NEGATIVE MOOD IMPACTS THE RELATIONSHIP BETWEEN EXPLICIT AND

IMPLICIT AGE-RELATED ATTITUDES

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ABSTRACT

The Implicit Association Test (IAT; Greenwald, McGhee, and Schwartz, 1998) has become a widely used method of measuring individuals' implicit preferences based on the speed of sorting words or images into respective categories in a computerized task. Age IATs have been used to ascertain implicit preference judgments towards young and old faces and to compare these ratings with explicit, self-reported age-related measures. Generally, research has found a positive relationship between implicit and explicit attitudes, as well as an overall bias towards younger age. However, in examining the relations between explicit beliefs about aging and implicit age preferences, the individual factors that might influence this relationship have not been fully explored. The present study seeks to examine the role that mood, specifically anxiety and depression, may play on influencing that relationship. Consistent with previous research, our results found a positive relationship between explicit beliefs and implicit age preferences. Further, negative mood was shown to predict implicit age attitudes above and beyond the predictive ability of explicit beliefs. The implications of these findings are discussed in the context of better understanding the differences between explicit and implicit attitudes of age.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the College of Arts and Sciences, have examined a thesis titled "Negative Mood Impacts the Relationship between Explicit and Implicit Age-Related Attitudes," presented by Norah C. Hass, candidate for the Master of Arts degree, and certify that in their opinion it is worthy of acceptance.

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CHAPTER 1

INTRODUCTION

Implicit attitudes are defined as automatic, unconscious preferences that do not require conscious introspection to be measured (Nosek, Greenwald, & Banaji, 2005). The Implicit Association Test (IAT; Greenwald, McGhee, and Schwartz, 1998) has been used to measure implicit preferences across a variety of subjects, including attitudes about the self and others. Implicit attitudes are often correlated in research with explicit, self-reported attitudes, or with other related constructs. What is overlooked, though, is the impact that individual factors may have on the relationship between implicit and explicit views. In the present study, the influence of individuals' moods, specifically depression and anxiety, is considered in its relation to implicit and explicit attitudes towards old age. Research has shown that high anxiety individuals report more rumination and worry but less future-oriented thoughts, suggesting that such individuals may perpetuate their anxiety through negatively-biased thoughts about their current state (Hughes, Alloy, & Cogswell, 2008). However, anxiety has not been considered in how it may specifically relate to ageist attitudes. Depressive symptoms are linked to a negative cognitive viewpoint and biases towards negative stimuli (e.g., Beck, 1967), but again, depressed mood has not been examined in how it might shape attitudes towards older adults. Measures on anxiety, depression, implicit age attitudes, and explicit beliefs about one's aging were used to ascertain the role that mood factors would play on the association between implicit and explicit aging attitudes. We found that measures of negative mood not only correlated with both explicit and implicit aging beliefs, but also explained implicit age biases when controlling for explicit beliefs. The implications of these findings are discussed in the context of better understanding the differences between explicit and implicit attitudes of age and how they impact older adults.

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CHAPTER 2

REVIEW OF THE LITERATURE

Implicit and Explicit Attitudes

Implicit attitudes are cognitions that are unconsciously held and considered to be automatic associations, sometimes held without full conscious realization (Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Greenwald & Banaji, 1995; Nosek, Greenwald, & Banaji, 2005). These automatic preferences are theorized to take one of two forms. They may either be below conscious abilities to retrieve, similar to a forgotten memory, or be in some way undesirable for an individual to want to share openly, such as socially unacceptable views or views that are dissonant from one's schemas or publicly-shared beliefs (Greenwald & Banaji, 1995; Nosek et al., 2007). Nosek and colleagues (2007) further state that retrieval of implicit attitudes does not require conscious reflection or introspection, but can be achieved without deliberate intention. Explicit attitudes, on the other hand, are those beliefs of which we are both consciously aware and willing to share with others. Commonly measured through self-report, these are attitudes which we propose to hold as true and find socially allowable for others to know. Because it is possible to be consciously aware of an attitude but unwilling to share it, it becomes important to look to implicit attitudes to uncover more genuine assessments of preferences. Further, examining the underlying differences between explicit and implicit reporting provides useful information on what factors contribute to this discrepancy. Evidence exists of both convergent and discriminant validity between implicit and explicit attitudes (Nosek & Smyth, 2007). Research has not only shown that explicit attitudes do not fully predict or explain implicit attitudes, but that other factors—such as social desirability, self-preservation, and affect—may

be involved besides explanations of explicit and implicit attitudes as related but distinct

constructs (Cherry, Allen, Denver, & Holland, 2015; Nosek, Greenwald, & Banaji, 2007).

Implicit Association Tests and Age

The Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) has become

a widely used method of measuring an individual's implicit preferences based on their

association of a category (e.g., black people, obese people) with a judgment (e.g., bad, lazy)

toward numerous topics, including gender roles, political alignments, and sexual orientations. In

a computerized task, individuals are asked to sort words or images into the appropriate category

on the screen by using corresponding keystrokes that match the displayed location of the

category. The categories are presented dually, that is, paired with another category, typically one

social and one evaluative in nature (e.g., normal weight/obese body images and good and bad

words might be paired as normal weight images with good words and obese images with bad

words). After acclimation trials with just one category being sorted at a time, the heart of the test

begins: participants must now sort both the topical and judgment categories at the same time,

with one response choice of each sharing a keystroke for the duration of a trial block. The

pairings are switched to be counterbalanced in the next block (e.g., obese with bad one block,

obese with good the next block), so that a "congruent" block, that is, a block of trials where the

word pairings are in line with the researcher's expectations (e.g., obese and bad) and an

"incongruent" block exist. The speed and accuracy at which an individual responds on trials is

calculated into a preference score, which is thought to operationalize implicit attitudes toward the

category, object, or peoples covered in that test. The basis of this logic is that strongly associated

words will be more quickly categorized (as shown through reaction times) when they are

congruently paired (e.g., share the same response key) as opposed to when they are incongruently paired (Coates & Campbell, 2010).

IATs have been used extensively in measuring implicit attitudes, with topics of the research spanning social, political, and personal realms. In addition to the topics of gender roles, political alignments, and sexual orientations mentioned above, IAT research has also focused on weight, race, and disability biases and stigma (e.g., Greenwald et al., 1998; Greenwald & Nosek, 2001; Hummert, Garstka, O'Brien, Greenwald, & Mellott, 2002; Wang, Brownell, & Wadden, 2004). Criticisms of IATs have centered on the validity and reliability of the tests, most notably when their usage strays from the original measurement intentions of the creators (Blanton et al., 2009; Nosek, Greenwald, & Banaji, 2005). However, supporters of the IAT have produced numerous studies to combat criticisms against the reliability of the measure and have successfully addressed or further specified many ambiguities, in particular about measurement, order effects, and interpretation (e.g., Nosek, Greenwald, & Banaji, 2007; McConnell & Leibold, 2009; Nosek et al., 2005). Despite the criticisms that remain, IATs are considered a valid manner of measuring implicit preferences within the guidelines provided by the authors for methods and interpretation.

Age-related IATs have often been used to ascertain implicit valence judgments towards young and old adults, and to compare these ratings with explicit age-related measures (e.g., Greenwald, Nosek, & Banaji, 2003; Nosek, Banaji, & Greenwald, 2002). Research on age IATs has shown that implicit attitudes suggest a bias towards the young and show varying levels of associations with explicit measures of ageism and old age beliefs (Greenwald et al., 2003; Hummert et al., 2002; Mingzheng, 2005; Nosek et al., 2002; Nosek et al., 2007). Findings demonstrate that both old and young participants, male and female, tend to show a pro-young

implicit bias, although older adults express it less when self-reporting (Nosek et al., 2007). Nosek and colleagues (2007) also found that the pro-young trend persists across all the ethnicities measured. However, explicit beliefs cannot fully predict implicit beliefs, suggesting that other factors may play into the difference between the two constructs.

In examining the relations between explicit age views and implicit age preferences, research has focused on explicit attitudes (i.e. prejudice) against old age and older adults (Hummert et al., 2002; Mingzheng, 2005; Nosek et al., 2002). To our knowledge, studies have not considered how the individual's beliefs about their own personal aging trajectory might impact implicit age attitudes. Expectations for one's own aging process, though, are intuitively likely to affect and be affected by implicit attitudes about age. Although it is a well-known fact that aging is inevitable, how one approaches the idea of his/her own aging expectations is likely to be heavily influenced by his/her personal, current outlook on life. This outlook, be it pessimistic or optimistic, may potentially play a role in determining an individual's implicit attitudes towards older age; however, the individual factors that might influence this relationship have not been fully explored.

Individual Factors of Mood

Implicit Association Tests have provided useful information on implicit preferences across many variables. In interpreting these findings, though, it is critical to take into account individual factors which may impact biases, especially when considering the highly personal topic of aging. Given the suppressive impact that social desirability can have on explicit aging beliefs (Cherry et al., 2015), it is important to explore theoretically relevant factors that might explain some of the difference between implicit performance and explicit reporting. Anxiety and depression are explored here as mood factors that may relate to aging attitudes. Both are

associated with maladaptive views rooted in dysfunctional schemas, beliefs, and cognitions. In the context of Age IATs, it is possible that anxious and depressive symptoms may impact preference results due to the relevance of personal aging to one's own beliefs and ideas about older age.

Anxiety

Previous research on anxiety and age attitudes has demonstrated that individuals high in aging-specific anxiety or in anxiety about contact with older adults express more negative attitudes and show more avoidant behavior (e.g., less social contact) towards old people than low-anxiety counterparts (Bousfield & Hutchison, 2010; Greenberg, Schimel, & Martens, 2002; Wisdom, Connor, Hogan, & Callahan, 2014). The relationship between anxiety and ageism has also been linked through findings that those who have high anxiety about aging tend to hold more ageist beliefs (Wisdom et al., 2014). Research exploring explicit and implicit anxiety self-reports has also shown that trait anxiety influences implicit anxiety task performance regardless of whether state anxiety is manipulated beforehand. Specifically, researchers challenged whether induced anxiety was the only influence on anxiety IAT scores and found that trait anxiety, with no situational anxiety priming, impacted participants' performance on an anxiety-IAT (Huang, Yang, Miao, Lu, & Zhu, 2012). Although this report specifically measured the impact of anxiety on an anxiety-specific IAT, both the nature of their findings and the relationship between anxiety and aging suggest that anxiety may influence scores on other IATs as well.

While it is important to consider how aging-specific anxiety may influence aging attitudes as well as how self-reported anxiety may relate to implicit anxiety measures, it is equally informative to explore how more general anxiety may impact implicit age attitudes. Shifting the focus from what past research has done, we intend to examine whether anxiety

interacts with the relationship of explicit and implicit aging biases, operationalizing anxiety by either one's current general mood or one's characteristic levels of symptoms. In one study, induced, acute anxiety was shown to impact implicit depression and self-esteem (Creemers, Scholte, Engels, Pieter, & Wiers, 2013). To our knowledge, though, state and trait anxiety have not been considered in how they may relate to ageist attitudes. Given that anxiety is defined in part by a worry about the future and a lower activation threshold for attending to perceived threats, we intend to explore how this might impact implicit attitudes about older adults. Individuals high on anxiety have reported more rumination and worry but less future-oriented thought or planning, suggesting that anxious individuals may perpetuate their anxiety through negatively-biased thoughts about their current state (Hughes, Alloy, & Cogswell, 2008). In a study that controlled for depression, severity of anxiety symptoms was found to relate negatively to quality of life and psychosocial functioning (D'Avanzato et al., 2013). Findings such as these suggest that highly anxious individuals view the state of their lives pessimistically and thus judge their current status—perhaps including their age—as undesirable and their quality of life poor. Anxiety symptoms are also known to be highly comorbid with depression, which may also impact one's attitudes about age due to its association with negative cognitions.

Depression

Depressed individuals are often characterized by their negative outlook on life. Depressed mood is associated with a cognitive bias towards focusing on negative occurrences that exhibits itself through a greater difficulty shifting attention away from negative stimuli or events in the environment because these are congruent with their negative mood (Nolen-Hoeksema, 1991). Depression typically includes rumination, negative thoughts, negative schemas, and negative views towards the present, and a more basic, conscious attentional bias towards negative stimuli

(Beck, 1967; Beck et al., 1979; Mogg & Bradley, 1998). Meta-analysis has shown that this attention bias in depressed individuals remained stronger than in non-depressed individuals even when other factors such as age, gender, or method of measurement were considered (Peckham, McHugh, & Otto, 2010). A review of the mechanisms underlying depression also supports the idea that depression develops and is perpetuated by a cognitive bias towards processing negative information about one's self and one's environment, which leads to the creation of dysfunctional schemas that thereby perpetuate the individual's poor mood by increasing their selective attention to schema-consistent (i.e., negative) stimuli and decreasing their awareness of schema-inconsistent (i.e., positive) environmental information (Clark, Beck, & Alford, 1999; Disner, Beevers, Haigh, & Beck, 2011). Depression has also been associated with having a negative self-image or self-concept and was found to relate to less optimistic biases about self-perceptions and less self-enhancement in cognitions than non-depressed individuals (Alloy, Wagner, Black, Gerstein, & Abramson, 2011). Further, low implicit self-esteem has been shown to relate with being clinically depressed (Risch et al., 2010). Given the association between depression and negative thoughts and feelings, an evaluation of one's self—including their age group—may not be as positive for a depressed individual than for someone without depressive symptoms.

Summary

Older adults are often stigmatized, negatively stereotyped to be deficient in physical, cognitive, and social functioning (Montepare & Zebrowitz, 2002) and consequently can be subjected to patronizing or belittling treatment (Castelli, Zecchini, Deamicis, & Sherman, 2005). The impact of ageist behaviors on older adults' quality of life is generally driven by ageist attitudes. It is important to explore the nature of the attitudes underlying these behaviors and judgments in younger adults and to tease apart the differences between the expression of explicit

and implicit attitudes, since implicit measures more directly relate to behavior, yet still can differ significantly from explicitly stated attitudes. Age IATs are often used to measure implicit prejudice against older adults, yet research has shown that explicit self-reports on ageist beliefs have varying correlation with implicit attitudes. Examining the relationship between explicitly reported views on aging and implicitly held ageist attitudes paints a better picture of one's beliefs about aging and is informative in predicting how one might behave towards an older adult as well. Explicit attitudes cannot fully predict implicitly-held attitudes, and one reason for this difference may be the influence of affect or mood factors of the individual that impact their attitudes. Anxiety and depression both involve dysfunctional cognitions about the self, others, and events, but neither has been examined in the context of how symptom levels may also influence implicit attitudes towards older adulthood. Exploring the role of mood factors on the relationship between explicit and implicit age biases may provide useful information for interpreting how age-related attitudes are determined.

Study Aims

There are two primary aims of this study: (1) establishing the existence of specific variable relationships and (2) exploring the predictive contributions of these variables on implicit age attitudes. First, the authors seek to confirm previous findings of the relationship between explicit beliefs and implicit age preferences. This relationship has been demonstrated in previous research (Greenwald et al., 2003; Hummert et al., 2002; Nosek et al., 2002; Nosek et al., 2007), but it has not been explored with explicit age preferences defined as personal expectations considering one's own aging. Because it is likely that aging expectations would be associated with implicit age attitudes, and because measuring explicit attitudes in this way is a new angle of approach for examining the implicit/explicit age attitudes relationship, establishing a relationship

between aging expectations and implicit age attitudes has the potential to increase our broader understanding of these constructs. In addition, the authors aim to explore whether negative mood, specifically anxiety and depression levels, is associated with implicit aging scores. Although previous studies have found a negative relationship between aging expectations and mood symptoms (Li et al., 2013; Sarkisian et al., 2005), to our knowledge, no research has directly tested whether relationships exist between depressive and anxious symptoms and implicit age attitudes.

With regard to the second aim of this study, we seek to determine whether explicit measures of one's own beliefs about aging are predictive of implicit aging biases. Further, we intend to explore how depression and anxiety levels may impact the predictive relationship between explicit and implicit age-related attitudes and may explain implicit scores above and beyond the explanatory abilities of explicit measures alone. As mentioned above, a negative relationship between aging expectations and mood symptoms has been observed in previous research (Li et al., 2013; Sarkisian et al., 2005). Determining how mood factors that may contribute to or influence the explicit/implicit attitude relationship is important not only for knowing the limitations of this relation but also, in the context of aging, for understanding how the symptomology of the individual who demonstrates an implicit and/or explicit bias may play a role in their perception of older age.

In sum, the specific aims and hypotheses of this study are as follows:

▸ **Aim 1, Hypothesis 1:** To confirm previous findings of an association between implicit age preference scores and explicit aging-related measures. Based on previous literature, we hypothesize that explicit measures of aging beliefs about the self, specifically the Expectations Regarding Aging Survey (ERA-12; Sarkisian, Steers, Hays, & Mangione,

2005), will be correlated with age IAT scores. The ERA-12 has three domain-specific subscales, namely, Mental Health, Physical Health, and Cognitive Function. We expect that higher scores on these three subscales will each be positively and independently associated with higher implicit attitude scores, that is, with greater implicit bias against older adults. Research has shown that explicit biases against older adults relate to similar implicit biases (Greenwald et al., 2003; Hummert, Garstka, O'Brien, Greenwald, & Mellott, 2002; Nosek et al., 2002; Nosek et al., 2007). While these explicit measures look at opinions about others, the ERA-12 scale measures beliefs about one's own aging process. Thus, we expect that higher expectations for one's own aging will correlate with an implicit bias pro-young bias, given that these individuals report that they expect (somewhat unrealistically) to age with less mental, physical, and cognitive health changes (i.e., expect to maintain current young health characteristics) than those who score lower on this measure, and thus are explicitly expressing a pro-young bias in their thoughts about themselves. Different than other explicit scales, this measure does not assess whether the individual has unfavorable attitudes about older adults, or if he/she views being old as a bad outcome. Because the ERA-12 only directly measures perceptions of the aging process, we expect higher scores on the IAT to be more indicative of pro-young biased cognitions. We also anticipate that this scale will correlate negatively with our mood scales, as has been shown in previous research (Li et al., 2013; Sarkisian et al., 2005).

▸ **Aim 1, Hypothesis 2:** The second part of the first aim of this research is to explore the relationship between negative mood, specifically anxiety and depression, and implicit age attitudes. We predict that higher reported depression and anxiety levels both would

correlate negatively with a bias against older-aged adults (i.e., an anti-young bias). Mood will be captured using the Beck Depression Inventory- II (BDI-II; Beck, Steer, & Brown, 1996) and the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). We anticipate a negative correlation because we expect that those in our young adult sample who score higher on depression and/or anxiety will perceive the current status of their life as less desirable and thus demonstrate an anti-young bias in their implicit attitudes.

▸ **Aim 2, Hypothesis 1:** Our second aim will first investigate the ability of explicit aging beliefs to predict implicit age attitudes. We hypothesize that explicit aging expectations about mental health, physical health, and cognitive function will significantly contribute to explaining implicit age attitudes, as measured by the Mental Health, Physical Health, and Cognitive Function subscales of the ERA-12 and the Age IAT, respectively.

▸ **Aim 2, Hypothesis 2:** Our final aim is to explore whether negative mood will impact the relationship between explicit and implicit age attitudes. We expect that depression and anxiety will make a unique combined contribution to predicting implicit attitudes above and beyond the contributions of explicit beliefs (i.e., when controlling for these beliefs). That is to say, we anticipate that mood, specifically anxiety and depression levels, will increase the predictability of implicit age bias from explicit aging attitudes. We also intend to explore whether specific components of explicit attitudes and mood stand alone as unique predictors of implicit attitudes within their constructs.

CHAPTER 3

METHOD

Participants and Procedure

Sixty-eight undergraduates (M_{age} = 23.5, SD = 7, 20 males, 44 Caucasian) were recruited from a mid-sized, Midwest, public university. Interested students over the age of 18 registered online via the university's Psych Pool, an online research participant recruitment system. Participation took place in a private research room and lasted approximately 30- 45 minutes. All participants provided informed consent before beginning the study and were briefed by trained research assistants of the voluntary nature of their participation and the complete confidentiality of their responses. This data was collected as a part of a larger project examining multiple research questions, however, this study specifically consisted of completing a facial age IAT as well as self-report measures of depression, anxiety, and personal expectations about aging. Compensation was awarded through Psych Pool in the form of course extra credit for those who completed the study. The study protocol was reviewed and approved by the university's Institutional Review Board (IRB).

Measures

Age Attitude IAT. Participants completed the Age Attitude IAT task developed by Nosek and colleagues (2007) using Inquisit (Seattle, 2013) software. This task consists of 12 facial images, 6 young (3 male, 3 female) and 6 old (3 male, 3 female) Caucasian faces with neutral expressions that were cropped at the forehead and chin and displayed in black and white in the center of the screen (see Appendix A for task examples). The judgment categories were between good (i.e., joy, love, peace, wonderful, pleasure, glorious, laughter, and happy) and bad (i.e., agony, terrible, horrible, nasty, evil, awful, failure, and hurt) target words, presented in

green in the center of the screen. All stimuli were selected and presented randomly within their respective category for each participant. Categorical decisions for words and images were made by pressing the "e" or "i" keyboard keys when the category name was shown in text in the left or right top corner of the screen, respectively.

Categories were first presented in Block 1 with only "young" and "old" judgments being made (20 trials total, 10 young and 10 old with gender represented equally and specific images selected randomly), then only "good" and "bad" word judgments in Block 2 (20 trials total, 10 good and 10 bad), to acclimate participants to the tasks. After being presented each by themselves, the categories were combined and presented in Blocks 3 and 4 such that the participant was required to select the same key for both a good/bad judgment and a young/old judgment. Categories were first paired congruently, that is, according to what is expected to be the stronger association, with "Young or Good" in the top left corner, and "Old or Bad" in the top right. Block 3 consisted of 20 trials and Block 4 with 40, split evenly between age and valence judgments and separated by a break screen which reminded the participants of the instructions. Block 5 followed as a reversed presentation of Block 1, that is, with the location of the age word category switched to acclimate the participant to a new layout and prevent handedness effects. Blocks 6 and 7 combined judgments ("Old or Good" and "Young or Bad") in this new, counterbalanced configuration from Blocks 3 and 4. As in Blocks 3 and 4, Blocks 6 and 7 consisted of 20 and 40 trials (respectively) split evenly between young/old judgments and good/bad judgments. The presentation of the task was not modified from the standard IAT developed by Greenwald and colleagues (2007). Trials were presented indefinitely until the participant gave a response. If an incorrect response was given, a red "X" appeared underneath the word or image. The participant was then required to remediate their choice by selecting the

correct response before they moved on to the next trial (see Figure 2). There was a 250 ms inter-

trial interval between selecting the correct response and the presentation of the next trial. The

entire task took approximately 5 minutes to complete.

Unlike most IATs, no performance feedback was given to participants to inform them of

their scores. Scores were calculated based on the trials of Blocks 3, 4, 6, and 7 (e.g., the

congruent compared to the incongruent blocks) using the same method recommended by the

authors of the IAT (Greenwald et al., 2003) with the exception of handling incorrect trials.

Greenwald and colleagues (2003) suggest "penalizing" incorrect responses by forcing the

participant to correct their error before moving on to the next trial, letting the extra time it takes

for them to make this correction serve as a subjective (but varying) penalty on their total latency

for that trial, and, if desired, adding a standard time penalty as well (e.g., 400 ms) for the error.

To be conservative and remove the possibility of confounding cognitive processes being

involved, we decided to calculate scores based only on correct trials, and did not use the latencies

from incorrect trials. For our task, we excluded 8% of trials as errors (5% of the congruent; 11%

of the incongruent). There was no significant difference between the number of errors on young

faces compared to old faces, $t(67)= -1.20$, $p = .24$. As expected, there was a significant difference

between the number of congruent trials and incongruent trials removed as errors, $t(67) = 9.28$, p

$< .001$. Because there were more errors on the incongruent trials, excluding these from our

scoring computations actually lowered the magnitude of the effect in our scores. Had these trials

been included with a penalty, the latencies for incongruent (i.e., old-good and young-bad) trials

would have been even longer and pushed scores more strongly towards the congruent direction

(i.e., old-bad and young-good). Further, excluding error trials removed the possible confounds of

additional cognitive processes being involved in these sorting decisions. The direction of the IAT

score value demonstrates the alignment of the preference, with positive scores indicating a pro-young (or anti-old) bias, and negative scores indicating an anti-young (or pro-old) bias. Higher absolute values of IAT scores indicate a stronger preference in that direction.

Anxiety. The State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983) was given to participants to measure anxiety. The STAI is a widely-used 40-item, self-report anxiety inventory rated on a 4-point Likert-type scale that captures two types of anxiety: state, or event-dependent anxiety, and trait, or persistent demonstrations of anxiety as a personal characteristic. It was included for the purposes of this study to capture both an individual's short-term expression of anxiety (i.e., state anxiety) as restricted by directions in the instructions asking participants to think only of the past two weeks, and an individual's enduring experiences of anxiety symptoms. Anxiety scores on the STAI are calculated by reverse-coding select responses and then summing the total point values of the items, with higher scores indicating higher levels of anxiety for both the state and trait subscales.

Depression. Depressive symptoms were measured using the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a commonly used 21-item, multiple-choice self-report which captures affect, cognitions, and physical symptoms of depression over the previous two weeks before completion. On this measure, higher scores indicate greater endorsement of depression symptoms. The BDI-II was considered an adequate and appropriate measure of current depressive mood for the purposes of this study.

Aging Expectations. The Shortened Expectations Regarding Aging (ERA-12) Survey (Sarkisian, Hays, Steers, & Mangione, 2005) is a twelve-item version of the ERA-38, a scale used to measure expectations regarding aging. The ERA-12 was determined using factor analysis into three subscales: expectations regarding physical health, mental health, and cognitive

function. Scores on each subscale are standardized onto a 0-100 range of possible scores. For the physical health subscale, higher scores demonstrate higher expectations held in regards to aging in the domain of physical health, and lower scores indicate lower expectations in physical health. Similarly, higher scores on the mental health and cognitive function subscales indicate higher expectations in both of those domains, with lower scores demonstrating lower expectations. Although this scale is typically used to measure the aging expectations of older adults, we included it to capture the changes predicted by participants to happen to them as they age in order to determine if those related to their implicit age attitudes.

Planned Analysis

Aim One, Hypotheses One and Two

The first hypothesis, which expects to support previous research by demonstrating a relationship between implicit age attitudes and explicit expectations regarding aging, will be tested through simple correlation analysis between the three ERA-12 subscales and the IAT scores. Similarly, we will test the prediction that depression and anxiety may negatively relate to implicit and explicit aging attitudes by analyzing the correlations between the BDI-II, the STAI-S and the STAI-T with the IAT scores and ERA-12 scores.

Aim Two, Hypothesis One

The first hypothesis of the secondary aim will be tested by performing a multiple regression analysis. For this hypothesis, in which implicit age attitudes are expected to be predicted from explicit expectations about aging, IAT scores will be entered into the regression equation as the dependent variable and the three subscales of the ERA-12 will be entered simultaneously into the model as predictors. If any factors appear to contribute uniquely in themselves (i.e., beyond the contributions of the factors when considered as a grouped variable),

stepwise multiple-regression will be conducted to clarify these contributions for each subscale on predicting aging attitude scores.

Aim Two, Hypothesis Two

The second hypothesis of this aim, which predicts that individual mood differences will explain implicit age attitudes above and beyond the contributions of explicit beliefs, will be tested within the same simultaneous-entry multiple regression analysis as hypothesis one. That is to say, age IAT scores will be entered as the dependent variable, and ERA-12 subscales will be entered as explicit belief predictors in the first step. In a second step of the regression, the three variables of depression and anxiety scores (i.e., the BDI, STAI-S and STAI-T) will be entered simultaneously as predictors. By entering them in a second model of the same regression, we will be able to determine the variance of IAT scores explained by these variables when controlling for the contributions of explicit aging expectations to predict implicit scores. Similar to the first regression analysis to be conducted for hypothesis one, any unique contributors that are statistically significant on their own will have their independent contributions clarified through a regression analysis using stepwise-entry in both steps for entering the explicit belief predictors and the mood factor predictors.

CHAPTER 4

RESULTS

Demographics and Descriptives

Demographic information is shown in Table 1. Our sample consisted of 68 total participants, M_{age} = 23.5, SD = 7, and was predominantly female (N= 48, 71%) and Caucasian (N= 44, 64.7%). Descriptive statistics from measures of depression, anxiety, explicit attitudes about aging, and implicit age attitudes are included as well, as captured by the BDI, STAI, ERA-12, and IAT, respectively. Overall, our sample showed a moderate preference for younger adults compared to older adults, which is in accord with previous literature findings (Greenwald et al., 2003; Hummert et al., 2002; Nosek et al., 2002; Nosek et al., 2007; Mingzheng, 2005).

Table 1. *Summary of Demographics and Self-Report Data Descriptives*

Total N= 68	Mean (n)	Standard Deviation (%)
Gender		
Male	20	29%
Female	48	71%
Age	23.5	7
Ethnicity		
Caucasian	44	64.7%
Hispanic	3	4.4%
African-American	13	19.1%
Asian	5	7.4%
Other	3	4.4%
Self-Report Measures		
Age IAT	.49	.45
ERA- Physical Health	29.78	13.01
ERA- Mental Health	56.80	13.26
ERA- Cognitive Function	32.35	15.53
STAI- State Anxiety	33.40	9.02
STAI- Trait Anxiety	39.06	9.77
BDI	7.35	5.53

To address our first hypotheses, namely, that explicit age beliefs and implicit age attitudes would be associated, simple correlations were conducted. Similarly, correlation analyses were performed to test for a relationship between depression and anxiety symptoms with implicit aging preferences (see Table 2). The results showed that two ERA-12 subscales related positively to implicit age attitude biases: higher expectations for both mental health (ERA- Mental) and cognitive function (ERA- Cognitive) were positively associated with an implicit anti-old (or pro-young) bias, $r = .28$, $p < .05$, and $r = .33$, $p < .01$. Depressive symptoms showed a negative relationship to implicit age bias, $r = -.24$, $p = .05$. Both state and trait anxiety also were negatively associated with implicit age bias, $r = -.31$, $p = .01$, and $r = -.37$, $p < .01$. All three mood scales, namely, state anxiety, trait anxiety, and depression, also correlated negatively with mental health expectations, $r = -.37$, $p < .01$, $r = -.49$, $p < .001$, and $r = -.39$, $p < .001$, respectively.

Table 2. *Correlation Matrix*

	1	2	3	4	5	6
1. Age IAT						
2. ERA-Physical	.192					
3. ERA-Mental	.281*	.434***				
4. ERA-Cognitive	.327**	.354**	.515***			
5. STAI-State	-.311**	.017	-.369**	-.268*		
6. STAI-Trait	-.371**	-.082	-.486***	-.127	.648***	
7. BDI	-.239*	-.139	-.388***	-.104	.578***	.713***

Note: ERA-Physical = Physical Health, ERA-Mental= Mental Health, ERA-Cognitive= Cognitive Function, STAI-State= State Anxiety, STAI-Trait= Trait Anxiety
*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$*

Multiple Regression Analyses

Our second aim was to investigate the ability of explicit aging beliefs to predict implicit age attitudes, then to examine whether mood factors would also predict implicit attitudes when controlling for explicit beliefs. We tested our hypothesis that explicit aging expectations about mental health, physical health, and cognitive function and participants' mood will significantly predict implicit age attitudes by conducting a multiple regression analysis with simultaneous entry of the variables into two steps— first the explicit measures, secondly the mood measures— for predicting implicit age attitudes. Specifically, the mental health, physical health, and cognitive function subscales of the ERA were entered simultaneously into the first step, and the depression, state anxiety, and trait anxiety measures were entered simultaneously in the second step. The overall regression was significant, $R = .48$, $R^2 = .23$, *adjusted* $R^2 = .16$, $F(6,61) = 3.06$, $p < .05$ (see Table 3). Based on the multiple correlation coefficient, implicit attitudes could be predicted moderately well from this set of variables, with approximately 23% of the variance accounted for by the regression. The first model, predicting IAT scores from only explicit beliefs, was significant, $R = .36$, $R^2 = .13$, *adj* $R^2 = .09$, $F(3,64) = 3.08$, $p < .05$. Adding depression and anxiety scores in a second step of the model also contributed significantly to explaining IAT scores when controlling for explicit beliefs, $R^2_{change} = .11$, $F_{change}(3,61) = 2.79$, $p < .05$. When examining the contributors of individual predictors, trait anxiety contributed significantly in itself to predicting IAT scores, $t(61) = -2.07$, $p < .05$, and cognitive function was approaching significance at $t(61) = 1.95$, $p = .056$. The direction of these relationships were as expected, with higher trait anxiety predicting stronger anti-young attitudes, and higher expectations for cognitive function related to stronger anti-old biases.

Table 3. *Multiple Regression Examining Predictors of Implicit Age Attitude* (*n*= 68)

Predictors	B(SE)	B	t	p	95% Confidence Intervals	
					Lower Bound	Upper Bound
Full Model: F(6, 61) = 3.06, *p* < .05, *R* = .48, R^2 = .23, *adjusted* R^2 = .16						
Model 1:						
Constant	-.046 (.232)		-.199	.843	-.511	.418
ERA- Mental Health	.005 (.005)	.138	.958	.342	-.005	.014
ERA- Cognitive Function	.007 (.004)	.240	1.734	.088	-.001	.015
ERA- Physical Health	.002 (.005)	.047	.358	.772	-.007	.011
Model 2:						
Constant	1.053 (.446)		2.360*	.021	.161	1.946
ERA- Mental Health	-.003 (.005)	-.090	-.561	.577	-.014	.008
ERA- Cognitive Function	.008 (.004)	.273	1.949	.056	.000	.016
ERA- Physical Health	.004 (.005)	.116	.883	.381	-.005	.013
Depression	.007 (.014)	.089	.536	.594	-.020	.034
State Anxiety	-.004 (.008)	-.075	-.466	.643	-.020	.012
Trait Anxiety	-.018 (.009)	-.386	-2.065*	.043	-.035	-.001

Note. All predictors simultaneously entered into the models.
*p < .05 (2-tailed).
**p < .01 (2-tailed).
***p < .001 level (2-tailed).

In order to determine whether hypotheses regarding cognitive function and trait anxiety would explain implicit attitudes independent of the other scales within their construct, the regression analysis was repeated using a stepwise entry method for both steps. As shown in Table 4, the overall model was significant, *R* = .47, R^2 = .22, *adj* R^2 = .19, *F*(2,65) = 9.05, *p* < .001. The multiple correlation coefficient was .47, indicating that 22% of the variance could be accounted for by expectations of cognitive functioning and trait anxiety. In Step 1, explicit

beliefs still predicted IAT scores, $R = .33$, $R^2 = .11$, $adj\ R^2 = .09$, $F(1,66) = 7.92$, $p < .01$, but only

cognitive function was entered into the model for contributing significantly in itself to predicting

IAT scores, $t(66) = 2.81$, $p < .01$. No other explicit aging beliefs were significant, and therefore

no other variables were entered into the first model. Step 2 was significant when controlling for

cognitive function, $R^2_{change} = .11$, $F_{change}(1,65) = 9.19$, $p < .01$, with trait anxiety the only

significant mood predictor in Step 2, $t(65) = -3.03$, $p < .01$. Cognitive function still contributed

significantly, $t(65) = 2.57$, $p < .05$. Thus, it appears as though these two factors (ERA- Cognitive

Function and Trait Anxiety) can successfully predict implicit age attitudes in themselves.

Table 4. *Stepwise Multiple Regression Predicting Implicit Age Attitudes* (*n*=68)

Predictors	B(SE)	B	t	p	95% Confidence Intervals	
					Lower Bound	Upper Bound
Full Model: F (2,65) = 9.05, p < .001, R = .47, R² = .22, adj R² = .19.						
Model 1:						
Constant	.185 (.121)		1.534	.130	-.056	.426
ERA- Cognitive Function	.009 (.003)	.327	2.814**	.006	.003	.016
Model 2:						
Constant	.827 (.240)		3.440**	.001	.347	1.307
ERA- Cognitive Function	.008 (.003)	.285	2.574*	.012	.002	.015
Trait Anxiety	-.015 (.005)	-.335	-3.031**	.003	-.026	-.005

Note. All predictors entered stepwise into the model.
*$p < .05$ (2-tailed).
**$p < .01$ (2-tailed).
***$p < .001$ level (2-tailed).

Discussion

Americans are collectively becoming older and living longer. It is estimated that 19.7%

of the U. S. population is over the age of 60, with men living an average of 76.4 years and

women an average of 81.2 (The Economist, 2014). Because a significant portion of our society's

population is composed of older adults, it is important to understand and address views towards

older adults and aging that persist in society. There are often discrepancies between measures of implicit and explicit attitudes towards a subject, particularly aging, because of the conceptual differences between automatic and conscious preferences. Significant social implications exist for older adults who are treated in an age-biased way, making it important to determine the factors that might contribute to this discrepancy. Social desirability is thought to play a role by influencing the strength and severity of reporting in explicit measures (Cherry et al., 2015), but it does not suffice as the full explanation for the differences between these constructs. The intent of the present study was to explore whether differences in self-reported mood might relate to the implicit/explicit age attitude relationship.

The first aim of our study was to confirm previous findings of a relationship between implicit and explicit aging attitudes. We were able to replicate previous demonstrations of this relationship (e.g., Nosek et al., 2007) and also extend it in measuring direct views on one's personal aging expectations, a nuanced difference from opinions about older age or older adults in a less personal context. More specifically, this measure does not assess whether the individual has unfavorable attitudes about older adults, or if being old is viewed as a bad outcome, but rather measures how realistically one anticipates their own aging to be. Higher self-reported expectations for one's own mental health and cognitive function in older adulthood positively correlated with an implicit pro-young bias. This would suggest that holding high personal expectations for mental health and cognitive function may interact with implicit attitudes towards older aged persons, motivating these attitudes which favor young adults. These individuals who show an implicit preference for younger faces, explicitly express expectations to function as if still young beyond what would be expected in older age. Thus, this bias to view themselves as still functioning "as if young" in older age appears to parallel an implicit bias towards younger

adults. It is unclear, however, why this pattern did not hold for physical health expectations. However, physical health expectations were on average lower across participants than the other two, indicating that participants may not have as optimistic of expectations in this domain and thus did not report high enough beliefs for this relationship to occur.

Our second hypothesis predicted a relationship between measures of mood and both implicit and explicit attitudes. This hypothesis was supported, with depression, trait anxiety, and state anxiety all negatively correlating with implicit age bias. Higher reported (yet still mostly subclinical) mood symptoms related to a more anti-young (i.e., pro-old) bias, which is contrary to the overall anti-old bias commonly seen in most adults (Nosek et al., 2007). These results suggest that negative views about the present may relate to negative implicit views about one's current age group and point in life, thus causing a shift from the typical bias found in healthy adults. Given the tendency for depressed individuals to perpetuate negative self-evaluations and the attentional bias towards schema-consistent information that is associated with depression (e.g., Disner, Beevers, Haigh, & Beck, 2011; Clark, Beck, & Alford, 1999; Alloy, Wagner, Black, Gerstein, & Abramson, 2011), it seems likely that this focus is linked to a negative implicit attitude about their own, current age group. Similarly, the attentional bias in anxiety towards worry and rumination in the present (Hughes, Alloy, & Cogswell, 2008) as well as the association between anxiety and lower reported current quality of life (D'Avanzato et al., 2013) may explain the negative relationship between anxiety symptoms and age bias. For both depression and anxiety symptoms, it is suspected that anti-young cognitions, and not specifically pro-old cognitions, are responsible for driving the implicit biases in such a manner. Relations between anxiety and depression with explicit attitudes of expectations regarding mental health were also found, suggesting that individuals with poorer current mental health also expected to

have poorer mental health in older age. This finding has been found in other research as well (e.g., Li et al., 2013; Sarkisian et al., 2005) and supports our decision to use this scale as a way of measuring explicit attitudes.

We also found that explicit views about aging were able to predict an implicit age-bias. Specifically, higher aging expectations across the three domains predicted implicit anti-old attitudes, suggesting that implicit age bias is at least partially explainable by one's personal expectations about aging. Given that participants may not be as willing to admit explicitly ageist attitudes due to social acceptability perceptions, it is worth recognizing that inquiries about their own aging expectations may be more informative about their implicit attitudes in place of explicit aging attitudes. This finding adds to the body of research on the relationship between explicit and implicit aging views (e.g., Hummert et al., 2002; Nosek et al., 2002; Mingzheng, 2005) as well as suggests the relevance of personal aging outlook for understanding implicit ageist attitudes that influence behavior toward others. Further, our results indicated that mood was able to predict implicit attitudes above and beyond the ability of explicit beliefs. Individuals' mood factors of depression and anxiety uniquely contributed to explaining implicit age attitudes when controlling for explicit beliefs, supporting our hypothesis that mood factors are beneficial to consider when interpreting implicit attitudes. Negative mood is often thought to bias how one views themselves and the world around them. From these findings, it would appear as though the impact of negative mood may go a step further, biasing implicit attitudes about age as well. Previous research has found that depression impacts implicit self-esteem attitudes, with currently depressed individuals demonstrating lower implicit self-esteem than non-depressed or remitted depressive patients (Risch et al., 2010). Also, acute, induced stress has been shown to impact implicit but not explicit depression and self-esteem (Creemers et al., 2013), thus reconfirming the

need to explore factors that could influence both constructs. The findings of the current study illuminate the key role that mood plays in influencing implicit and explicit age attitudes. Because previous implicit attitudes research has not examined this topic specifically in the context of aging, it is important for future research to explore the role that mood might play on implicit attitudes relevant to one's self-image.

When exploring the unique contributions of our explicit and mood variables in predicting implicit age attitudes, we found that expectations regarding cognitive function in particular significantly predicted anti-age bias. Thus, it would appear that expectations regarding cognitive function and performance in older age are particularly salient in identifying implicit age biases. Whereas physical health expectations in older age have been shown to relate to physical activity levels (Meisner, Weir, & Baker, 2013; Sarkisian, Prohaska, Wong, Hirsch, & Mangione, 2005), expectations of mental and cognitive health have not revealed this connection. Thus, it is possible that these two constructs relate more strongly to implicit aging attitudes than physical health, because they appear less controllable and thus an unavoidable consequence of older age. This explanation fits well with the correlational relationships we found, but does not explain why only expectations of cognitive functioning, and not mental health, could significantly predict implicit attitudes. We speculate that perhaps mental health is perceived as more medically manageable than declining cognitive functioning, but future research would be necessary to clarify the mechanisms behind the perception of control and inevitability in these constructs. The impact of expectations regarding cognitive functioning still held when adding mood factors into the model, of which only trait anxiety was able to independently predict implicit attitudes. General trait anxiety likely showed this relationship through an overlap with aging-specific anxiety, which is known to relate to stronger anti-old attitudes (Wisdom et al., 2014). The

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relationship between trait anxiety and explicit attitudes is likely different, encompassing a worry about future personal health and performance. Thus, trait anxiety may play a notably important role in how explicit and implicit biases are manifested. This analysis provided clarification for the individual predictive abilities of cognitive functioning expectations and trait anxiety in how they concurrently aid in the prediction of implicit age bias.

Our study has several limitations to be noted. First, in choosing to use a young adult sample, we are not able to generalize our findings to how older adults' implicit and explicit views on aging may be impacted by mood. However, given previous research demonstrating that older adults hold an anti-old bias similar to younger adults (Nosek et al., 2007), we speculate that the role mood might have on older adults would be to strengthen negative attitudes towards their current, older age. Future research in this area would be useful in confirming or denying this speculation. Also, our sample was primarily Caucasian (64.7%), and the facial images were all Caucasian. Thus, it is difficult to determine from our findings whether differences may exist between judgments of different ethnic groups and if in-group or out-group bias may have influenced performance when performing the task with Caucasian-only images. Also, mood was measured by using self-reports, which, though generally considered accurate in estimating symptoms, is nonetheless subject to reporting biases. Future research would benefit from a more inclusive measurement of mood variations including a clinical interview, as well as from longitudinal information relating to whether implicit attitudes change if mood states change or if mood-related traits (e.g., anxiety) are addressed through treatment. If changes in mood over time impact implicit attitudes, then those findings may suggest additional benefits for considering age-related attitudes in treatments of anxiety and depression.

The IAT task itself presents limitations worth noting. Although it was chosen for this study in order to validate our findings against the most commonly used measure of implicit age attitudes, the IAT has weaknesses in its stimuli and its scoring. First, although the facial images were cropped around the eyes and nose to minimize any effects of perceived emotion, it is possible that there are still perceivable differences between the young and old faces, particularly a sense of negative emotion in the older face. Because we did not control for this, it is difficult to say whether the facial images used may have influenced sorting speeds when paired with bad compared to good words. Also, the ethnicities represented in the task were limited to Caucasians. Replicating the findings of this study with facial images updated to better control for emotional expression and more inclusive of ethnic diversity would clarify these possible confounds and extend the generalizability. Also, it is important to note that the IAT measure provides overall preference scores, but does not discriminate specifically between young preference ratings and old preference ratings. Thus, it is possible that, for example, strong anti-old attitudes may be exists with strong pro-young or neutrally pro-young feelings in an individual and be captured by a similar score. In general, explicit measures can clarify the dominant attitude behind an IAT score, but these measures have limitations as well. In our study, pro-young sentiments with regards to one's own aging are thought to suggest that the higher IAT scores found in these individuals is indicative of stronger pro-young than possibly anti-old attitudes. A more recently-developed measure, the Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes et al., 2006) has been developed to combat this issue by measuring preferences for each category involved, not relative to the opposite choice. It has been implemented successfully in areas such as weight and sexual attitudes research (Dawson, Barnes-Holmes, Gresswell, Hart, & Gore, 2009; Roddy, Stewart, & Barnes-Holmes, 2009) and correlates well with IAT measures. Using a

tool such as the IRAP to discriminate between pro-young and anti-old biases could be beneficial for future research to determine the attitudinal differences underlying the relationships we found with explicit aging expectations and mood factors.

Our study was the first of its kind to explore the crucial role that mood plays in impacting implicit age attitudes. Further, it illuminated the link between personal aging beliefs and implicit attitudes in addition to that which explicit ageist prejudice has already shown. In highlighting the importance of considering mood factors when predicting and interpreting implicit aging biases, this research testifies to the potential pliability of implicit attitudes. Additionally, depression and anxiety become important facets in unraveling the fundamentals of implicit attitudes because of the impact such symptoms can have on life outlook. Understanding age attitudes, both implicit and explicit, is imperative in order to understand how age attitudes are created, maintained, and manifested in interactions. Because implicit attitudes may affect behaviors and responses to older adults below conscious awareness, being able to predict these attitudes is necessary for determining how to change age attitudes and thereby impact how older adults are treated. Additionally, these findings are important because of how one's attitudes towards aging are known to influence health-related behaviors (e.g., physical activity; Sparks, Meisner, & Young, 2013) and one's future health (Levy, Slade, Kunkel, & Kasl, 2002). Thus, the benefits to addressing ageist attitudes are two-fold: reducing negative stereotyped behaviors towards older adults, and improving the health outcomes of younger adults. Because the expression of explicit and implicit attitudes can differ, it is valuable to identify how and when they differ, and when they are similar in predicting behavior. Explicit expectations of aging may portray a more accurate image of one's implicit biases, but depressive and anxious symptoms hold an important

role in understanding that relationship. The effect of mood on explaining implicit ageist attitudes from beliefs about aging brings new insight in comprehending the nature of implicit attitudes.

Age IAT
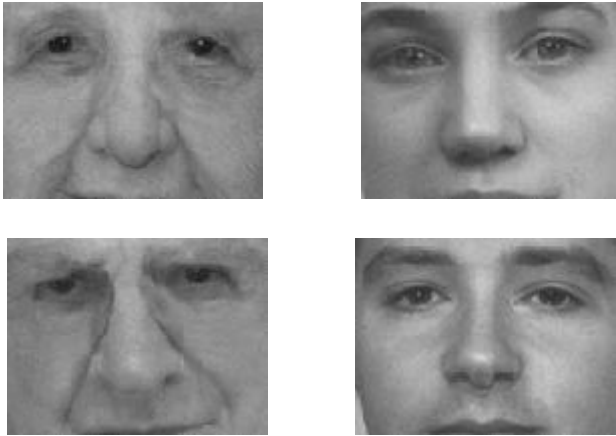
Figures A1, A2, A3, & A4. Two female and
two males examples of the images judged as
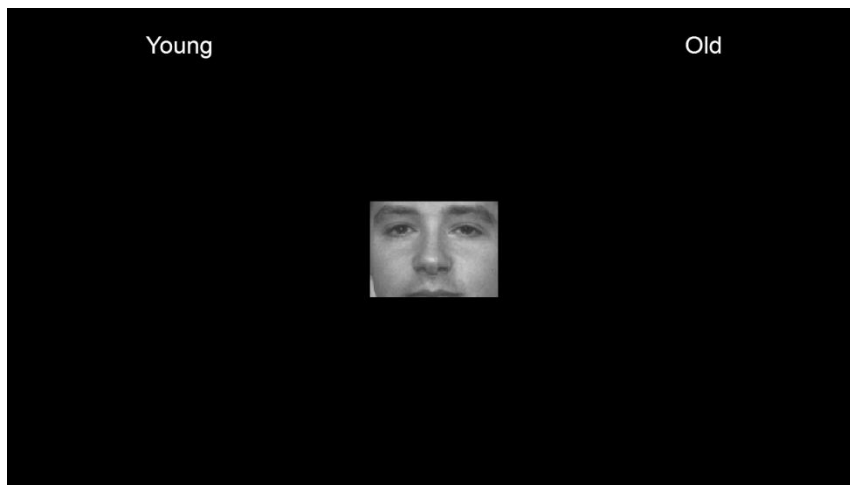"old" or "young" in this task.

Figure A5. Display example when judging "young" vs. "old."
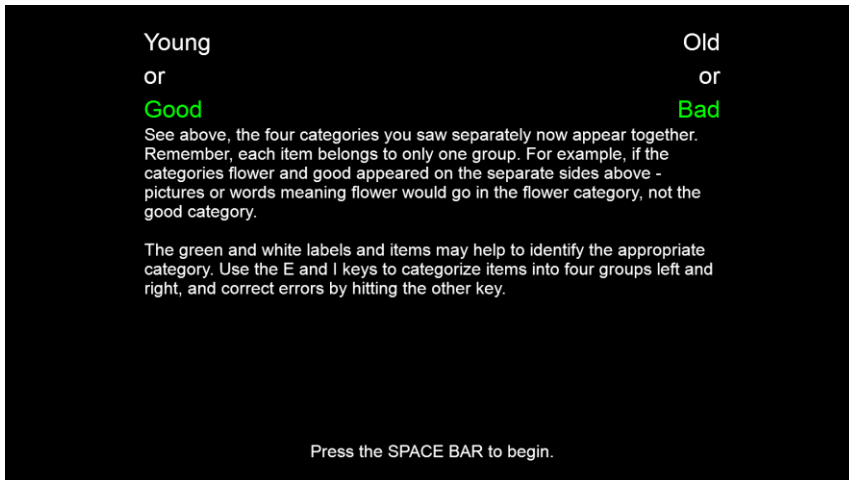
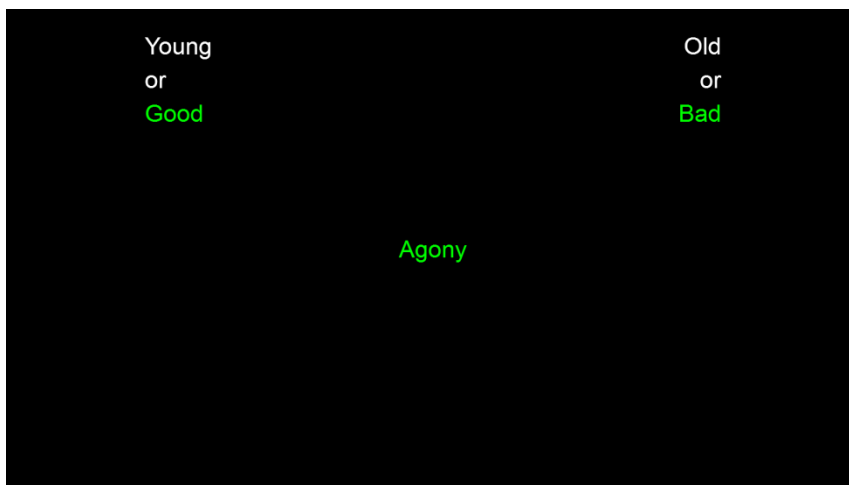*Figure A6.* Instructions for judging both young/old and good/bad.

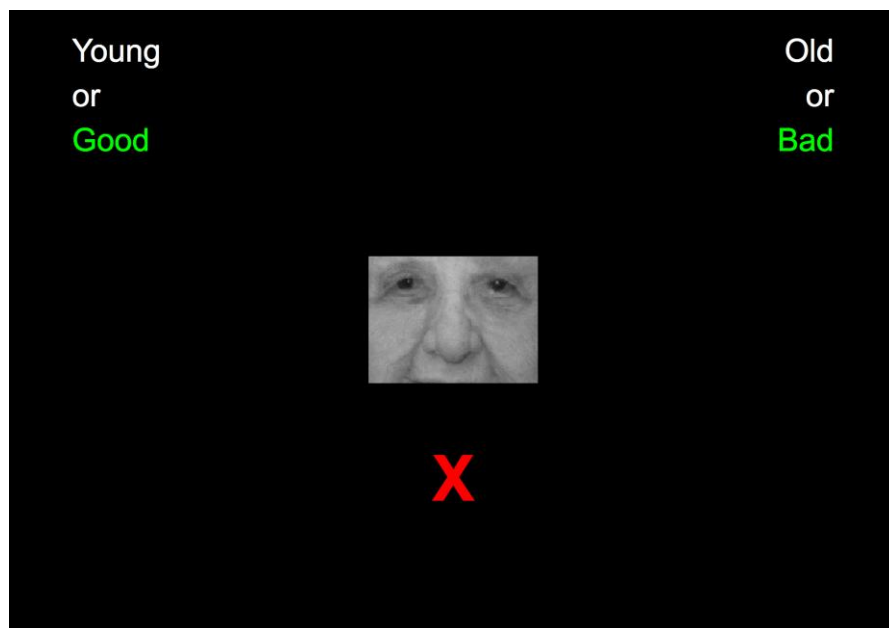*Figure A7.* Display example when judging "good" vs. "bad."

Figure A8. Display example after an incorrect response.

Appendix B

Beck Depression Inventory- II (BDI-II; Beck et al., 1996)

Choose the one statement, from among the group of four statements in each question that best describes how you have been feeling during the past few days. Circle the number beside your choice.

1	0	I do not feel sad.
	1	I feel sad.
	2	I am sad all the time and I can't snap out of it.
	3	I am so sad or unhappy that I cannot stand it.
2	0	I am not particularly discouraged about the future.
	1	I feel discouraged about the future.
	2	I feel I have nothing to look forward to.
	3	I feel that the future is hopeless and that things cannot improve.
3	0	I do not feel like a failure.
	1	I feel I have failed more than the average person.
	2	As I look back on my life, all I can see is a lot of failure.
	3	I feel I am a complete failure as a person.
4	0	I get as much satisfaction out of things as I used to.
	1	I don't enjoy things the way I used to.
	2	I don't get any real satisfaction out of anything anymore.
	3	I am dissatisfied or bored with everything.
5	0	I don't feel particularly guilty.
	1	I feel guilty a good part of the time.
	2	I feel guilty most of the time.
	3	I feel guilty all of the time.
6	0	I don't feel that I am being punished.
	1	I feel I may be punished.
	2	I expect to be punished.
	3	I feel I am being punished.
7	0	I don't feel disappointed in myself.
	1	I am disappointed in myself.
	2	I am disgusted with myself.
	3	I hate myself.
8	0	I don't feel I am worse than anybody else.
	1	I am critical of myself for my weaknesses or mistakes.
	2	I blame myself all the time for faults.
	3	I blame myself for everything bad that happens.
9	0	I don't have any thoughts of killing myself.
	1	I have thoughts of killing myself but I would not carry them out.
	2	I would like to kill myself.
	3	I would kill myself if I had the chance.
10	0	I don't cry anymore than usual.
	1	I cry more now than I used to.
	2	I cry all the time now.
	3	I would kill myself if I had the chance.
11	0	I am not more irritated by things than I ever am.
	1	I am slightly more irritated now than usual.
	2	I am quite annoyed or irritated a good deal of the time.
	3	I feel irritated all the time now.

12	0	I have not lost interest in other people.
	1	I am less interested in other people than I used to be.
	2	I have lost most of my interest in other people.
	3	I have lost all my interest in other people.
13	0	I make decisions about as well as I ever could.
	1	I put off making decisions more than I used to.
	2	I have a greater difficulty in making decisions than before.
	3	I can't make decisions at all anymore.
14	0	I don't feel I look any worse than I used to.
	1	I am worried that I am looking old or unattractive.
	2	I feel that there are permanent changes in my appearance that make me look unattractive.
	3	I believe that I look ugly.
15	0	I can work about as well as before.
	1	It takes an extra effort to get started at doing something.
	2	I have to push myself very hard to do anything.
	3	I can't do any work at all.
16	0	I can sleep as well as usual.
	1	I don't sleep as well as I used to.
	2	I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
	3	I wake up several hours earlier than I used to and cannot get back to sleep.
17	0	I don't get more tired than usual.
	1	I get tired more easily than I used to.
	2	I get tired from doing almost anything.
	3	I am too tired to do anything.
18	0	My appetite is no worse than usual.
	1	My appetite is not as good as it used to be.
	2	My appetite is much worse now.
	3	I have no appetite at all anymore.
19	0	I haven't lost much weight, if any, lately.
	1	I have lost more than five pounds.
	2	I have lost more than ten pounds.
	3	I have lost more than fifteen pounds trying to lose weight.
		Score 0 if you have been purposely trying to lose weight.
20	0	I am no more worried about my health than usual.
	1	I am worried about my physical problems such as aches and pains or upset stomach.
	2	I am very worried about physical problems and it's hard to think of much else.
	3	I am so worried about my physical problems that I cannot think about anything else.
21	0	I have not noticed any recent change in my interest in sex.
	1	I am less interested in sex.
	2	I am much less interested in sex.
	3	I have lost interest in sex completely.

Appendix C

State-Trait Anxiety Inventory (STAI; Spielberger et al., 1977)

SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1

Please provide the following information:

Name_____Date_____S_____

Age_____   Gender (*Circle*) **M   F**   T_____

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm..	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive...	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused..	1	2	3	4
19. I feel steady..	1	2	3	4
20. I feel pleasant..	1	2	3	4

STAIP-AD Test Form Y
www.mindgarden.com

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name_____Date_____

DIRECTIONS

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

ALMOST NEVER   *SOMETIMES*   *OFTEN*   *ALMOST ALWAYS*

21. I feel pleasant	1	2	3	4
22. I feel nervous and restless	1	2	3	4
23. I feel satisfied with myself	1	2	3	4
24. I wish I could be as happy as others seem to be	1	2	3	4
25. I feel like a failure	1	2	3	4
26. I feel rested	1	2	3	4
27. I am "calm, cool, and collected"	1	2	3	4
28. I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4
29. I worry too much over something that really doesn't matter	1	2	3	4
30. I am happy	1	2	3	4
31. I have disturbing thoughts	1	2	3	4
32. I lack self-confidence	1	2	3	4
33. I feel secure	1	2	3	4
34. I make decisions easily	1	2	3	4
35. I feel inadequate	1	2	3	4
36. I am content	1	2	3	4
37. Some unimportant thought runs through my mind and bothers me	1	2	3	4
38. I take disappointments so keenly that I can't put them out of my mind	1	2	3	4
39. I am a steady person	1	2	3	4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

Appendix D

Expectations Regarding Aging Scale (ERA-12; Sarkisian et al., 2005)

EXPECTATIONS REGARDING AGING
(Short Version, Physical Health , Mental Health, and Cognitive Function Scales)

- This survey has questions about what you expect about aging.
- Please check the **ONE** box to the right of the statement that best corresponds with how you feel about the statement. If you are not sure, go ahead and check the box that you think **BEST** corresponds with your feelings.

	Definitely True ☐	Somewhat True ☐	Somewhat False ☐	Definitely False ☐
1. When people get older, they need to lower their expectations of how healthy they can be.	☐ 1	☐ 2	☐ 3	☐ 4
2. The human body is like a car: when it gets old, it gets worn out.	☐ 1	☐ 2	☐ 3	☐ 4
3. Having more aches and pains is an accepted part of aging.	☐ 1	☐ 2	☐ 3	☐ 4
4. Every year that people age, their energy levels go down a little more.	☐ 1	☐ 2	☐ 3	☐ 4
5. I expect that as I get older I will spend less time with friends and family.	☐ 1	☐ 2	☐ 3	☐ 4
6. Being lonely is just something that happens when people get old.	☐ 1	☐ 2	☐ 3	☐ 4
7. Quality of life declines as people age.	☐ 1	☐ 2	☐ 3	☐ 4
8. It's normal to be depressed when you are old.	☐ 1	☐ 2	☐ 3	☐ 4

9. I expect that as I get older I will become more forgetful.

☐ 1 ☐ 2 ☐ 3 ☐ 4

10. It's an accepted part of aging to have trouble remembering names.

☐ 1 ☐ 2 ☐ 3 ☐ 4

11. Forgetfulness is a natural occurrence just from growing old.

☐ 1 ☐ 2 ☐ 3 ☐ 4

12. It is impossible to escape the mental slowness that happens with aging.

☐ 1 ☐ 2 ☐ 3 ☐ 4

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