. (p. 279)

Dementia Attitudes Scale (O'Conner & McFadden, 2010). Participants completed the same questionnaire administered in Phase 1.

Data Analysis

A two-way ANOVA was conducted to examine negative attitudes based on gender and race of persons diagnosed with dementia. Second, a one-way ANOVA was conducted to evaluate attitudes toward persons diagnosed with dementia at a group level.

For additional analyses, a two-sample t -test was conducted to explore social distance and social isolation among participants. Second, a two-way ANOVA was conducted to examine the interaction of race and gender on the perceived competency of people diagnosed with dementia. Total sum scores of responses to the Dementia Attitudes Scale (DAS; O’Conner & McFadden, 2010) were then calculated to determine attitudes toward dementia further. Last, the superpower package (Caldwell et al., 2022) in R was used to determine that at least 100 participants were needed to provide 80% power for a small effect.

Results

Hypothesis 1: There will be a main effect of gender such that women with dementia will be evaluated more negatively than men with dementia

Women diagnosed with dementia ($M = 3.87$, $SD = 1.11$) were not evaluated more negatively than men diagnosed with dementia ($M = 3.79$, $SD = 1.23$), $F(1,107) = 2.54$, $p = .114$, $ges = .001$.

Hypothesis 2: There will be a main effect of race such that African Americans will be evaluated more negatively than race not specified people

African Americans with dementia ($M = 3.81$, $SD = 1.17$) were not evaluated more negatively than race not specified people with dementia, ($M = 3.85$, $SD = 1.18$), $F(1,107) = 0.52$, $p = .472$, $ges = < .001$.

Hypothesis 3: There will not be an interaction between race and gender

The interaction of race and gender did not influence attitudes toward individuals diagnosed with dementia, $F(1,107) = 2.54, p = .378, ges = <.001$.

Hypothesis 4: Race not specified women will be evaluated more negatively than Race not specified men and Race not specified people

The one-way ANOVA with target gender as the independent variable and likability as the dependent variable was not significant, $F(1.93,205) = 2.43, p = .093, ges = .003$.

Hypothesis 5: Black men will be evaluated more negatively than Race not specified people, and Black women will be evaluated more negatively than Black men

The one-way ANOVA analyzing attitudes toward Race not specified people Black women, and Black men was not significant, $F(1.89,202) = 2.68, p = .074, ges = .003$.

Additional Analyses

Further analyses were conducted to explore participants' responses to the discrimination scenario. First, a two-sample t -test was conducted to measure how likely participants were to spend the evening socializing with race not specified people diagnosed with dementia and black women diagnosed with dementia. Analyses revealed no significant difference between attitudes toward race not specified people ($M = 4.04, SD = 1.40$) and Black women ($M = 4.20, SD = 1.30$), $t(101) = -0.61, p = .541, d = -0.12, [95\% CI = -0.69, 0.36]$.

Second, a two-sample t -test was conducted to measure how likely participants were to recommend race not specified people diagnosed with dementia ($M = 4.40, SD = 1.20$) and black women diagnosed with dementia ($M = 4.70, SD = 1.20$) into an assisted living home for 24-hour supervision. A two-sample t -test revealed no significant differences in attitudes $t(104) = -1.35, p = 0.181, d = -0.26, [95\% CI = -0.77, 0.15]$.

A two-way ANOVA was used to analyze the interaction of race and gender on the perceived competency of persons diagnosed with dementia. Analyses revealed a significant interaction between race and gender, $F(1,107) = 0.72, p = .05, ges = .001$. Specifically, Black women were rated higher in competency ($M = 4.10, SD = 1.02$) compared to Black men ($M = 4.00, SD = 1.09$), race not specified men ($M = 4.07, SD = 1.04$), and race not specified women ($M = 4.03, SD = 1.05$).

Participants responses to the Dementia Attitudes Scale were evaluated (Table 2). The overall mean revealed a score of 93.21 out of 140 (67%). The mean of the sub-scale “social comfort” revealed a score of 39.25 out of 70 (56%) while the sub-scale “dementia knowledge” revealed a mean score of 53.96 out of 70 (77%).

Table 2

Descriptive statistics for Phase 2 DAS items

		<i>Total</i>	
		<i>N = 108</i>	
		<i>Mean</i>	<i>SD</i>
<i>Social Comfort</i>			
	1. It is rewarding to work with people who have ADRD.	5.25	1.09
	2. I am afraid of people with ADRD. *	3.35	2.07
	4. I feel confident around people with ADRD.	5.10	1.43
	5. I am comfortable touching people with ADRD.	5.20	1.36
	6. I feel uncomfortable being around people with ADRD. *	3.18	2.00
	8. I am not very familiar with ADRD. *	3.04	2.00
	9. I would avoid an agitated person with ADRD. *	3.05	2.00
	13. I feel relaxed around people with ADRD.	5.09	1.40
	16. I feel frustrated because I do not know how to help people with ADRD. *	2.80	1.92
	17. I cannot imagine caring for someone with ADRD. *	3.19	2.11

Mean Score	39.25	17.38
<i>Dementia Knowledge</i>		
3. People with ADRD can be creative.	5.32	1.31
7. Every person with ADRD has different needs.	5.50	1.19
10. People with ADRD like having familiar things nearby.	5.36	1.29
11. It is important to know the past history of people with ADRD.	5.37	1.21
12. It is possible to enjoy interacting with people with ADRD.	5.40	1.25
14. People with ADRD can enjoy life.	5.34	1.18
15. People with ADRD can feel when others are kind to them.	5.53	1.13
18. I admire the coping skills of people with ADRD.	5.35	1.23
19. We can do a lot now to improve the lives of people with ADRD.	5.48	1.00
20. Difficult behaviors may be a form of communication for people with ADRD.	5.34	1.39
Mean Score	53.96	12.18
Overall attitude score	93.21	29.56
<i>ADRD, Alzheimer's disease and related dementia. * Reversed scored item.</i>		

Discussion

The findings from Phase 1 provide strong support for two predictions derived from the intersectional invisibility hypothesis (Purdie-Vaughns & Eibach, 2008), which predicts that being a member of more than one minority group causes persons to be seen as 'invisible'. Specifically, in support of Hypothesis 1, classification images of people with dementia were more similar to classification images of men with dementia than women with dementia. This finding is consistent with Hamilton (1991) and Silvera (1980) who demonstrated that individuals imagine a typical person as a man as opposed to a woman.

Second, as predicted by Hypothesis 2, young adults' classification images of people with dementia were more similar to images of men with dementia than Black men with dementia. This finding is consistent with the intersectional invisibility hypothesis because Black men

diagnosed with dementia are members of more than one subordinate group and therefore, they are ‘invisible’.

Phase 2 had five hypotheses derived from the multiple jeopardy hypothesis which predicts that older adults diagnosed with dementia are affected by multiple disadvantages due to their race, gender, age, and dementia diagnosis (Essed, 1991; Cummings et al., 2000). The first hypothesis was not supported as gender did not influence negative attitudes toward persons with dementia. This finding is inconsistent with McConatha et al. (2003) who suggested that gender is the most influential form of identity regarding perceptions of aging. The second hypothesis was also not supported, as race did not influence negative attitudes toward persons with dementia. The finding is inconsistent with the multiple jeopardy hypothesis, which suggests age, discrimination, and prejudice place minority groups at an increased risk of negative attitudes based on their status (Dowd & Bengton, 1978; Markides, 1983; Ferraro & Farmer, 1996).

The third hypothesis was partially supported. Race and gender did not influence negative attitudes among participants when evaluating how ‘likable’ they perceived the person to be. However, race and gender did influence how competent participants perceived the person. Specifically, Black women were perceived as more competent than Black men, race not specified men, and race not specified women. This finding is inconsistent with Sontag (1972), who found older men are seen as more competent and intelligent compared to women.

The fourth hypothesis which suggested that race, not specified women will be evaluated more negatively than race not specified men and race not specified people was not supported. Ageism affects women more than men (McConatha, 1999; Franzio et al. 1989; Busso et al. 2019) because society associates women's identities with their physical appearance, but men are not held to the same standard. Therefore, this finding is inconsistent with previous literature.

Finally, hypothesis five states that Black men will be evaluated more negatively than race not specified people. This finding was not supported and is inconsistent with Phills et al., (2018) and Esses et al., (1993). Esses et al. (1993) found that in the early 1990s participants held negative stereotypes toward ethnic groups. Phills et al. (2018) achieved similar findings, specifically, participants explicitly evaluated Blacks, East Asians, and South Asians more negatively compares to Whites. Hypothesis five also stated that Black women will be evaluated more negatively that Black men. This finding was not supported and is inconsistent with the multiple jeopardy hypothesis which suggests that being a member of two or more stigmatized groups can place persons at a higher disadvantage (Essed, 1991; Cummings et al., 2000).

Phase 2 revealed a lack of negative attitudes which may be because more than half of Phase 2 participants (57.4%, $n = 62$) reported that they know someone with ADRD. This finding is consistent with Lunquist and Ready (2008), who found that young adults who shared close relationships with persons diagnosed with Alzheimer's Disease expressed increased positive attitudes and decreased stigma toward the disease. Also, a greater number of participants stated that they were familiar with ADRD (62%, $n = 67$). Increased knowledge and understanding about diseases are effective in reducing negative attitudes and reducing stigma (Mukadam & Livingston, 2012; Blay & Peluso, 2010; Roman & Floyd, 1981). Therefore, although the results did not support that participants held negative attitudes towards persons diagnosed with dementia, factors like education and close contact can explain these results.

Strengths

The current study is the first to study visual stereotypes of people diagnosed with dementia. Previous studies have focused on data generated through questionnaires/survey data rather than pictures (Lunquist and Ready, 2008, Gellis et al., 2003). Therefore, the present study

is important because visual stereotypes have been related to discriminatory behaviors toward certain social groups. Specifically, the study utilized the reverse correlation method which has several advantages in assessing implicit biases. Persons tend to base social judgments on faces which form rapidly. Several studies have demonstrated that social judgments of faces predict significant social outcomes (Dotsch & Todorov, 2012; Todorov & Oosterhof, 2011; Brinkman et al., 2019 & Brown-Iannuzzi et al., 2017).

Second, the present study focused on differences in perceptions of dementia based on race and gender. Previous research has focused efforts on identifying knowledge of and attitudes toward aging, however, there is a limited focus on dementia perception while considering the intersectionality of demographic characteristics (i.e., gender and race) among young adults (Cummings et al. 2000; Intrieri et al. 2017). For example, Intrieri et al. (2017) identified racial differences in knowledge and attitudes about aging and contact with older adults among non-Hispanic white and African American undergraduates. In addition, Cummings et al. (2000) examined how knowledge of aging influenced anxieties toward aging based on the gender and race of participants aged 18-55. It is important to examine the differences in attitudes toward dementia, specifically when perceiving the intersection of race and gender in young adults given the future projections indicating 13.9 million older adults will be diagnosed with ADRD by 2060 (Matthews et al., 2018). Young adults will become caregivers later and findings can be used to inform dementia stigma interventions at an early age.

Limitations

It is important to note that the present findings may not represent young adults in the general public, as the sample was recruited through the University of North Florida SONA Research Participation System. Utilizing student samples can lead to sampling bias and impact

generalizability (Wild et al., 2022). University students are reported to be more educated and of a higher socioeconomic (SES) background than non-university adults and therefore, are not representative of the general population. This is consistent with Snowberg and Yariv, 2021 who found that student participants differed from the general young adult population as student participants performed higher in a cognitive skill domain. Research participants in the current study were mostly UNF undergraduate participants in a psychology class or pursuing a degree in psychology. Also, 72.4% ($n = 110$) of the sample represented young adults who identified as White. These characteristics represent a very specific group of young adults unique to UNF which may differ among young adults at other universities and colleges, or young adults who are not pursuing further education. Future researchers should collaborate with other degree programs and community colleges which tend to have a more diverse pool of young adults and establish community partnerships to target young adults outside a school setting. This can also help to provide insight into how other individual factors (i.e., differences in education attainment, SES, and gender) and contextual factors (i.e., culture) may affect visual perceptions that may not have been captured utilizing UNF SONA participants.

Future research should also specifically focus on marginalized groups like African Americans and Hispanics. Study participants were predominantly non-Hispanic White participants; Phase 1 ($n = 110$, 72.4%), Phase 2 ($n = 92$, 85.2%). Buchanan et al. (2021) and Roberts et al. (2020) suggests that predominantly white samples are problematic as it prevents insight into physical/mental health disparities among racial and ethnic minorities. Regarding the present study, utilizing a predominantly white sample does not provide an accurate perception of dementia among other racial/ethnic groups. African Americans and Hispanics are at a higher risk for cognitive decline but are less likely to be clinically diagnosed and included in clinical trials

targeting ADRD (Michos et al., 2021; Alzheimer's Association, 2020; Amof et al., 2022).

Barriers including lack of knowledge and dementia stigma are prominent in communities like African Americans and Hispanics which causes persons to not seek help when symptoms are present (Danner et al., 2008; Herrmann et al., 2018). Because young adults will be the future of caretaking, focusing a study on a predominantly marginalized sample can provide insight into their perceptions of dementia and an avenue to educate communities about dementia to improve attitudes toward dementia.

Theoretical Implications

The present study provided a test of two theories: the intersectional invisibility hypothesis and the multiple jeopardy hypothesis. Results of Phase 1 supported the theory of intersectional invisibility hypothesis because men were the default when making depictions of people diagnosed with dementia. These findings extend research on the intersectional invisibility hypothesis by identifying attributions toward other subordinate groups. They also have broad implications for the social perception of intersecting identities. Previous research has speculated that there are differences in perceptions of medical diagnoses. Specifically, when asked to think about coronary heart disease, the typical image is a man which is contrary to women being linked to breast cancer (Biddle et al., 2020; Woodward, 2019). Certain combinations of identities when perceiving health conditions (i.e., Black man diagnosed with dementia) are uncommon. They may require more effortful processing compared to other combinations like persons diagnosed with dementia or men diagnosed with dementia. Because of the increased effort, persons tend not to engage in the process leading to groups being seen as invisible (i.e., women and Black men). This finding can explain which African Americans are more likely to be misdiagnosed and have a delay in an ADRD diagnosis (Stephenson, 2001). Because they may

not fit in social perceptions of what someone with dementia looks like, it may lead certain groups to be ‘invisible’.

Phase 2 findings produced mixed support for the multiple jeopardy hypothesis as differences in perceived competency revealed Black women were viewed as more competent compared to Black men, race not specified men, and race not specified people. However, other findings did not reveal negative attitudes toward social groups diagnosed with dementia, which is inconsistent with the double jeopardy and multiple jeopardy hypothesis. Mixed results may have been due to participants' familiarity and contact with people diagnosed with dementia. These findings have implications highlighting the importance of anti-stigma interventions. Dementia stigma is prevalent among other groups like healthcare professionals (Vernooji-Dassen et al., 2005; Cahill et al., 2008; Piver et al., 2013), caregivers (Mackenzie, 2006), and ethnic/racial minorities (Jang et al., 2010; Liu et al., 2008; Woo & Chung, 2013). Due to the expected growth of the aging population in the United States, it is important to identify approaches that can help promote positive attitudes and reduce biases about dementia.

Conclusion

Overall, men were found to be the default when perceiving people diagnosed with dementia. Also, although negative attitudes toward dementia were not found among participants with respect to likability, differences were found in how they perceived groups as competent. These findings emphasize the theory of intersectional invisibility hypothesis as distinct forms of prejudice due to intersecting identities rendering certain groups of persons diagnosed with dementia to be invisible. Further, differences in competence informed the multiple jeopardy hypotheses in a direction that was not predicted, as Black women were seen as more competent compared to other groups. Further findings revealed that participants were familiar with and

knew someone diagnosed with AD, which suggests that interventions focused on educating persons and increasing contact with people diagnosed with dementia might be a means of reducing dementia-related stigma.

References

- Albohn, D. N., & Adams, R. B. (2020). Everyday Beliefs About Emotion Perceptually Derived From Neutral Facial Appearance. *Frontiers in Psychology*, 11, 264.
<https://doi.org/10.3389/fpsyg.2020.00264>
- Alzheimer's Association. (2017). 2017 Alzheimer's disease facts and figures. *Alzheimer's & Dementia*, 13(4), 325-373. <https://www.alz.org/alzheimers-dementia/facts-figures>
- Alzheimer's Association. (2021). *Special Report – Race, Ethnicity and Alzheimer's in America* <https://www.alz.org/media/Documents/alzheimers-facts-and-figures-special-report-2021.pdf>
- Alzheimer's Association, (2022). *Overcoming Stigma*. <https://www.alz.org/help-support/i-have-alz/overcoming-stigma>
- Anderson, D., & Wiscott, R. (2004). Comparing social work and non-social work students' attitudes about aging: Implications to promote work with elders. *Journal of Gerontological Social Work*, 42(2), 21-36.
- Baquero, M., & Martín, N. (2015). Depressive symptoms in neurodegenerative diseases. *World journal of clinical cases*, 3(8), 682–693. <https://doi.org/10.12998/wjcc.v3.i8.682>
- Biddle, C., Fallavollita, J. A., Homish, G. G., Giovino, G. A., & Orom, H. (2020). Gender differences in symptom misattribution for coronary heart disease symptoms and intentions to seek health care. *Women & health*, 60(4), 367–381.
<https://doi.org/10.1080/03630242.2019.1643817>
- Blay, S. L., Furtado, A., & Peluso, E. T. (2008). Knowledge and beliefs about help-seeking behavior and helpfulness of interventions for Alzheimer's disease. *Aging & mental health*, 12(5), 577–586. <https://doi.org/10.1080/13607860802343050>

- Bodner, E., & Lazar, A. (2008). Ageism among Israeli students: structure and demographic influences. *International Psychogeriatrics*, 20(5), 1046-1058.
- Brinkman, L., Dotsch, R., Zondergeld, J., Koevoets, M. G., Aarts, H., & van Haren, N. E. (2019). Visualizing mental representations in schizophrenia patients: A reverse correlation approach. *Schizophrenia Research: Cognition*, 17, 100138.
- Brown-Iannuzzi, J. L., Dotsch, R., Cooley, E., & Payne, B. K. (2017). The Relationship Between Mental Representations of Welfare Recipients and Attitudes Toward Welfare. *Psychological science*, 28(1), 92–103. <https://doi.org/10.1177/0956797616674999>
- Brooks, J. A., Stoller, R. M., & Freeman, J. B. (2018). Stereotypes Bias Visual Prototypes for Sex and Emotion Categories. *Social Cognition*, 36(5), 481–493. <https://doi.org/10.1521/soco.2018.36.5.481>
- Brown-Iannuzzi, J. L., McKee, S., & Gervais, W. M. (2018). Atheist horns and religious halos: Mental representations of atheists and theists. *Journal of Experimental Psychology: General*, 147(2), 292–297. <https://doi.org/10.1037/xge0000376>
- Buchanan, N. T., Perez, M., Prinstein, M. J., & Thurston, I. B. (2021). Upending racism in psychological science: Strategies to change how science is conducted, reported, reviewed, and disseminated. *The American psychologist*, 76(7), 1097–1112. <https://doi.org/10.1037/amp0000905>
- Burgener, S. C., & Berger, B. (2008). Measuring perceived stigma in persons with progressive neurological disease: Alzheimer's dementia and Parkinson's disease. *Dementia*, 7(1), 31-53.

- Cahill, S., Clark, M., O'Connell, H., Lawlor, B., Coen, R. F., & Walsh, C. (2008). The attitudes and practices of general practitioners regarding dementia diagnosis in Ireland. *International journal of geriatric psychiatry*, 23(7), 663–669.
<https://doi.org/10.1002/gps.1956>
- Caldwell, A., Lakens, D., DeBruine, L., Love, J., Aust, F. (2022). Superpower: Simulation-Based Power Analysis for Factorial Designs. <https://cran.r-project.org/web/packages/Superpower/index.html>
- Canetto, S. S., Kaminski, P. L., & Felicio, D. M. (1995). Typical and optimal aging in women and men: Is there a double standard? *The International Journal of Aging and Human Development*, 40(3), 187-207.
- Carter, C. L., Resnick, E. M., Mallampalli, M., & Kalbarczyk, A. (2012). Sex and gender differences in Alzheimer's disease: recommendations for future research. *Journal of women's health*, 21(10), 1018-1023.
- Coles, S. M., & Pasek, J. (2020). Intersectional invisibility revisited: How group prototypes lead to the erasure and exclusion of Black women. *Translational Issues in Psychological Science*, 6(4), 314–324. <https://doi.org/10.1037/tps0000256>
- Cone, J., Brown-Iannuzzi, J. L., Lei, R., & Dotsch, R. (2021). Type I error is inflated in the two-phase reverse correlation procedure. *Social Psychological and Personality Science*, 12(5), 760-768.
- Cuddy, A. J., Norton, M. I., & Fiske, S. T. (2005). This old stereotype: The pervasiveness and persistence of the elderly stereotype. *Journal of social issues*, 61(2), 267-285.

- Cummings, S. M., Kropf, N. P., & Weaver, K. L. D. (2000). Knowledge of and attitudes toward aging among non-elders: Gender and race differences. *Journal of Women & Aging*, 12(1-2), 77-91.
- Degner, J., Mangels, J., & Zander, L. (2019). Visualizing Gendered Representations of Male and Female Teachers Using a Reverse Correlation Paradigm. *Social Psychology*, 50(4), 233–251. <https://doi.org/10.1027/1864-9335/a000382>
- DeViney, S., & Solomon, J. C. (1996). Gender differences in retirement income: A comparison of theoretical explanations. *Journal of women & aging*, 7(4), 83-100.
- Devlin, E., MacAskill, S., & Stead, M. (2006). We're still the same people: Developing a mass media campaign to raise awareness and challenge the stigma of dementia. *International Journal of Nonprofit and Voluntary Sector Marketing*, 12(1), 47–58. <https://doi.org/10.1002/nvsm.273>
- Diedenhofen, B., (2022). cocor: Comparing Correlations. <https://cran.r-project.org/web/packages/cocor/index.html>
- Dotsch, R. (2015). rcicr: Reverse-correlation image-classification toolbox. <https://cran.r-project.org/web/packages/rcicr/index.html>
- Dotsch, R., Wigboldus, D. H. J., Langner, O., & van Knippenberg, A. (2008). Ethnic Out-Group Faces Are Biased in the Prejudiced Mind. *Psychological Science*, 19(10), 978–980. <https://doi.org/10.1111/j.1467-9280.2008.02186.x>
- Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological and Personality Science*, 3(5), 562-571.
- Dowd, J. J., & Bengtson, V. L. (1978). Aging in minority populations an examination of the double jeopardy hypothesis. *Journal of Gerontology*, 33(3), 427-436.

- Eng, K. J., & Woo, B. K. (2015). Knowledge of dementia community resources and stigma among Chinese American immigrants.
- Essed, P. (1991). *Understanding everyday racism: An interdisciplinary theory* (Vol. 2). Sage.
- Feagin, J. R. (2018). The continuing significance of race: Antiracist discrimination in public places. In *The Inequality Reader*, 269-275.
- Ferraro, K. F., & Farmer, M. M. (1996). Double jeopardy, aging as leveler, or persistent health inequality? A longitudinal analysis of white and black Americans. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 51(6), S319-S328.
- Fineman, N. (1994). Health care providers' subjective understandings of old age: Implications for threatened status in late life. *Journal of Aging Studies*, 8(3), 255-270.
- Follmer, D. J., Sperling, R. A., & Suen, H. K. (2017). The role of MTurk in education research: Advantages, issues, and future directions. *Educational Researcher*, 46(6), 329–334.
<https://doi.org/10.3102/0013189X17725519>
- Gellis, Z. D., Sherman, S., & Lawrance, F. (2003). First year graduate social work students' knowledge of and attitude toward older adults. *Educational Gerontology*, 29(1), 1-16.
- Goffman, E. (1963) *Stigma: Notes on the Management of Spoiled Identity*. Englewood Cliffs, NJ: Prentice Hall.
- Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data collection in a flat world: The strengths and weaknesses of Mechanical Turk samples. *Journal of Behavioral Decision Making*, 26(3), 213-224.
- Gunaydin, G., & DeLong, J. E. (2015). Reverse Correlating Love: Highly Passionate Women Idealize Their Partner's Facial Appearance. *PLOS ONE*, 10(3), e0121094.
<https://doi.org/10.1371/journal.pone.0121094>

- Gunderson, A., Tomkowiak, J., Menachemi, N., & Brooks, R. (2005). Rural physicians' attitudes toward the elderly: evidence of ageism? *Quality Management in Healthcare*, 14(3), 167-176.
- Hamilton, M. C. (1991). Masculine bias in the attribution of personhood: People= male, male= people. *Psychology of Women Quarterly*, 15(3), 393-402.
- Hamilton, D. L., & Sherman, J. W. (1994). Stereotypes (In RS Wyer & TK Srull (Eds.). *Handbook of social cognition*, 2, 1–68.
- Hebert, L. E., Scherr, P. A., Bienias, J. L., Bennett, D. A., & Evans, D. A. (2003). Alzheimer's disease in the US population: prevalence estimates using the 2000 census. *Archives of Neurology*, 60(8), 1119-1122.
- Hepworth, M. (1995). Positive aging. What is the message? *The sociology of health promotion: Critical analyses of consumption, lifestyle, and risk*, 176-190.
- Herrmann, L. K., Welter, E., Leverenz, J., Lerner, A. J., Udelson, N., Kanetsky, C., & Sajatovic, M. (2018). A systematic review of dementia-related stigma research: can we move the stigma dial? *The American Journal of Geriatric Psychiatry*, 26(3), 316-331.
- Intrieri, R. C., & Kurth, M. L. (2018). Racial differences in attitudes toward aging, aging knowledge, and contact. *Educational Gerontology*, 44(1), 40-53.
- Joachim, G., & Acorn, S. (2000). Stigma of visible and invisible chronic conditions. *Journal of advanced nursing*, 32(1), 243-248.
- Kane, A., Murphy, C., & Kelly, M. (2020). Assessing implicit and explicit dementia stigma in young adults and care-workers. *Dementia*, 19(5), 1692-1711.

- Lasher, K. P., & Faulkender, P. J. (1993). Measurement of aging anxiety: Development of the anxiety about aging scale. *International Journal of Aging and Human Development*, 37(4), 247-259.
- Lee, Y. S. (2009). Measures of student attitudes on aging. *Educational Gerontology*, 35(2), 121-134.
- Lin, C., Adolphs, R., & Alvarez, R. M. (2018). Inferring Whether Officials Are Corruptible From Looking at Their Faces. *Psychological Science*, 29(11), 1807–1823.
<https://doi.org/10.1177/0956797618788882>
- Liu, D., Hinton, L., Tran, C., Hinton, D., & Barker, J. C. (2008). Reexamining the relationships among dementia, stigma, and aging in immigrant Chinese and Vietnamese family caregivers. *Journal of cross-cultural gerontology*, 23(3), 283-299.
- Luleci, N. E., & Hidiroglu, S. (2021). Stigma and Alzheimer's disease. *Marmara Medical Journal*, 34(2), 13-16.
- Lundquist, T. S., & Ready, R. E. (2008). Young Adult Attitudes About Alzheimer's Disease. *American Journal of Alzheimer's Disease & Other Dementias*®, 267-273. <https://doi.org/10.1177/1533317508317818>
- Mackenzie, J. (2006). Stigma and dementia: East European and South Asian family carers negotiating stigma in the UK. *Dementia*, 5(2), 233-247.
- Mahoney, D. F., Cloutterbuck, J., Neary, S., & Zhan, L. (2005). African American, Chinese, and Latino family caregivers' impressions of the onset and diagnosis of dementia: cross-cultural similarities and differences. *The Gerontologist*, 45(6), 783-792.
- Markides, K. S. (1983). Ethnicity, aging, and society: Theoretical lessons from the United States experience. *Archives of gerontology and geriatrics*, 2(3), 221-228.

- Matthews, K. A., Xu, W., Gaglioti, A. H., Holt, J. B., Croft, J. B., Mack, D., & McGuire, L. C. (2019). Racial and ethnic estimates of Alzheimer's disease and related dementias in the United States (2015–2060) in adults aged ≥ 65 years. *Alzheimer's & Dementia*, 15(1), 17–24.
- McConatha, J. T., Schnell, F., & McKenna, A. (1999). Description of older adults as depicted in magazine advertisements. *Psychological Reports*, 85(3), 1051–1056.
- McConatha, J. T., Schnell, F., Volkwein, K., Riley, L., & Leach, E. (2003). Attitudes toward aging: a comparative analysis of young adults from the United States and Germany. *International journal of aging & human development*, 57(3), 203–215.
<https://doi.org/10.2190/K8Q8-5549-0Y4K-UGG0>
- McConatha, J. T., Hayta, V., Rieser-Danner, L., McConatha, D., & Polat, T. S. (2004). Turkish and US attitudes toward aging. *Educational Gerontology*, 30(3), 169–183.
- Milne, A. (2010). The ‘D’word: Reflections on the relationship between stigma, discrimination, and dementia. *Journal of Mental Health*, 19(3), 227–233.
- Moyle, W. (2003). Nursing students’ perceptions of older people: continuing society’s myths. *The Australian Journal of Advanced Nursing*, 20(4), 15–21.
- O'Connor, M. L., & McFadden, S. H. (2010). Development and psychometric validation of the dementia attitudes scale. *International Journal of Alzheimer's disease*, 2010.
- Oliveira, M., Garcia-Marques, T., Dotsch, R., & Garcia-Marques, L. (2019). Dominance and competence face to face: Dissociations obtained with a reverse correlation approach. *European Journal of Social Psychology*, 49(5), 888–902.
<https://doi.org/10.1002/ejsp.2569>
- Palmore, E. B. (1998). *The Facts on Aging quiz* (2nd ed.). New York: Springer.

- Phills, C. E., Williams, A., Wolff, J. M., Smith, A., Arnold, R., Felegy, K., & Kuenzig, M. E. (2018). Intersecting race and gender stereotypes: Implications for group-level attitudes. *Group Processes & Intergroup Relations*, 21(8), 1172-1184.
- Piver, L. C., Nubukpo, P., Faure, A., Dumoitier, N., Couratier, P., & Clément, J. P. (2013). Describing perceived stigma against Alzheimer's disease in a general population in France: the STIG-MA survey. *International journal of geriatric psychiatry*, 28(9), 933–938. <https://doi.org/10.1002/gps.3903>
- Population Reference Bureau, (2021). *Fact Sheet: U.S. Dementia Trends*.
https://www.prb.org/resources/fact-sheet-u-s-dementia-trends/#_edn2
- Purdie-Vaughns, V., & Eibach, R. P. (2008). Intersectional invisibility: The distinctive advantages and disadvantages of multiple subordinate-group identities. *Sex roles*, 59(5), 377-391.
- Royse, S. K., Cohen, A. D., Snitz, B. E., & Rosano, C. (2021). Differences in Alzheimer's Disease and Related Dementias Pathology Among African American and Hispanic Women: A Qualitative Literature Review of Biomarker Studies. *Frontiers in systems neuroscience*, 69.
- Schmitz, M., Rougier, M., & Yzerbyt, V. (2021). Introducing the brief reverse correlation.
- Schug, J., Alt, N. P., & Klauer, K. C. (2015). Gendered race prototypes: Evidence for the non-prototypicality of Asian men and Black women. *Journal of Experimental Social Psychology*, 56, 121-125.
- Seefeldt, C., & Ahn, U. R. (1990). Children's attitudes toward the elderly in Korea and the United States. *International Journal of Comparative Sociology*, 31, 248.

- Sesko, A. K., & Biernat, M. (2010). Prototypes of race and gender: The invisibility of Black women. *Journal of Experimental Social Psychology*, 46(2), 356-360.
- Silveira, J. (1980). Generic masculine words and thinking. *Women's Studies International Quarterly*, 3(2-3), 165-178.
- Sontag, S. (1972). The Double Standard of Aging. *Psychology of Women: Selected Readings*, J. Williams (ed.), Academic Press, New York, 462-478.
- Snowberg, E., & Yariv, L. (2021). Testing the waters: Behavior across participant pools. *American Economic Review*, 111(2), 687-719.
- Stephenson, J. (2001). Racial barriers may hamper diagnosis, care of patients with Alzheimer's disease. *JAMA*, 286(7), 779-780.
- Stites, S. D., Johnson, R., Harkins, K., Sankar, P., Xie, D., & Karlawish, J. (2018). Identifiable characteristics and potentially malleable beliefs predict stigmatizing attributions toward persons with Alzheimer's disease dementia: Results of a survey of the US general public. *Health communication*, 33(3), 264-273.
- Swaffer, K. (2014). Dementia: stigma, language, and dementia-friendly. *Dementia*, 13(6), 709-716.
- Todorov, A., & Oosterhof, N. N. (2011). Modeling social perception of faces [social sciences]. *IEEE Signal Processing Magazine*, 28(2), 117-122.
- Towner, E. M. (2006). Assessment of geriatric knowledge: An online tool for appraising entering APN students. *Journal of Professional Nursing*, 22(2), 112-115.
- Urbańska, K., Szcześniak, D., & Rymaszewska, J. (2015). The stigma of dementia. *Postępy Psychiatrii i Neurologii*, 24(4), 225-230.

- Vernooij-Dassen, M. J., Moniz-Cook, E. D., Woods, R. T., Lepeleire, J. D., Leuschner, A., Zanetti, O., ... & Iliffe, S. (2005). Factors affecting timely recognition and diagnosis of dementia across Europe: from awareness to stigma. *International Journal of Geriatric Psychiatry: A journal of the psychiatry of late life and allied sciences*, 20(4), 377-386.
- von dem Knesebeck, O., Angermeyer, M. C., Lüdecke, D., & Kofahl, C. (2014). Emotional reactions toward people with dementia—results of a population survey from Germany. *International Psychogeriatrics*, 26(3), 435-441.
- Werner, P. (2014). Stigma and Alzheimer's disease: A systematic review of evidence, theory, and methods.
- Wild, H., Kyröläinen, A. J., & Kuperman, V. (2022). How representative are student convenience samples? A study of literacy and numeracy skills in 32 countries. *Plos one*, 17(7), e0271191.
- Woodward M. (2019). Cardiovascular Disease and the Female Disadvantage. *International journal of environmental research and public health*, 16(7), 1165.
<https://doi.org/10.3390/ijerph16071165>
- Woo, B. K., & Chung, J. O. (2013). Public stigma associated with dementia in a Chinese-American immigrant population. *Journal of the American Geriatrics Society*, 61(10), 1832–1833. <https://doi.org/10.1111/jgs.12472>
- Yuri Jang, Kim, G., & Chiriboga, D. (2010). Knowledge of Alzheimer's disease, feelings of shame, and awareness of services among Korean American elders. *Journal of aging and health*, 22(4), 419–433. <https://doi.org/10.1177/0898264309360672>

Vicki A. Freedman, Jennifer C. Cornman, and Judith D. Kasper, [*National Health and Aging Trends Study Chart Book: Key Trends, Measures and Detailed Tables*](#), 2021.