Atypical Beauty Concepts May Confer Risk for Symptoms of Anorexia Nervosa and Suicidal Behavior

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ATYPICAL BEAUTY CONCEPTS MAY CONFER RISK FOR SYMPTOMS OF ANOREXIA NERVOSA AND SUICIDAL BEHAVIOR

By

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I dedicate this research to my husband, Jonathan, and my mom, Jeannie, for their unwavering love and support throughout this project.
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ABSTRACT

Study 1 examined whether the belief that “emaciation is beautiful” may contribute to anorexia nervosa (AN) symptom severity. Findings suggest that compared to non-eating disordered women, AN women are more likely to associate emaciation with both beauty and ugliness. Further, eating disorder symptoms, such as restraint, shape concern, and weight concern, significantly predicted the strength of the association between emaciation and beauty and emaciation and ugliness.

Study 2 investigated whether the belief that “death is beautiful” is a cognitive risk factor for suicidality. I found that among participants who were fearless about death (i.e., had high levels of acquired capability), thinking about death was associated more with positivity than thinking about a control condition. As currently conceptualized, the acquired capability for suicide is a construct that is behaviorally based and can only increase or remain stable over time. However, the results of this study suggest there might be cognitive styles related to the acquired capability for suicide, which could have important treatment implications.
INTRODUCTION

“The beautiful strikes us as much by its novelty as the deformed itself.”
—Edmund Burke, A Philosophical Inquiry into the Origin of our Ideas of the Sublime and Beautiful (1757)

Beauty is generally believed to be a good and desired thing. Multiple studies have shown that many positive traits, such as being more socially competent and successful, are associated with being beautiful (e.g., Eagly, Ashmore, Makhijani, & Longo, 1991). Philosophers and others have mused over the benefits of beauty for centuries. For example, Plato (c. 385 B.C.) suggested that by aiming to capture beauty, artists are able to reveal truths not normally available to human perception; Burke (1757) believed that a sense of beauty contributed to man’s social nature and allowed people to experience love; and Freud (1930) considered the ability to value beauty a hallmark of civilization.

These years of research and inquiry into the nature of beauty have led to the discovery of qualities and features that are considered to be beautiful by most. These qualities include symmetry, youth (in women), and masculinity (in men), and recent research has found that all of these qualities are indicators of reproductive fitness (Little & Perrett, 2002). Thus, people may be evolutionarily adapted to find certain characteristics beautiful, as doing so helps us to find good mates. Moreover, aside from being associated with increased reproductive success, researchers have suggested that beauty is associated with other beneficial outcomes, such as reduced anxiety (Hagman, 2002).

However, individual differences in perceptions of beauty exist, and the subjectivity surrounding what one considers to be beautiful is often expressed in colloquialisms such as “Beauty is in the eye of the beholder,” “Beauty is only skin deep,” and “There’s no accounting for taste.” Experimental studies also support this subjectivity. Jacobsen and Hofel (2002) found that although the majority of participants found symmetrical and complex images to be the most beautiful, 10% rated non-symmetric patterns as the most beautiful and 15% found simple designs to be the most beautiful.
And so, although generally speaking there is truth to the statement “what is beautiful is good,” researchers have also noted that there can be a dark side to beauty (Dermer & Thiel, 1975). Thus, it is possible that when beauty is associated with certain stimuli, problematic outcomes can occur. For example, extreme ideas about beauty are the foundation of some psychological disorders (e.g., body dysmorphic disorder). Maladaptive perceptions about beauty might also contribute to the development and/or maintenance of dangerous behaviors like suicidality and high mortality disorders like anorexia nervosa (AN), yet little attention has been given to individual differences in perceptions about beauty in regard to these significant mental health problems. The guiding hypothesis for the proposed research is that extreme atypical beliefs about beauty, specifically that “emaciation is beautiful” or “death is beautiful,” are cognitive risk factors for symptoms of AN and suicidal behavior, respectively.

**Anorexia Nervosa**

Although AN is a relatively rare disorder, afflicting approximately 1% of women (American Psychological Association [APA], 2000), AN is a deadly disease with a standardized mortality ratio (SMR; the ratio of number of actual deaths to expected deaths in the population) ranging from 10.6 in recent studies (Huas, et al., 2011) to as high as 17.8 (Norring & Sohlberg, 1993). Despite its lethality, there is relatively little research on how to effectively treat this disorder. To date there is no empirically supported efficacious treatment for AN (Cooper, 2005), though some show promise (e.g., behaviorally-based family therapy for adolescents; Le Grange & Lock, 2005). Clearly, there is a pressing need for continued research to better understand the etiology, maintenance, and treatment of AN.

In order to receive a diagnosis of AN four criteria must be met: A) refusal to maintain body weight above a minimally normal weight (e.g., 85% that expected), B) intense fear of gaining weight or becoming fat, C) perceptual disturbance about one’s shape and weight, overvaluation of body weight or shape, or failure to recognize seriousness of one’s low body weight, and D) (pertaining to women only) amenorrhea (APA, 2000). These are stringent criteria; many clinicians have argued that the amenorrhea criterion be deleted due to its limited clinical significance (Garfinkel, et al., 1996), and that the weight criterion be more explicitly relaxed (Mitchell, Cook-Myers, & Wonderlich, 2005). In fact, in the forthcoming 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the criteria for AN have
changed to reflect these issues, and as currently proposed in DSM-5, amenorrhea will no longer be necessary for a diagnosis of AN and there will no longer by any example threshold for criterion A, though guidance regarding minimally acceptable weight ranges will be provided in the text (APA, 2010). With these changes to the more explicit, measurable criteria, it will become even more important to be able to accurately assess for the remaining cognitive criteria. Thus, it is crucial that clinicians engage in research to better understand the accompanying cognitive distortions in AN, as knowledge about these distortions will increase diagnostic specificity and inform treatment.

**Believing Emaciation is Beautiful**

Although the belief that “emaciation is beautiful” is likely held by only a minority of people, there is evidence that this belief exists. Some support comes from the recent explosion of “pro-eating disorder” websites (or “pro-ana” as they are called when they are specific to AN); over 500 are currently estimated to be in operation (Bardone-Cone & Cass, 2007). These pro-ana websites aim to help people with AN maintain their disorder by viewing it as a life-style choice rather than a disorder. In order to accomplish this aim, these sites generally contain the following: the “Ana Creed” (e.g., “I believe in salvation through starvation”), the “Thin Commandments” (e.g., “Thou shall count calories and restrict intake accordingly”), “Tips and Tricks” (e.g., “Freeze foods such as fruits, yogurts, and flavored ice cubes because frozen foods take forever to eat so you feel occupied longer”), and “thinspiration” pictures (i.e., images of emaciated models, celebrities, and women). A recent study of these websites found that 92% of them prominently featured “thinspiration” pictures (Norris, Boydell, Pinhas, & Katzman, 2006). Visitors to these sites report spending considerable amounts of time looking at “thinspiration” pictures, and leave comments such as “I love those ribs” (Kat87, 2007) and “One day I will be thin enough. Just the bones, no disfiguring flesh” (StarvetotheBones, 2007). Many pro-ana sites also feature “bone pics,” which are pictures of emaciated women that have been digitally altered to make the women appear even more wasted (Bardone-Cone & Cass, 2007). Additional evidence that some consider emaciation to be beautiful comes from a recent pilot study I conducted which surveyed over 1,000 undergraduates. My pilot study found that on a questionnaire designed to assess for the belief that emaciation is beautiful scores ranged from 4 to 28, which covered the full range of the possible scores.
In the case of AN, believing that an emaciated body ideal is more beautiful than a thin body ideal, as demonstrated by behaviors such as frequently viewing “thinspiration” and “bone” pictures, may motivate individuals to severely and unwaveringly restrict in order to achieve this beauty standard. Harper and colleagues (2008) surveyed close to 1,600 women and found that those who viewed pro-eating disorder websites experienced more body dissatisfaction and had higher levels of restriction compared to a control group of women who did not view these sites. However, as causality in these types of studies is impossible to determine, another group of researchers created a prototypic pro-ana website, and randomized participants to browse through either the pro-ana website or two other control websites they created (one on female fashion, which featured average sized models, and another on home décor, which did not feature any people; Bardone-Cone & Cass, 2007). The participants who viewed the pro-ana site (for only 25 minutes) reported more negative affect, lower social self-esteem, and lower appearance self-efficacy than did participants in a comparison group. Moreover, they reported that they perceived themselves to be heavier and that they were more likely to exercise and think about their weight than did the control groups. Furthermore, in the pilot study I conducted, students who reported that they believed emaciation to be beautiful also reported significantly more disordered eating behaviors than did students who did not find emaciation to be beautiful.

Examining the Anorexic Beauty Ideal

Leading cognitive theories of AN (e.g., Fairburn, 1998) hold that extreme overvaluation of shape and weight is central to the disorder. Disordered cognitions and cognitive biases are believed to play a major role in the development and maintenance of AN (e.g., Cooper, 1997; Cooper, 2005; Shafran et al., 2007). Specifically, cognitive theories of AN posit that people with this disorder hold dysfunctional beliefs about their eating habits, shape, and weight. These core beliefs perpetuate negative automatic thoughts and attentional biases in the processing of information (e.g., attending only to information regarding one’s body size). Thus, behaviors that reduce these negative thoughts, such as restricting food intake, are highly reinforcing and contribute to the chronicity of the disorder. Regrettably, research investigating automatic thoughts and attentional biases in people with AN is sparse.

One of the aims of the proposed project was to examine how core beliefs about one’s ideal body type may operate in AN. For a disorder so tied to appearance, it is interesting that few studies have explored the anorexic concept of beauty using objective methods. I propose that
among people with AN, beliefs about weight and shape may result, in part, from a distorted belief of what is beautiful, i.e., emaciation is valued over thinness. This core belief would contribute to intermediate beliefs, such as, “If I’m not excessively thin, I’m not beautiful.” This intermediate belief would then likely spawn automatic thoughts, such as, “I’m not thin enough; I’m ugly,” which would lead to emotions like worthlessness, and behaviors aimed at reducing these feelings, like restricting.

**Suicide**

In the U.S., suicide is the 11th overall leading cause of death, and the 3rd leading cause of death for people aged 15 to 24 (Centers for Disease Control [CDC], 2004). Approximately 32,000 people die by suicide every year in the U.S. Moreover, four times that many people are hospitalized due to injuries sustained while attempting suicide (CDC, 2004). Suicide is thus a serious mental health issue. One promising way to decrease the number of deaths from suicide is identification of proximal causes.

According to Joiner’s (2005) interpersonal-psychological theory, three proximal, jointly necessary, and jointly sufficient causes must be present before a person will die by suicide; these are: 1) feelings of perceived burdensomeness, 2) a sense of thwarted belongingness, and 3) an acquired capability to lethally self-harm. Perceived burdensomeness occurs when a person believes his/her death is worth more than his/her life to others. Thwarted belongingness results when one of the basic human needs, to be connected to others (Baumeister & Leary, 1995), is not met. The third necessary condition for death by suicide, and a focus of this project, is the acquired capability to lethally self-harm (subsequently referred to as the acquired capability for suicide). Engaging in self-harm usually involves pain and is fear-inducing to most people. In order to overcome this fear, it is necessary to habituate to stimuli associated with self-injury. According to Joiner’s (2005) theory one acquires this habituation through repeated exposure to painful and/or provocative stimuli. These painful and/or provocative stimuli include past suicide attempts, self-injecting drug use, non-suicidal self-injury, and exposure to physical violence, among other things (Van Orden et al., 2008). Van Orden and colleagues (2008) found evidence for the distinctiveness of the acquired capability for suicide from suicidal ideation. Importantly, one may have acquired the capability for suicide, but have no suicidal desire. Conversely, one may have suicidal desire, but lack the capability to die by suicide. The relative rarity of their
intersection is consistent with the relative rarity of death by suicide (Joiner, 2005; Van Orden et al., 2008).

Believing Death is Beautiful

For the current studies, perceiving beauty in death refers to more concrete judgments about the physical appearance of corpses, rather than more abstract judgments about the beauty of an afterlife. There is evidence that some consider such stimuli to be beautiful. Several studies have found that suicidal people or people with a history of suicidal behavior find images of death to be comforting (e.g., Holmes, Crane, Fennell, & Williams, 2007). However, some people without a history of suicidality find beauty in death as well. For instance, in a pilot study I conducted of over a thousand undergraduates, the scores ranged from 4 to 28, covering the entire range of possible scores. Moreover, members of Goth and Death Metal subcultures are bound by their fascination with death and doom, and beliefs that death is beautiful can be readily found within Gothic poetry, death metal, and Gothic music. For instance, lyrics from a song by a popular death metal band read, “Zombiefication through torture/Terror, blood, guts and gore/Living dead, life in death/I scream but I only want more” (Blood Bath, 1999). Gothic and death metal music glorifies death, as is apparent from the names of some of the more popular of these bands: Carcass, Death, Dying Fetus, Cannibal Corpse, and Obituary.

Finding this kind of beauty in death may reduce fearfulness about death and be associated with a greater acquired capability for suicide. In fact, in a pilot study I conducted, participants who reported finding death to be beautiful had higher levels of acquired capability for suicide than did participants who did not find death to be beautiful. As discussed above, according to Joiner (2005), in combination with perceived burdensomeness and thwarted belongingness, the acquired capability can lead to death by suicide. Tellingly, Goth membership was found to be a strong predictor of self-harm and attempted suicide (Young, Sweeting, & West, 2007).

Moreover, Selby and colleagues (2007) found that levels of depression interacted with daydreaming about death and violence to predict suicidal ideation, such that people who were depressed and engaged in violent daydreams reported the most suicidal ideation. Another study found that among recovered patients with a history of suicidality, preoccupation with suicide-related images was associated with worst-point suicidal ideation (Holmes, Crane, Fennell, & Williams, 2007). Furthermore, a subset of people who die by suicide also seem to be attracted to
dying in a “very beautiful, spectacular, dramatic way” (e.g., jumping off the Golden Gate Bridge; Guthmann, 2005).

Examining Beliefs about Death in People with Acquired Capability

For most people, thinking about death is frightening. In fact, thinking about death has been shown to increase anxiety and stress (e.g., Greenberg et al., 2003). Recent studies, built on Terror Management Theory (Solomon, Greenberg, & Pyszczynski, 1991), have found that most people rate their anxiety about death to be low on subjective measures, yet their scores on implicit awareness tasks indicate that they are actually quite concerned with death (e.g., Pollak, 1979). However, the minority of people who do not show implicit concern with death have not been seriously studied despite findings that not only do some people daydream about death (Selby, Anestis, & Joiner, 2007), but that for some, thinking about images of their death can be comforting (Holmes, Crane, Fennell, & Williams, 2007).

Thus, a main aim of this project was to investigate associations between death and beauty among people who are believed to be fearless about death (i.e., those who have elevated levels of acquired capability for suicide). Given that the acquired capability for suicide is believed to be associated with fearlessness about death (Joiner, 2005), I proposed that people with elevated levels of acquired capability should be more attracted to death than those who have average levels of acquired capability.

Testing for the Presence of Atypical Senses of Beauty

I tested for the accessibility of beauty and its associations with emaciation and death using two different methods: a lexical decision task (LDT) and a free recall task. Broadly speaking, LDTs measure implicit associations between constructs. The basic premise of an LDT is that participants will be faster to respond to certain words after being primed with related words or constructs. Moreover, priming manipulations create individual differences in construct accessibility (Higgins, 1989); thus, if one believes that death is beautiful or emaciation is beautiful, this should be evidenced by increased accessibility of beauty words after undergoing a death or emaciation prime, respectively. Because LDTs are a parsimonious and direct way to test for the presence of associations, they have been used extensively in cognitive and social psychology. Moreover, because LDTs assess for automatic and implicit associations, they are able to provide data regarding beliefs outside of conscious control and/or that the participant has
ambivalence about expressing. This is particularly relevant to the current project, as I was attempting to measure atypical beliefs that participants may or may not be entirely aware of or feel comfortable expressing. The decision to use an implicit measure was further predicated upon research that has found implicit and explicit attitudes can differ (e.g., Dovidio, et al., 1997) and that implicit attitudes can better predict future psychopathology as compared to traditional explicit, self-report measures (i.e., Buhlmann et al., 2009; Teachman et al., 2001; Nock & Banaji, 2007).

Free recall tasks measure memory, but they also can be used to assess for attentional biases. Thus, if people pay more attention to the beauty words after being primed with death, they should be able to recall more of these words at a later time. In Study 1 people with AN completed an LDT designed to test for the association between emaciation and beauty, as well as completed a free-recall task. The method of Study 2 was the same, but I was testing for the association between death and beauty among people with high levels of acquired capability for suicide.
STUDY 1

Study Aims and Hypotheses

The aims of Study 1 were twofold. The first aim was to determine if AN participants associate emaciation with beauty. In order to achieve this aim I recruited two groups of participants, a group with AN and a control group that was eating disorder symptom free. I then primed these groups with the concept of either emaciation or thinness, and then I compared the groups’ responses on the LDT and free recall task. There were three hypotheses associated with the first aim. First, it was predicted that during the LDT, AN participants primed with emaciation would recognize beauty words faster than the control participants primed with emaciation and faster than AN participants primed with thinness. I did not predict that AN participants primed with emaciation would recognize beauty words faster than control participants primed with thinness because it is possible that thinness may active concepts of beauty among control participants. It was further predicted that during the LDT, AN participants primed with emaciation would recognize beauty words faster than ugly, neutral, or positive words. Finally, it was expected that during the free recall task, AN participants primed with emaciation would remember more beauty words than the other groups and that they would remember more beauty words as compared to the other word types.

The second aim of Study 1 was to test whether there was a relationship between AN symptomatology and performance on the LDT. It was hypothesized that AN symptom severity would predict the strength of the belief that “emaciation is beautiful.”

Method

Participants

The sample consisted of 30 women with AN-like syndromes. Specifically, participants had to meet at least three out of the four DSM-IV criteria necessary for a diagnosis of AN. Ten participants met four out of four criteria for an AN diagnosis, the remaining 20 met three out of four criteria. Twenty-eight out of the 30 participants had a BMI of less than 18.5, which was the initial threshold used for this study. Two participants had BMIs above this threshold (18.7 and 19.0); however, these participants had recently lost a significant amount of weight and thus were found to meet for criterion A given their weight history (APA, 2000). Control participants and 18
AN-syndrome participants took part in exchange for course credit. Twelve AN-syndrome participants took part in exchange for $60. Paid participants were referred from another lab conducting eating disorders research. Exclusion criteria for both groups included schizophrenia spectrum disorders. The Structured Clinical Interview for DSM–IV Non-Patient Edition (SCID-I/NP; First, Spitzer, Gibbon, & Williams, 1995) was used for the diagnosis of AN, as well as all other psychiatric diagnoses.

The majority of the participants (n = 52; 88.1%) were non-Latino and seven (11.9%) were Latino. Among the non-Latino participants, 43 (82.7%) were Caucasian, seven (13.5%) were African American/Black, and two (3.8%) were Asian. Of the seven participants who identified themselves as Latino, five (71.4%) were Caucasian, one (14.3%) was African American/Black, one (14.3%) was Asian.

Control and AN-syndrome participants had the following (comorbid, in the case of AN-syndrome participants) current disorders: bipolar disorder (0/1), major depression (0/5), alcohol abuse (2/2), alcohol dependence (0/1), cannabis dependence (0/1), panic disorder (0/1), agoraphobia without panic disorder (0/2), social phobia (1/3), specific phobia (2/4), posttraumatic stress disorder (0/2), general anxiety disorder (0/1), and anxiety disorder not otherwise specified (0/3).

**Sequence of the Investigation**

Over the course of two years (six semesters) thousands of students were screened for restrictive eating tendencies during the department’s mass screening of Introductory Psychology students based on body mass index (BMI) and by using questions from the Restraint subscale of the Eating Disorder Examination Questionnaire-4 (EDEQ-R). Female students whose scores on the EDEQ-R indicated severe food restriction and who had low BMIs (less than 19.0) were invited to the lab for the second screening. Additionally, participants were recruited from an in-house eating behaviors clinic and an in-house community clinic based on their BMI. I contacted these participants via telephone gave them the modified Anorexia Nervosa module of the SCID-I/NP. Participants who met three out of four criteria for AN were invited to the lab for the second screening.

Control subjects were also recruited from the department’s mass screening of Introductory Psychology; however, control participants needed to be within a normal weight range (BMI of 19.0-24) and not have indicated significant restraint on the EDEQ-R.
Upon entering the lab, participants were told a cover story (i.e., that they would be participating in several, unrelated studies). The first experiment was described as a clinical interview. I then interviewed consenting participants with the SCID-I/NP module for Axis I disorders. Based on the outcome of the clinical interview, eligible participants continued on with the study protocol; ineligible participants were dismissed.

After completing the SCID-I/NP, participants were informed that they would next complete two computerized experiments; participants signed a separate consent form for these experiments to bolster the cover story. Participants were told that the purpose of the first study was to examine weight and age. In reality, this “experiment” served as the prime. Participants were told that they would be viewing several pictures of women’s bodies and that they would be asked to rate how old each woman appeared. Participants were then randomly assigned to either an emaciation prime or control prime. In the emaciation condition, participants viewed 15 color, full body, digital photos of emaciated-looking women (see Appendix A). Participants in the control condition were primed with 15 color, full body, digital photos of thin women (see Appendix B). Pictures were pre-rated by an independent sample of 93 undergraduates enrolled in General Psychology to ensure that they significantly differed in terms of perceived weight, on a 1 to 9 scale (1 = emaciated, 3 = very thin, 5 = thin, 7 = average, 9 = overweight). Emaciated pictures were rated as significantly thinner than thin pictures, mean diff = -4.13, t(1,92) = -58.93, p < .001. During the priming phase, pictures were presented on a 15-inch computer screen for 10 seconds. After a 10 second interval, a prompt asking the participant to “Please rate how old this person appears” was displayed. After another five seconds, the next picture appeared. After the entire manipulation was over participants completed a questionnaire assessing state affect.

After completing this portion of the experiment, participants were told that they would next complete an experiment on word recognition. Participants were then instructed about the LDT portion of the study. All participants were seated in front of a 15-inch computer monitor that was placed at a standard distance of 25 centimeters from the edge of the desk. The LDT was presented using Inquisit (2010) software (Version 3), a program designed to present stimuli for psychological research.

During the lexical decision portion of the experiment, participants were asked to distinguish between words and nonwords that were presented on the computer screen. They were instructed to press the ‘A’ key if they saw a word and the ‘L’ key if they saw a nonword. All
participants were given a random order of trials and were told to answer as quickly and accurately as possible. Each participant first completed 10 practice trials (5 words, 5 nonwords) to familiarize herself with the task. Practice trial words and nonwords were unique from those included in the experimental portion of the task. The LDT included 96 trials consisting of 48 nonwords and 48 words. The nonwords were pronounceable pseudowords (e.g., scrant), and were matched in terms of syllables and number of letters to the real words. The real words consisted of 12 “beauty” words (e.g., glamorous, beautiful, attractive), 12 “ugly” words (e.g., hideous, gross, disgusting), 12 “neutral” words (e.g., mailbox, cloud, desktop), and 12 “positive” words (e.g., happy, cheerful, elated).

A typical trial proceeded as follows: a fixation point appeared at the center of the screen for 1,000 milliseconds (ms). This fixation point was then replaced by a word or nonword, and remained on the screen until the participant responded.

Following recommendations (i.e., Bargh and Chartrand, 2000), I chose beauty, ugly, positive, and neutral words that were roughly comparable in terms of frequency and word length, as these factors have been found to have impact on response latencies (e.g., Bargh, Chaiken, Govender, & Pratto, 1992). For our frequency metric, we used the SUBTLEXUS frequency norms (Brysbaert & New, 2009). Table 1 displays the mean frequencies (per million) and lengths for all the words used in the experiment.

After completing the LDT, participants were given a two minute filler task in which they were asked to write down the names of as many U.S. cities as possible. After two minutes had expired, participants were then asked to write down as many of the real words from the LDT as they could remember. They were given three minutes for the free recall task.

Participants next completed several questionnaires (described in the “Measures” section) on the computer. Finally, I weighed participants and measured their height in order to determine their objective BMI. Before leaving participants were fully debriefed about the true nature of the study.

**Measures**

Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1998). The BMIS is a well-validated 28-item scale that measures arousal and affective valence. The BMIS was given after the priming manipulation in order to measure the differences in affect among the groups.
following stimuli exposure. Cronbach’s alpha for the BMIS (Pleasant-Unpleasant Mood) was .87 in the current sample.

Eating Disorders Examination Questionnaire 4 (EDEQ; Fairburn & Beglin, 1994). The EDEQ-4 is a 36-item self-report measure adapted from the EDE interview that has four subscales: restraint, eating concern, weight concern, and shape concern. Numerous studies have reported on the excellent internal consistency and test-retest reliabilities for the subscales of the EDEQ (e.g., Luce & Crowther, 1999), and the questionnaire has also demonstrated good concurrent and acceptable criterion validity (Fairburn & Beglin, 1994; Mond, Hay, Rodgers, Owen, & Beaumont, 2004). Additionally, the restraint subscale was used to screen for restrictive eating tendencies which are characteristic of AN. Alpha for the subscales was as follows: restraint (.92), eating concern (.88), weight concern (.88), and shape concern (.95).

Results

Descriptive Statistics/Preliminary Analyses

As indicated in Table 2, groups did not differ in age, ethnicity, or education. However, AN-syndrome participants had significantly lower body mass indices (BMI; ratio of weight to squared height in kg/m2) and higher EDEQ-4 scores than the control participants (see Table 2). Bivariate correlations between continuous study variables can be found in Table 3. Additionally, there was no Group X Prime interaction for affect following the priming manipulation, BMIS Overall Mood, $F(1,55) = 0.94$, $p = .34$; BMIS Pleasant-Unpleasant, $F(1,55) = 1.69$, $p = .20$.

Main Analyses

Lexical decision task.

Before submitting my data to analysis, I first needed to transform them to meet the criteria for our statistical analyses. Following recommendations by Grainger and Ferrand (1996), the responses latencies over 1,000 ms were deleted; this affected less than 7% of the data. All incorrect responses were excluded from the analysis. Additionally, as recommended by Berent (1997), three words (morning, aluminum, gorgeous) were excluded from the analyses because they tended to elicit low accuracy performance in the current sample (less than 75%). Mean reaction time latencies were then computed for beauty, ugly, positive, and neutral words. See Table 4 for mean response latencies for each group and condition by word type.
To investigate the first hypothesis associated with the first aim, that AN-syndrome participants primed with emaciation would be faster at responding to beauty words than AN-syndrome participants primed with thinness and faster than control participants primed with emaciation, response time latencies were submitted to a 2 X 2 X 4 mixed-model repeated measures ANOVA, with the between participants factors group (AN-syndrome, control) and condition (emaciation, thin) and the within-participant factor word type (beauty, ugly, neutral, positive). Mauchly’s Test of Sphericity was not significant, thus assumptions were not violated. A significant Group X Prime X Word Type interaction was found, $F(3,52) = 2.82, p = .05$. There were no significant main effects for group or condition ($p$’s > .57), but there was a significant main effect for word type, $F(3,52) = 16.22, p < .001$, such that participants in general were fastest at responding to positive words. In order to understand the nature of the 3-way interaction, I examined the Group X Prime interaction amongst the various word types. A significant Group X Prime interaction was found for both beauty words, $F(1,55) = 8.49, p = .005$, and ugly words, $F(1,55) = 11.39, p = .001$, see Figures 1 and 2.

![Figure 1. Study 1 Group X Prime interaction for beauty words.](image)
In order to further understand these interactions, I ran a regression analysis to examine the effect of group (AN-syndrome or control) within the emaciation condition. For beauty words, I found a significant effect of group in the emaciated condition ($\beta = -.36$, $t(57) = -2.05$, $p = .05$), such that AN-syndrome women responded faster to beauty words than control women. Additionally, for ugly words I found a significant effect of group in the emaciated condition ($\beta = -.44$, $t(57) = -2.56$, $p = .01$), such that AN-syndrome women also responded faster to ugly words than control women.

I also ran a regression analysis to examine the effect of condition (emaciation or thin) within the AN-syndrome group on reaction times. For beauty words, the effect of condition was marginally significant within the AN-syndrome group ($\beta = -.30$, $t(57) = -1.71$, $p = .09$). For ugly words the effect of condition was significant in the AN-syndrome group ($\beta = -.53$, $t(57) = -3.11$, $p = .003$), such that AN-syndrome women receiving the emaciation prime responded faster to ugly words than AN-syndrome women receiving the thin prime.
To test whether AN-syndrome participants primed with emaciation would be faster at recognizing beauty words as compared to the other word types, I selected only AN-syndrome participants who had received the emaciation prime. I then compared the means of the response latencies between beauty words and the other word types: beauty/ugly, mean diff = 1.56, \( t(15) = 0.19, p = .89 \); beauty/neutral, mean diff = -13.58, \( t(15) = -1.28, p = .22 \); beauty/positive, mean diff = 20.40, \( t(15) = 2.32, p = .04 \). This hypothesis was not supported as AN-syndrome participants primed with emaciation were faster to respond to positive words than beauty words. However, given that there was no significant Group X Prime interaction effect for positive words, the examination of mean response latencies for different word types for AN-syndrome women in the emaciation condition does not necessarily reflect anything unique to how positively AN women view emaciation, and in fact, may be an artifact of participants in general responding faster to positive words.

**Word recall.**

It was predicted that during the free recall task AN-syndrome participants primed with emaciation would remember more beauty words than the other groups and remember more beauty words as compared to the other word types. To examine this, I conducted a 2X2 ANOVA with the between-subjects factors of Group (AN-syndrome, control) and Prime (emaciated, thin). The Group X Prime interaction was not significant for beauty words, \( F(1, 57) = .27, p = .61 \), or ugly words, \( F(1, 57) = .31, p = .58 \); thus, the AN-syndrome group did not remember more beauty or ugly words as compared to the other groups.

In order to determine whether AN-syndrome participants who received the emaciation prime remembered more beauty as compared to ugly words, I selected only AN-syndrome participants who received the emaciation prime. AN-syndrome participants primed with emaciation remembered more beauty words as compared to positive words, mean diff = 2.00, \( t(15) = 4.76, p < .001 \), and more beauty words as compared to neutral words, mean diff = 2.19, \( t(15) = 5.78, p < .001 \). AN-syndrome participants did not remember significantly more beauty words as compared to ugly words, mean diff = 0.38, \( t(15) = 1.15, p = .27 \). Additionally, AN-syndrome participants primed with emaciation remembered more ugly words compared to positive words, mean diff = 1.62, \( t(15) = 4.62, p < .001 \), and more ugly words as compared to neutral words, mean diff = 1.81, \( t(15) = 4.93, p < .001 \). However, given the non-significant Group X Prime interactions, these results are not necessarily specific to this group.
Exploratory Analyses

Regression analyses were conducted in order to investigate whether AN symptom severity predicted the strength of the association between emaciation and beauty or ugliness (as indexed by the mean of the reaction times for beauty and ugly words following the emaciation prime). Separate regression equations were run in order to see if EDEQ-4 subscale scores or BMI predicted average response times to beauty words or ugly words.

For those participants who received the emaciation prime, BMI predicted the average reaction time to ugly words, $\beta = .38$, $t(29) = 2.15$, $p = .04$, such that lower BMIs were associated with faster reaction times; this effect was only marginally significant for beauty words, $\beta = .32$, $t(29) = 1.80$, $p = .08$. EDEQ-4 Restraint was significantly associated with reaction times to beauty words, $\beta = -.37$, $t(29) = -2.04$, $p = .05$, and to ugly words, $\beta = -.39$, $t(29) = -2.22$, $p = .04$, such that greater levels of restraint predicted faster reaction times to both beauty and ugly words. EDEQ-4 Eating Concern was a significant predictor of reaction time to ugly words, $\beta = -.39$, $t(29) = -2.22$, $p = .04$, such that greater levels of eating concern predicted faster reaction times. EDEQ-4 Shape Concern was also significant in the prediction of reaction time to both beauty words, $\beta = -.46$, $t(29) = -2.68$, $p = .01$, and ugly words, $\beta = -.48$, $t(29) = -2.89$, $p = .01$. Finally, EDE Weight Concern was significant in the prediction of reaction time to beauty words, $\beta = -.42$, $t(29) = -2.40$, $p = .02$ and ugly words, $\beta = -.47$, $t(29) = -2.77$, $p = .01$.

Study 1 Discussion

As predicted, I found that AN-syndrome women who were primed with emaciation were faster than controls primed with emaciation at responding to beauty words. Unexpectedly, AN-syndrome women primed with emaciation were also found to be faster than controls primed with emaciation at responding to ugly words. Additionally, AN-syndrome women primed with emaciation were faster at responding to ugly words than AN-syndrome women primed with thinness.

I further predicted that AN-syndrome participants primed with emaciation would recognize beauty words faster than ugly, neutral, or positive words. Contrary to expectations, I found that AN women primed with emaciation were faster at responding to positive words as compared to beauty and neutral words; however, given the non-significant interaction for positive words, this finding may have been an artifact of faster overall responding to positive
words among all the participants. Moreover, my hypothesis regarding increased recall of beauty words among AN-syndrome participants who received the emaciation prime was not supported as they did not remember more beauty (or ugly) words as compared to the other groups.

The second aim of Study 1 was to test whether AN symptoms predicted performance on the LDT. Eating disorder symptoms, such as restraint, shape concern, and weight concern, significantly predicted the strength of the association between emaciation and beauty. Additionally, I found that these same eating disorder symptoms, as well as eating concerns and low BMI, predicted the strength of the association between emaciation and ugliness.

These findings suggest that compared to non-eating disordered women, AN-syndrome women are more likely to associate emaciation with both beauty and ugliness. It may be that these two concepts are interrelated for women with AN symptoms and that calling to mind beauty standards also activates feelings of ugliness, perhaps due to an inability to live up to these beauty standards. Or it may be that emaciation is priming an underlying continuum of attractiveness, from beauty to ugly. Alternatively, it may be that AN-syndrome women found the pictures to be simultaneously beautiful and ugly.

Although anecdotal, many of the control women who were primed with emaciation made comments and remarks about how disturbing they found the emaciated pictures to be; however, no AN-syndrome participants made such comments. Thus, it seems somewhat unlikely that AN-syndrome participants found the pictures to be uglier than controls; rather, I suggest that seeing images that the participants found to be beautiful activated associations with ugliness as a result of feeling unable to achieve the beauty standard encountered. However, the nature of the study design did not allow us to determine the primacy or temporality of the associations, and this will need to be untangled in future studies. The use of subliminal primes could help disentangle the temporality of the effect. For example, using an affect misattribution paradigm (AMP; Payne et al., 2005), emaciated and thin pictures could be subliminally paired with neutral stimuli, like Chinese characters. If AN-syndrome participants were found to rate the neutral characters as more positive following the emaciated pictures as compared to the thin pictures this would provide additional evidence that beauty is the primary association with emaciation.

The results of this study also underscore the importance of assessing for and monitoring patients’ usage of pro-eating disorder websites. These websites have been found to prominently feature “thinspiration” and “bone pics” (e.g., Borzekowski, et al., 2010). Although I do not know
of any published studies that have experimentally examined the effects of pro-eating disorder websites on people with eating disorders, the results of this study suggest that viewing them could have iatrogenic effects, as it may reinforce an unrealistic beauty standard, while potentially also activating feeling of ugliness due to failing to achieve that standard.

There are some important limitations of the current study to note. First, the AN-syndrome participants were recruited for the most part from a university setting; thus, participants generally did not have severe AN, and in fact, the majority of the participants would not have met DSM-IV criteria for AN (though they would have met three out of four criteria). As such, it is unclear how our results would generalize to more severe inpatient or residential populations. However, it may be that effects would actually be stronger in more disordered populations. A second important limitation to note is the cross-sectional nature of the data. As such, I was unable to determine when biases regarding emaciation might develop over the course of the eating disorder; future investigation is necessary in order to establish the longitudinal nature of the relationship.

However, this study had several strengths. First, by using thin, rather than normal weight pictures as the control prime I conducted a rigorous test of the study hypotheses. Relatedly, the control group had BMIs on the lower range of healthy, which potentially also resulted in a more rigorous test of my hypotheses.

From an assessment standpoint, researchers have noted the importance of internalization of the thin ideal in contributing to the development and maintenance of eating disorders (e.g., Stice & Thompson, 2001). However, very few studies have experimentally examined preferences for ideals of varying degrees of thinness, and how these preferences may relate to eating disorder symptoms. Homan (2010) explored how athletic-ideal versus thin-ideal internalization was related to disordered eating and found that thin-ideal internalization was a stronger predictor of more behaviors related to disordered eating as compared to athletic-ideal internalization. To my knowledge, no study has examined preference for an emaciated-ideal versus a thin-ideal. In fact, one of the most widely used assessments of thin-ideal internalization, the Sociocultural Attitudes Towards Appearance Scale (Thompson, et al., 2004) only assesses preferences for bodies that are like “TV and movie stars” or “athletic.” Thus, aside from the degree of thin-ideal internalization, these findings suggest that another important aspect to consider is the type of thin ideal that is
being internalized. Future studies may benefit by assessing for a greater range of thin ideal internalization, a range that encompasses a spectrum from emaciated to athletic.
Table 1: Frequency per Million and Word Length (in Characters) by Word Type

<table>
<thead>
<tr>
<th>Beauty words</th>
<th>Frequency</th>
<th>Length</th>
<th>Positive words</th>
<th>Frequency</th>
<th>Length</th>
<th>Ugly words</th>
<th>Frequency</th>
<th>Length</th>
<th>Neutral words</th>
<th>Frequency</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beautiful</td>
<td>14,266</td>
<td>8</td>
<td>Happy</td>
<td>16,993</td>
<td>5</td>
<td>Ugly</td>
<td>2,150</td>
<td>4</td>
<td>Morning</td>
<td>22,389</td>
<td>7</td>
</tr>
<tr>
<td>Perfect</td>
<td>8,091</td>
<td>7</td>
<td>Sweet</td>
<td>7,405</td>
<td>5</td>
<td>Sick</td>
<td>8,437</td>
<td>4</td>
<td>Outside</td>
<td>8,671</td>
<td>7</td>
</tr>
<tr>
<td>Lovely</td>
<td>4,453</td>
<td>6</td>
<td>Pleasure</td>
<td>4,118</td>
<td>8</td>
<td>Terrible</td>
<td>4,795</td>
<td>8</td>
<td>General</td>
<td>5,885</td>
<td>9</td>
</tr>
<tr>
<td>Excellent</td>
<td>2,688</td>
<td>9</td>
<td>Laugh</td>
<td>3,206</td>
<td>5</td>
<td>Awful</td>
<td>3,234</td>
<td>5</td>
<td>Apartment</td>
<td>4,235</td>
<td>7</td>
</tr>
<tr>
<td>Sexy</td>
<td>1,529</td>
<td>4</td>
<td>Merry</td>
<td>1,994</td>
<td>5</td>
<td>Horrible</td>
<td>2,164</td>
<td>8</td>
<td>Practice</td>
<td>2,330</td>
<td>8</td>
</tr>
<tr>
<td>Attractive</td>
<td>1,256</td>
<td>10</td>
<td>Success</td>
<td>1,390</td>
<td>7</td>
<td>Disgusting</td>
<td>1,357</td>
<td>10</td>
<td>Forgotten</td>
<td>1,771</td>
<td>9</td>
</tr>
<tr>
<td>Gorgeous</td>
<td>1,227</td>
<td>8</td>
<td>Romance</td>
<td>792</td>
<td>7</td>
<td>Nasty</td>
<td>1,151</td>
<td>5</td>
<td>Forest</td>
<td>963</td>
<td>6</td>
</tr>
<tr>
<td>Elegant</td>
<td>320</td>
<td>7</td>
<td>Delight</td>
<td>288</td>
<td>6</td>
<td>Hideous</td>
<td>274</td>
<td>7</td>
<td>Lined</td>
<td>330</td>
<td>5</td>
</tr>
<tr>
<td>Glamorous</td>
<td>151</td>
<td>9</td>
<td>Warmth</td>
<td>227</td>
<td>6</td>
<td>Repulsive</td>
<td>103</td>
<td>9</td>
<td>Mailbox</td>
<td>212</td>
<td>8</td>
</tr>
<tr>
<td>Stunning</td>
<td>209</td>
<td>8</td>
<td>Cheerful</td>
<td>190</td>
<td>8</td>
<td>Revolting</td>
<td>98</td>
<td>9</td>
<td>Numerous</td>
<td>183</td>
<td>7</td>
</tr>
<tr>
<td>Flawless</td>
<td>80</td>
<td>8</td>
<td>Cuddle</td>
<td>110</td>
<td>6</td>
<td>Unattractive</td>
<td>92</td>
<td>12</td>
<td>Aluminum</td>
<td>115</td>
<td>8</td>
</tr>
<tr>
<td>Alluring</td>
<td>21</td>
<td>8</td>
<td>Elated</td>
<td>14</td>
<td>6</td>
<td>Unsightly</td>
<td>19</td>
<td>9</td>
<td>Illuminated</td>
<td>18</td>
<td>11</td>
</tr>
</tbody>
</table>
Table 2: Means and Standard Deviations of Study 1 Sample Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>AN Group</th>
<th></th>
<th>Control Group</th>
<th></th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SE</td>
<td>M</td>
<td>SE</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>20.00</td>
<td>0.80</td>
<td>18.93</td>
<td>0.19</td>
<td>F = 2.53, p = .12</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td></td>
<td>( \chi^2 = 1.35, p = .25 )</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>25</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( \chi^2 = 5.18, p = .08 )</td>
</tr>
<tr>
<td>Bachelors</td>
<td>3</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associates/Some college</td>
<td>8</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>7</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body mass index (kg/m(^2))</td>
<td>17.51</td>
<td>0.19</td>
<td>21.38</td>
<td>0.26</td>
<td>( F = 145.42, p &lt; .001 )</td>
</tr>
<tr>
<td>EDEQ-4 Restraint</td>
<td>2.64</td>
<td>0.39</td>
<td>0.48</td>
<td>0.14</td>
<td>( F = 27.55, p &lt; .001 )</td>
</tr>
<tr>
<td>EDEQ-4 Eating Concern</td>
<td>1.88</td>
<td>0.31</td>
<td>0.14</td>
<td>0.06</td>
<td>( F = 32.00, p &lt; .001 )</td>
</tr>
<tr>
<td>EDEQ-4 Weight Concern</td>
<td>2.65</td>
<td>0.31</td>
<td>0.60</td>
<td>0.15</td>
<td>( F = 38.62, p &lt; .001 )</td>
</tr>
<tr>
<td>EDEQ-4 Shape Concern</td>
<td>3.12</td>
<td>0.33</td>
<td>0.82</td>
<td>0.17</td>
<td>( F = 35.46, p &lt; .001 )</td>
</tr>
</tbody>
</table>

*Note.* EDEQ-4 = Eating Disorder Examination Questionnaire-4.
Table 3: Study 1 Intercorrelations Between Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>AN Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. BMI</td>
<td>-.20</td>
<td>.20</td>
</tr>
<tr>
<td>3. EDEQ-4 Restraint</td>
<td>.60** .19</td>
<td>.01 .18</td>
</tr>
<tr>
<td>4. EDEQ-4 Eating Concern</td>
<td>.57* .17</td>
<td>-.06 -.09</td>
</tr>
<tr>
<td>5. EDEQ-4 Weight Concern</td>
<td>.55* .20</td>
<td>-.03 -.02</td>
</tr>
<tr>
<td>6. EDEQ-4 Shape Concern</td>
<td>.48* .22</td>
<td>.70** .69**</td>
</tr>
</tbody>
</table>

Note: * = p < .05, ** = p < .001.
Table 4: Study 1 mean response latencies for each group and condition by word type

<table>
<thead>
<tr>
<th></th>
<th>AN-syndrome Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emaciated Prime</td>
<td>Thin Prime</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SE</td>
</tr>
<tr>
<td>BEAUTY</td>
<td>554.05</td>
<td>a</td>
</tr>
<tr>
<td>UGLY</td>
<td>552.49</td>
<td>a</td>
</tr>
<tr>
<td>NEUTRAL</td>
<td>567.63</td>
<td>a</td>
</tr>
<tr>
<td>POSITIVE</td>
<td>533.51</td>
<td>16.41</td>
</tr>
</tbody>
</table>

Note: Within word type, reaction times denoted with an “a” are significantly faster (p < .05) than reaction times denoted with a “b.”
STUDY 2

Study Aims and Hypotheses

There were two main aims of Study 2. The first aim was to determine if people who are relatively fearless about death (subsequently referred to as high ACS [acquired capability for suicide] participants) are more likely to associate death with beauty than people who are neither fearless nor fearful of death. In order to achieve this aim I primed two groups of participants, a high ACS group and a control group, with either death or dental pain, and then I compared the groups’ responses on an LDT and free recall task. There were three hypotheses associated with the first aim. First, it was predicted that during the LDT high ACS participants primed with death would recognize beauty words faster than any of the other comparison groups. It was further expected that high ACS participants primed with death would recognize beauty words faster than ugly, neutral, or positive words. Third, it was hypothesized that during the free recall task, high ACS participants primed with death would remember more beauty words than the other groups and that they would remember more beauty words as compared to the other word types.

An additional goal of Study 2 was to ascertain whether suicidality predicted performance on the LDT. It was hypothesized that suicidality would be significantly associated with the belief “death is beautiful.”

Method

Participants

Participants were 81 Introductory Psychology students who signed up to participate in exchange for course credit. Fifty-one (63%) of the participants were female, and 30 (37%) were male, which reflects the general composition of the Introductory participant pool. The participants ranged in age from 18-21, with a mean age of 18.66 (SD = 0.80). The majority of the participants (n = 68; 84%) were non-Latino, 10 (12.3%) were Latino, and three participants chose not to identify an ethnic category. Among the non-Latino participants, 62 (91.2%) were Caucasian, five (7.4%) were African American/Black, and one (1.4%) was Asian. Of the 10 participants who identified themselves as Latino, seven (70%) were Caucasian, one (10%) was African American/Black, one (10%) was American Indian/Alaskan Native, and one (10%) was Asian.
Approximately half of the participants (n = 37) scored high (more than two standard deviations above the mean) on the Acquired Capability for Suicide Scale (ACSS) and were recruited through mass screening. A cut-off of two standard deviations above the mean was chosen for selecting high ACS individuals as we do not currently have a clinical threshold for this scale. The control participants (n = 44) scored within a quarter of a standard deviation of the mean on the ACSS; these participants were also recruited through mass screening. The cut-offs for the high ACS and control groups were based on the mean of the ACSS from the first semester of data collection. The overall variation on the ACSS across semesters was not significantly different between any of the semesters. Both groups of participants were distinct from those in Study 1.

**Sequence of the Investigation**

Across several semesters students were screened for their fearlessness about death during the department’s mass screening of Introductory Psychology students using questions from the ACSS. Students scoring two standard deviations above the mean on this measure were invited to participate in the study by signing up on-line; controls were invited after the quota of participants scoring high on the ACSS was met.

Upon arrival to the lab, participants were told that they would be completing an experiment on word recognition. Before completing the experiment, participants were given a cover story, which involved telling them that one of the ongoing projects in the lab was the development of a personality assessment. Further, participants were told that as part of this ongoing project, we asked all participants who came into our lab to first complete the personality assessment, which involved writing about various topics. Participants were then given the “assessment,” which was really the prime. At this point, participants were randomly assigned to be primed with either death, which involved writing about thoughts about death and the physical consequences of death (see Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), or were assigned to the control condition, which involved writing about dental pain and associated physical consequences. We chose to employ this written prime for this study as it is a widely used and generally successful method of priming death. Participants were given five minutes for the written priming task. After the priming task, participants completed a questionnaire that assessed state affect. Next, as with Study 1, participants were instructed about the LDT and
completed the 10 practice trials and 96 experimental trials. Following the LDT, participants completed the free-recall task and a battery of questionnaires.

**Measures**

Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979). The BDI is a 21-item instrument that broadly assesses symptoms of depression, including the affective, cognitive, behavioral, somatic, and motivational components of depression. Items are rated on a 4-point scale and reflect a 2-week time period. Beck, Steer, and Garbin (1988) conducted a meta-analytic study of the BDI and reported the mean coefficient alpha across 25 years of studies to be .81 in non-psychiatric populations. I measured depression in order to be able to control for any differences between the groups, should they arise. Reliability in the current sample was .88.

Acquired Capability for Suicide Scale (ACSS; Bender et al., 2007). The ACSS is a 20-item self-report measure which assesses one’s fearlessness about death and lethal self-injury. The scale has demonstrated good discriminant and concurrent validity (Bender et al., 2011). The ACSS was used in the current study to screen for fearlessness about death. Reliability in the current sample was .89.

Interpersonal Needs Questionnaire (INQ; Van Orden, in press). The INQ is an 18-item self-report measure designed to measure participants’ connection to others (i.e., belongingness) and the extent to which they feel like a burden on the people in their lives (i.e., perceived burdensomeness). The INQ was given for exploratory purposes; I was interested in examining whether the strength of the association between death and beauty is associated with belongingness and/or burdensomeness. Reliability for INQ-Burdensomeness was .88 and INQ-Belongingness was .77 in the current sample.

Beck Scale for Suicide Ideation (BSS; Beck, Steer, & Ranieri, 1988). The BSS is a 21-item self-report measure of suicidal ideation and intent in the last week. Psychometric properties assessed with an outpatient sample suggest strong internal consistency ($\alpha = .87$). The BSS was given for exploratory purposes; I was interested in examining whether the strength of the association between death and beauty was associated with suicidality. Reliability in the current sample was .94.

Non-suicidal Self-Injury. Non-suicidal self-injury (NSSI) was assessed by asking participants to recount the number of times they had engaged in NSSI over the course of their
lives. This question was also given for exploratory purposes in order to test if NSSI was related to the association between death and beauty.

Brief Mood Introspection Scale. (See above; Study 1). Cronbach’s alpha for the BMIS (Pleasant-Unpleasant Mood) was .75 in the current sample.

Lexical Decision Task. (See above; Study 1).

Free-recall task. (See above; Study 1).

Results

Descriptive Statistics/Preliminary Analyses

As indicated in Table 5, groups did not differ in terms of age, ethnicity, education, or depression. Bivariate correlations between study variables can be found in Table 6. Additionally, there was no Group X Prime interaction for affect following the priming manipulation, BMIS Overall Mood, $F(1,77) = 2.91, p = .09$; BMIS Pleasant-Unpleasant, $F(1,77) = 0.05, p = .83$. Main Analyses

Lexical decision task.

As with Study 1, before submitting my data to analysis, I transformed them by trimming the response latencies by applying a 1,000 ms cutoff and removing incorrect responses. Additionally, the same three words that were removed from Study 1 were removed due to low response accuracies. Following these transformations, mean reaction times were then computed for beauty, ugly, positive, and neutral words. See Table 7 for mean response latencies for each group and condition by word type.

To investigate the first hypothesis, that high ACS participants primed with death would be faster at responding to beauty words than all other groups, response time latencies were submitted to a 2 X 2 X 4 mixed-model repeated measures ANOVA, with the between participant factors group (high ACSS, control) and condition (death, dental pain) and the within-participant factor word type (beauty, ugly, neutral, positive). Mauchly’s Test of Sphericity was not significant, thus assumptions were not violated. The Group X Condition X Word Type interaction was not significant, $F(3,75) = 0.36, p = .77$. There were no significant main effects for group ($p = .80$) or condition ($p = .07$), but there was a significant main effect for word type, $F(3,75) = 14.68, p < .001$, such that participants in general were fastest at responding to positive words. Additionally, a significant between-subjects interaction of Group X Condition emerged,
$F(1,77) = 4.39, p = .04$. Given the study hypothesis, in order to understand the nature of this interaction, I looked at the Group X Condition interaction among the various word types. A significant Group X Condition interaction was only found for positive words, $F(1,77) = 5.77, p = .02$, see Figure 3.

![Graph](image)

**Figure 3.** Study 2 Group X Condition interaction for positive words.

In order to further understand this interaction, I ran a regression analysis to examine the effect of Group (high ACS or control) within the death condition. For positive words, there was not a significant effect of Group in the death condition ($\beta = -.18, t(80) = -1.24, p = .22$). However, I also ran a regression analysis to examine the effect of Condition (death or dental) within the high ACS group, and found that for positive words, the effect of condition was significant in the high ACS group ($\beta = -.49, t(80) = -3.10, p = .003$). Thus, high ACS participants receiving the death prime responded faster to positive words than high ACS participants receiving the dental prime.

To test whether high ACS participants primed with death would be faster at recognizing beauty words as compared to the other word types, I selected only high ACS participants who
had received the death prime. I then compared the means of the response latencies between beauty words and the other word types: beauty/ugly, mean diff = 12.97, \( t(19) = -1.24, p = .23 \); beauty/neutral, mean diff = -15.62, \( t(19) = -1.66, p = .11 \); beauty/positive, mean diff = 17.05, \( t(19) = 2.01, p = .06 \). Given our earlier finding, I also compared the means of the response latencies between positive words and the other word types. I found that high ACS participants who received the death prime were significantly faster at responding to positive words as compared to ugly or neutral words: positive/ugly, mean diff = -30.02, \( t(19) = -2.51, p = .02 \); positive/neutral, mean diff = -32.67, \( t(19) = -3.66, p = .002 \). However, it is important to consider these findings in light of the non-significant effect of group. In other words, although High ACS participants were faster at responding to beauty words as compared to other word types, this finding is not specific to this group.

**Word recall.**

It was predicted that during the free recall task high ACS participants primed with death would: 1) remember more beauty words than the other groups and, 2) remember more beauty words as compared to the other word types. To examine this, I conducted a 2X2 ANOVA with the between-subjects factors of Group (high ACS, control) and Prime (death, dental). The Group X Prime interaction was not significant for beauty words, \( F(1, 74) = .07, p = .80 \).

To examine whether the high ACS participants primed with death would remember more beauty words than any of the other word types, I selected only high ACS participants who received the death prime. High ACS participants primed with death remembered more beauty words as compared to positive words, mean diff = 1.32, \( t(19) = 4.76, p < .001 \), more beauty words as compared to neutral words, mean diff = 2.37, \( t(19) = 8.86, p < .001 \), and more beauty words as compared to ugly words, mean diff = 1.16, \( t(19) = 3.76, p < .001 \). However, given the non-significant Group X Prime interaction it is not possible to draw any conclusions about group or condition in these analyses of word recall.

**Exploratory Analyses**

For those participants who received the death prime, regression analyses were run in order to investigate whether suicidality predicted their performance on the LDT. Separate regression equations were run in order to test if the BSS, INQ Belongingness, INQ Burdensomeness, or non-suicidal self-injury (NSSI) predicted average response times to beauty words or positive words after receiving the death prime.
Overall, these analyses were not significant for beauty words: BSS, $\beta = -.10, t(38) = -0.54, p = .59$; INQ Belongingness, $\beta = -.21, t(38) = -1.27, p = .21$; INQ Burdensomeness, $\beta = -.15, t(38) = -0.91, p = .37$; NSSI, $\beta = -.24, t(38) = -1.48, p = .17$, or for positive words: BSS, $\beta = -.12, t(38) = -0.74, p = .47$; INQ Belongingness, $\beta = -.22, t(38) = -1.35, p = .19$; INQ Burdensomeness, $\beta = -.17, t(38) = -1.07, p = .29$. However, engagement in NSSI trended towards predicting the average reaction time to positive words, $\beta = -.29, t(38) = -1.85, p = .07$.

**Study 2 Discussion**

A primary aim of Study 2 was to test whether high ACS participants who were primed with death would recognize beauty words faster than participants in the other comparison groups. This hypothesis was not supported; however, I did find that high ACS participants receiving the death prime responded faster to positive words than high ACS participants receiving the control prime. Thus, among high ACS participants, thinking about death was associated more with positivity than thinking about another type of painful situation; however, their reactions to death did not differ significantly from controls.

Additionally, I hypothesized that high ACS participants primed with death would recognize beauty words faster than ugly, neutral, or positive words. Contrary to expectations, but in line with my previous finding, high ACS participants primed with death were faster at responding to positive words as compared to neutral or ugly words. However, this finding is not particularly meaningful as it was not specific to the high ACS group. Further, it was expected that during the free recall task, high ACS participants primed with death would remember more beauty words than the other groups and that they would remember more beauty words as compared to the other word types. Although I did find that high ACS participants receiving the death prime remembered more beauty words during the free recall task than positive, neutral, or ugly words, I did not find that the high ACS group remembered more beauty words than the other groups.

The other main aim associated with Study 2 was to test the hypothesis that indicators of suicidality (i.e., suicidal ideation, burdensomeness, belongingness, NSSI) would predict the strength of the relationship between death and beauty (as indexed by reaction times to beauty words following the death prime). In general, indicators of suicidality did not predict reaction
times to beauty or positive words, though NSSI trended towards predicting reaction time to positive words among those participants who received the death prime.

Failure to find support for this hypothesis could be due to the fact that the scale we used to measure ACS assesses for fearlessness and pain tolerance, not suicidality; thus, I would not necessarily expect it to be significantly related to such variables. Additionally, results may have been attenuated due to the use of a non-clinical population, which did not evidence high levels of suicidal ideation or NSSI. In future studies it may be informative to assess whether constructs that are related to fearlessness and pain tolerance, but not necessarily suicidality, like stoicism and distress tolerance, are better predictors of the association between death and positivity.

Overall these findings suggest that people with high levels of fearlessness and pain tolerance have more favorable attitudes towards death as compared to dental pain; this is notable given that dental pain is temporary and likely less painful. This finding may be useful in increasing understanding regarding the acquired capability for suicide, which is the most novel aspect of Joiner’s (2005) theory of suicidal behavior. As currently conceptualized, the acquired capability for suicide is a construct that is behaviorally based and can only increase or remain stable over time. However, the results of these studies suggest there might be cognitive styles related to the acquired capability for suicide, which could have important treatment implications. If someone is at great risk for a suicide attempt (i.e., has elevated burdensomeness, low belongingness, and acquired the capability for suicide), interventions informed by Joiner’s (2005) theory typically focus on targeting suicidal desire by increasing belongingness or decreasing burdensomeness (or both), as ACS is believed to be a more static trait not amenable to clinical intervention. However, if the acquired capability for suicide is related to certain cognitive biases, perhaps these biases could be targeted. Although this would likely not be a necessary intervention for most, for the chronically suicidal it may be one method of decreasing the likelihood and/or lethality of future attempts.

Although qualitative, in reviewing the essays that participants wrote about death, there were striking differences between the high and average ACS groups. By and large, people in the average ACS group wrote about death as being fearful and something to be avoided. For example, some typical responses were as follows: “Honestly [death] scares me. Death is probably my greatest fear. I try not to think about it”; “Terrifying”; “The emotions that are brought up when thinking of my own death are scared…anxious.” However, some typical
responses from high ACS people were as follows: “My death arouses many emotions in me. First is actually excitement”; “The emotions that arise are actually calmness and peacefulness”; “[The] thought of my own death doesn't really phase me at all. Death seems more objective rather than something to be feared”; “I wouldn't feel upset about it obviously. I feel that if it's my time to go, it's my time.” In future studies I plan to analyze these essays to examine the linguistic differences between high ACS and average ACS individuals using Linguistic Inquiry and Word Choice software (Tausczik & Pennebaker, 2009).

Some of the limitations of Study 2 are similar to that of Study 1, including the cross-sectional design. As such, I was unable to determine the temporal course of the development of these attitudes in relation to the acquisition of ACS. Further, this study used a predominantly Caucasian undergraduate population, thus it is unclear whether the results of this study would generalize to other populations. However, I found some effects despite the use of a non-clinical sample, which may indicate that my effects would have been even more pronounced in a sample of people with depression or suicidal ideation. An additional important limitation may have been the use of a written, as opposed to a visual prime. Given that the majority of the results from this study were non-significant, a visual prime may have been a more appropriate manipulation and potentially produced stronger results.

Strengths of this study include the use of a rigorous control group in that I compared high ACS individuals to people with average (rather than low) levels of ACS. As with Study 1, by including both positive and beauty words I was better able to determine whether the effect was specific to beauty or more generally to positivity. Further, this is the first study to test cognitive associations of the acquired capability for suicide.
Table 5: Means and Standard Deviations of Study 2 Sample Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>High ACS</th>
<th></th>
<th>Control</th>
<th></th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SE$</td>
<td>$M$</td>
<td>$SE$</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>18.57</td>
<td>.15</td>
<td>18.70</td>
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<td>$F = 0.49, p = .49$</td>
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<td>Hispanic</td>
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<td></td>
<td>7</td>
<td></td>
<td>$\chi^2 = 1.03, p = .31$</td>
</tr>
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<td>Non-Hispanic</td>
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<td></td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2 = 3.09, p = .21$</td>
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<tr>
<td>Bachelors</td>
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<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associates/Some college</td>
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<td>19</td>
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<td></td>
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<td>High School</td>
<td>25</td>
<td></td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDI Depression</td>
<td>8.54</td>
<td>1.4</td>
<td>6.8</td>
<td>0.72</td>
<td>$F = 1.29, p = .26$</td>
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*Note.* BDI = Beck Depression Inventory.
Table 6: Study 2 Intercorrelations Between Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>High ACS Group</th>
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<td>3</td>
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<tr>
<td>1. Age</td>
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<td></td>
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</tr>
<tr>
<td>2. Acquired Capability for Suicide</td>
<td>.08</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Beck Depression Inventory</td>
<td>-.25</td>
<td>.30</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. INQ Belongingness</td>
<td>-.191</td>
<td>.06</td>
<td>.71**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. INQ Burdensomeness</td>
<td>-.18</td>
<td>.17</td>
<td>.84**</td>
<td>.76**</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Beck Suicide Scale</td>
<td>-.14</td>
<td>.32</td>
<td>.62**</td>
<td>.47**</td>
<td>.77**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>7. NSSI</td>
<td>-.24</td>
<td>.07</td>
<td>.21</td>
<td>.20</td>
<td>.07</td>
<td>.05</td>
<td>--</td>
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<table>
<thead>
<tr>
<th>Measure</th>
<th></th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>--</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Acquired Capability for Suicide</td>
<td>-.14</td>
<td>--</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Beck Depression Inventory</td>
<td>-.07</td>
<td>-.11</td>
<td>--</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. INQ Belongingness</td>
<td>-.19</td>
<td>.14</td>
<td>.31*</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. INQ Burdensomeness</td>
<td>-.05</td>
<td>.04</td>
<td>.47**</td>
<td>.39**</td>
<td>--</td>
<td></td>
<td></td>
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<tr>
<td>6. Beck Suicide Scale</td>
<td>#</td>
<td>#</td>
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<td>#</td>
<td>#</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. NSSI</td>
<td>.25</td>
<td>.03</td>
<td>.17</td>
<td>.02</td>
<td>.03</td>
<td>#</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

Note: INQ = Interpersonal Needs Questionnaire, NSSI = number of life-time episodes of non-suicidal self-injury; # indicates the correlation could not be computed due to the BSS being a constant (0); * = p < .05, ** = p < .001.
Table 7: Study 2 mean response latencies for each group and condition by word type

<table>
<thead>
<tr>
<th>Word Type</th>
<th>High ACS Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Death Prime</td>
<td>Dental Prime</td>
</tr>
<tr>
<td>BEAUTY</td>
<td>M</td>
<td>SE</td>
</tr>
<tr>
<td>549.55</td>
<td>18.81</td>
<td>619.93</td>
</tr>
<tr>
<td>UGLY</td>
<td>562.51</td>
<td>20.10</td>
</tr>
<tr>
<td>NEUTRAL</td>
<td>565.17</td>
<td>17.85</td>
</tr>
<tr>
<td>POSITIVE</td>
<td>532.50</td>
<td>17.97</td>
</tr>
</tbody>
</table>

Note: Within word type, reaction times denoted with an “a” are significantly faster ($p < .05$) than reaction times denoted with a “b.”
GENERAL DISCUSSION

The guiding hypothesis for the current research was that extreme atypical beliefs about beauty are cognitive risk factors for suicidal behavior and symptoms of AN. The conclusions drawn from the two studies provide some support for this hypothesis. AN-syndrome participants primed with emaciation were faster to respond to beauty words than control participants primed with emaciation. However, it appears that the associations with emaciation and death are more complex than originally conceptualized.

In Study 1 I found that AN-syndrome participants had a greater association between both emaciation and beauty and emaciation and ugliness as compared to controls. Human nature is such that people are driven to compare themselves to others in order to better understand their own abilities (Festinger, 1954). Given the pictorial nature of the prime used in Study 1, it is possible that participants made judgments about their own bodies in comparison to the ones they were viewing. For AN-syndrome participants viewing emaciated pictures, this judgment may in turn have led to associations with ugliness, as a result of feeling less beautiful than the comparison images.

These results have potentially important clinical implications. Currently, two out of four of the criteria necessary for a DSM-IV AN diagnosis are cognitive in nature (intense fear of gaining weight or becoming fat; disturbance in the way weight/shape is experienced or undue influence of weight/shape on self-evaluation); however, these cognitive criteria are difficult to assess, in part due to individuals with AN oftentimes being recalcitrant to disclose them (Becker, 2009). My colleagues and I (Smith et al., 2011) suggest that a promising alternative to assessing for self-reported cognitive criteria is to assess for implicit cognitions or attitudes regarding beliefs about weight and shape. It is possible that normed versions of experimental procedures, like the one used in the current study, could be used in conjunction with more traditional explicit measures, such as structured clinical interviews, as a way to aid in the often difficult process of diagnosis among people believed to have AN. Assessing for the presence of certain types of cognitions and attitudes, such as a preference for emaciation, has the potential to aid in making diagnostic decisions, treatment recommendations, and to monitor progress.

Perhaps in part due to the use of a non-clinical sample and written prime, overall the results of Study 2 were negative. However, I did find that high ACS individuals find death to be...
more positive than dental pain. This is notable given that elevated ACS does not imply suicidality, and in fact, the majority of our participants were not suicidal.

**Limitations and Future Directions**

In addition to the limitations previously outlined for each individual study, the results should be tempered with the consideration of some additional limitations. Above all, the present investigations were limited by their cross-sectional nature. Although the results yielded some support for the hypothesis that individuals with an AN-like syndrome have atypical associations with emaciation, the temporality of the effect remains unclear. Follow-up longitudinal studies are needed to determine whether these associations precede or follow the onset of AN symptoms.

Additionally, I used supraliminal priming, rather than subliminal priming. This was a deliberate design decision made in order to avoid any interference caused by using multiple subliminal primes, as research has indicated that using primes that vary in terms of affect or emotionality may interfere with subsequent stimulus processing (e.g., Flaisch, Stockburger, & Schupp, 2008). In other words, there is some evidence that target stimuli detection is affected when targets follow an affectively engaging picture (e.g., Most, Smith, Cooter, Levy, & Zald, 2007), which likely results from competition for processing resources. However, by using prolonged supraliminal primes, I may have been assessing secondary evaluative associations in addition to the primary, implicit association.

There are several clinical implications and future directions that stem from this work. Recent research has demonstrated that automatic and implicit cognitions can predict psychopathology. For instance, among participants with body dysmorphic disorder (BDD), Buhlmann and colleagues (2009) found that implicit beliefs regarding self-esteem and attractiveness predicted overall BDD symptom severity, distress during a mirror exposure, and avoidance during a mirror exposure. Furthermore, Nock and Banaji (2007) found that among self-injurers, an implicit association between “cutting” and “me” better predicted self-injury than typical self-report measures. Although our data are cross-sectional, the relationships uncovered warrant more study in order to determine if these associations could be predictive of future behavior. For example, associating beauty with emaciation may predict restricting type behaviors.
Future studies should also attempt to replicate the findings with other paradigms, such as the affect misattribution paradigm (AMP) and the implicit association task (IAT). In an IAT study, it would be interesting to see if AN women were more likely to associate “emaciation” with “me” versus “thin” with “me.” Given the largely negative results of Study 2, which used a written prime, in future studies I would like to employ a visual stimuli. For example, I think it would be interesting to use a design, like the AMP, to pair death related images with Chinese characters to see if individuals with high levels of ACS find the Chinese characters as more pleasant when followed by death images as compared to individuals with average or low levels of ACS. Further, it would have been instructive to have included negative words in Study 2 to see if high ACS individuals have less negative associations with death as compared to average ACS individuals. Additionally, it would be interesting to assess for physiological differences in responding to stimuli such as emaciation and death. For example, although qualitative, control participants seemed to respond with more disgust and/or arousal to the primes of interest. Differences in arousal could be assessed with heart rate and skin conductance and disgust could be measured with facial electromyography (EMG).
APPENDIX A

EXAMPLE PICTURE OF EMACIATION PRIME
APPENDIX B

EXAMPLE PICTURE OF THIN PRIME
APPENDIX C

IRB APPROVAL STUDY 1

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673, FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 4/14/2011

To: April Smith
Address: 1107 W. Call St.
Dept.: PSYCHOLOGY DEPARTMENT

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research
Perceptions of beauty in people with symptoms of anorexia nervosa

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 4/11/2012, you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc: []
HSC No. 2011.5995
"Clinical Interview" INFORMED CONSENT FORM

Title of Research: Clinical Interview

Principal Investigators: April R. Smith, and Thomas E. Joiner, Jr., Ph.D.

I, ___________________________________________, being 18 years of age or older, freely and voluntarily and without undue inducement or any element of force, fraud, deceit, duress, or other form of constraint or coercion, consent to be a participant in the above named research project, to be conducted at the Florida State University from June 1, 2009 through June 1, 2011.

Listed below are the procedures to be followed in this research and their purposes.

Purpose of the research: This project is being conducted by April Smith, M.S., a graduate student in psychology who is being trained by Thomas Joiner, Ph.D., the Bright-Burton Professor of Psychology at Florida State University. I understand the purpose of this research project is to better understand the prevalence of certain eating behaviors.

Procedures for the research: I understand that if I participate in the project I will need to make 1 visit to the lab, and I will be paid $60 for this visit. During the first hour of the study, I will participate in an interview, during which I will be asked about my feelings, thoughts, and mental health symptoms. During the second portion of the study I will complete a brief computer task and fill out some questionnaires about my feelings, thoughts, and mental health symptoms. The total time commitment for this study is 2 hour. I will be paid $60 for my participation at the end of the study.

Potential risks or discomforts: I understand there is a possibility of a minimal level of risk involved with participation in this study. I might experience distress while answering questions about mental health symptoms. I understand I am able to stop my participation at any time I wish and am free to omit questions which I am not comfortable answering. I understand that if I experience distress in connection with the sensitive questions being asked, April Smith (or trained personnel) will be immediately available to discuss the concerns. At my request, I may be given a referral for mental health services. I understand that while I am completing the interview, the experimenter will review my responses to the questions about suicide. This will be done for my safety. If my responses indicate that I may be at risk for suicide, the experimenter will accompany me to the Psychology Clinic where I may speak with a therapist.

Potential benefits to you or others: I will be given an opportunity to receive $60 in return for participation in this study. In addition, I will be exposed to the research process, which may be a learning opportunity. The information gained from this project will provide researchers and
clinicians with currently unavailable information on what people with eating disorders perceive as beautiful.

Confidentiality: I understand that all my answers to the questions will be kept confidential to the extent allowed by law and will be assigned a subject code number to conceal my identity. Only researchers involved in this project will have access to my data and my contact information will be used only for recruitment purposes. No one other than research personnel involved in this collaborative project will have access to the link between my contact information and my responses. This link will be destroyed at the end of the term in which I complete the survey. My name will not appear on any of the results and no individual responses will be reported. Only group findings will be reported. All of my data will be stored in secure laboratory files in the FSU Psychology building and will be destroyed no later than ten years after my participation.

I understand that this consent may be withdrawn at any time without prejudice, penalty or loss of benefits to which I am otherwise entitled. I have been given the right to ask any inquiry concerning the study. Questions, if any, have been answered to my satisfaction.

I understand that I may contact April R. Smith, Florida State University, Department of Psychology, for answers to questions about this research or my rights. Group results will be sent to me upon my request.

I understand that if I have any questions about my rights as a participant in this research, or if I feel I have been placed at risk, I can contact the Chair of the Human Subjects Committee, Institutional Review Board, through the Vice President for the Office of Research at (850) 644-7900.

I have read and understand this consent form.

_________ (Participant) ___________ (Date)
Study 2b Informed Consent Form

Title of Research: Word Recognition

Principal Investigators: April R. Smith, M.S., and Thomas E. Joiner, Jr., Ph.D.

I, ____________________________, being 18 years of age or older, freely and voluntarily and without undue inducement or any element of force, fraud, deceit, duress, or other form of constraint or coercion, consent to be a participant in the above named research project, to be conducted at the Florida State University from June 1, 2009 through June 1, 2011.

Listed below are the procedures to be followed in this research and their purposes.

Purpose of the research: This project is being conducted by April Smith, a graduate student in psychology who is being trained by Thomas Joiner, Ph.D., the bright-burton Professor of Psychology at Florida State University. I understand the purpose of this research project is to better understand whether word recognition is affected by certain associations.

Procedures for the research: I understand that if I participate in the project I will fill out questionnaires that ask me about my feelings, thoughts, and mental health symptoms. I will also complete a brief task on the computer. The total time commitment will consist of approximately 1 hour to fill out questionnaires and complete the computer task.

Potential risks or discomforts: I understand there is a possibility of a minimal level of risk involved with participation in this study: I might experience distress while answering questions about mental health symptoms. I understand I am able to stop my participation at any time I wish and am free to omit questions which I am not comfortable answering. I understand that if I experience distress in connection with the sensitive questions being asked, April Smith (or trained personnel) will be immediately available to discuss the concerns. At my request, I may be given a referral for mental health services. I understand that after I complete the questionnaires, the experimenter will look at my responses to the questions about suicide. This will be done for my safety. If my responses indicate that I may be at risk for suicide, the experimenter will accompany me to the Psychology Clinic where I may speak with a therapist.

Potential benefits to you or others: I will be given an opportunity to receive 1 course credit in return for participation in this study. In addition, I will be exposed to the research process, which may be a learning opportunity. The information gained from this project will provide researchers and clinicians with currently unavailable information on what people with eating disorders perceive as beautiful.

FSU Human Subjects Committee Approved on 4/14/11. Void after 4/11/12. HSC# 2011.5995
Confidentiality: I understand that all my answers to the questions will be kept confidential to the extent allowed by law and will be assigned a subject code number to conceal my identity. Only researchers involved in this project will have access to my data. My name will not appear on any of the results and no individual responses will be reported. Only group findings will be reported. All of my data will be stored in secure laboratory files in the FSU Psychology building and will be destroyed no later than ten years after my participation.

I understand that this consent may be withdrawn at any time without prejudice, penalty or loss of benefits to which I am otherwise entitled. I have been given the right to ask any inquiry concerning the study. Questions, if any, have been answered to my satisfaction.

I understand that I may contact April R. Smith, Florida State University, Department of Psychology, or Thomas E. Joiner, Florida State University, Department of Psychology, for answers to questions about this research or my rights. Group results will be sent to me upon my request.

I understand that if I have any questions about my rights as a participant in this research, or if I feel I have been placed at risk, I can contact the Chair of the Human Subjects Committee, Institutional Review Board, through the Vice President for the Office of Research at (850) 644-7900.

I have read and understand this consent form.

__________________________________________________________________________

(Participant)                                                 (Date)
APPENDIX D

IRB APPROVAL STUDY 2

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673, FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 4/14/2011

To: April Smith

Address: 1107 W. Call St.
Dept.: PSYCHOLOGY DEPARTMENT

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research
Perceptions of beauty in people with symptoms of anorexia nervosa

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 4/11/2012, you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc: []
HSC No. 2011.5995
STUDY 3 INFORMED CONSENT FORM

Title of Research: Word Recognition

Principal Investigators: April R. Smith, and Thomas E. Joiner, Jr., Ph.D.

I, ________________________________, being 18 years of age or older, freely and voluntarily and without undue inducement or any element of force, fraud, deceit, duress, or other form of constraint or coercion, consent to be a participant in the above named research project, to be conducted at the Florida State University from May 1, 2010 through August 30, 2011. Listed below are the procedures to be followed in this research and their purposes.

Purpose of the research: This project is being conducted by April Smith, a graduate student in psychology who is being trained by Thomas Joiner, Ph.D., the Bright-Burton Professor of Psychology at Florida State University. I understand the purpose of this research project is to better understand whether word recognition is affected by certain associations.

Procedures for the research: I understand that if I participate in the project I will fill out questionnaires that ask me about my feelings, thoughts, and mental health symptoms. Specifically, these questionnaires will ask me about symptoms of depression, suicide, and belongingness. I will be asked to write a short essay about a potentially disturbing topic. I will also complete a brief task on the computer that will involve judging whether letter strings presented on computer are words or not. The total time commitment will consist of approximately 1 hour to fill out questionnaires and participate in the computer task.

Potential risks or discomforts: I understand there is a possibility of a minimal level of risk involved if I agree to participate in this study. I might experience distress while answering questions about mental health symptoms. I understand I am able to stop my participation at any time I wish and am free to omit questions which I am not comfortable answering. At my request, I may be given a referral for mental health services. I understand that while I am completing the interview, the experimenter will look at my responses to the questions about suicide. This will be done for my safety. If my responses indicate that I may be at risk for suicide, the experimenter will accompany with to the Psychology Clinic where I may speak with a therapist.

Potential benefits to you or others: Introductory Psychology students will be given an opportunity to receive 1 course credit in return for participation in this study. Non-Introductory Psychology students will be given an opportunity to earn extra credit as dictated by their instructor. I understand there may be societal benefits for participating in this research project. Increasing the scientific community's knowledge of the types of stimuli people are attracted to will allow for the creation of better mental health preventions and interventions.

Confidentiality: I understand that all my answers to the questions will be kept confidential to the extent allowed by law and will be assigned a subject code number to conceal my identity. Only

FSU Human Subjects Committee Approved on 4/14/11. Void after 4/11/12. HSC# 2011.5997
researchers involved in this project will have access to my data. No one other than research personnel involved in this collaborative project will have access to the link between my contact information and my responses. This link will be destroyed at the end of the term in which I complete the survey. My name will not appear on any of the results and no individual responses will be reported. Only group findings will be reported. All of my data will be stored in secure laboratory files in the FSU Psychology building and will be destroyed no later than ten years after my participation.

I understand that this consent may be withdrawn at any time without prejudice, penalty or loss of benefits to which I am otherwise entitled. I have been given the right to ask any inquiry concerning the study. Questions, if any, have been answered to my satisfaction. I understand that I may contact April R. Smith, Florida State University, Department of Psychology, or Thomas E. Joiner, Florida State University, Department of Psychology, for answers to questions about this research or my rights. Group results will be sent to me upon my request.

I understand that if I have any questions about my rights as a participant in this research, or if I feel I have been placed at risk, I can contact the Chair of the Human Subjects Committee, Institutional Review Board, through the Vice President for the Office of Research at (850) 644-8633.

I have read and understand this consent form.

__________________________________________  __________________________
(Participant)                                  (Date)

FSU Human Subjects Committee Approved on 4/14/11. Void after 4/11/12. HSC# 2011.5997
REFERENCES


Inquisit 3.0 [Computer software]. (2010). Seattle, WA: Millisecond Software LLC.


BIOGRAPHICAL SKETCH

April Smith was born in Dallas, Texas and graduated Magna Cum Laude from the University of Texas, Austin with a Bachelors of Arts in Psychology and Plan II. A true Texan, April owns three pairs of cowboy boots. In 2006 April entered the graduate program in Clinical Psychology at Florida State University. In 2008 April completed her Masters degree and was entered into the doctoral program. April’s research interests include disordered eating in non-traditional populations, suicidal behavior, and the intersection between eating disorders and suicidality.