THE EFFECTS OF ACUTE DISSOCIATION ON IMPLICIT AND EXPLICIT MEASURES OF EMOTIONAL RESPONSIVITY

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Abstract

Recent research highlights the importance of exploring the relationship between acute dissociation and emotional responsivity; however, few studies have examined the difference between implicit and explicit emotional experiences. As such, this study investigated the effects of dissociation on both, implicit and explicit emotional responses, in college-aged individuals (N = 132). Using a combination of experimental inductions for dissociation and sadness, along with measures like the Implicit Measure of Distinct Emotional States (IMDES) and the Positive and Negative Affect Schedule (PANAS-X), the study examines the hypothesis that dissociation dampens explicit emotional responses while preserving implicit emotional processes. Findings revealed no significant differences in emotional responses (i.e., sadness, fear, anger, happiness) between individuals subjected to dissociation induction and those in the control group, suggesting that the acute induction of dissociation may not significantly impact emotional responsivity as measured in this study. Correlational analyses demonstrated significant associations between general dissociative experiences, levels of alexithymia, and trauma exposure. The study contributes to the nuanced understanding of dissociation's effects on emotional processing, suggesting the need for further research into the mechanisms underlying dissociative experiences and their interaction with emotional states. Implications for clinical practice and future research directions are discussed, highlighting the importance of considering both implicit and explicit emotional processes in understanding and treating dissociative phenomena.

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The Effects of Acute Dissociation on Implicit and Explicit Measures of Emotional Responsivity

In a moment that would alter the lives of many, a commuter train derailed on its way to New York City in 2013, tragically resulting in the loss of four lives. The engineer, caught in what he described as a "daze," sparked discussions among experts about the potential experience of "highway hypnosis," a phenomenon situated on the dissociation continuum (Braun, 1988; Lupkin, 2013). Dissociation disrupts the seamless integration of consciousness, memory, identity, and perception. Clinically, the term dissociation is defined as “a disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior” (American Psychiatric Association [APA], 2013, p. 291). Ranging from non-pathological instances like daydreaming to severe dissociative disorders, dissociation's impact on daily functioning and mental health varies widely (Braun, 1988).

Considerable research has shed light on the prevalence of dissociative experiences among the general population, with studies indicating that a majority of college students report some degree of dissociation, emphasizing its commonality and varying impact (Alvarado, 2005; Zingrone & Alvarado, 2002). Notably, the National Alliance on Mental Health (2022) suggests that up to 75% of people experience at least one episode of depersonalization or derealization. The dissociative spectrum includes pathological dissociation, which significantly hampers one's ability to function effectively in daily life. This type of dissociation is commonly associated with the diagnosis of a dissociative disorder and occurs in less than 2% of the population (APA, 2013). According to the *Diagnostic and Statistical Manual of Mental Disorders* (5th Edition; DSM-5; APA, 2013), symptoms of dissociation may include absorption (including highway

hypnosis), depersonalization, derealization, emotional constriction, amnesia, and identity alterations. Additionally, dissociative features are often linked with complex psychiatric conditions like post-traumatic stress disorder (PTSD) and borderline personality disorder (BPD), underpinning the critical role of trauma in its development (Craparo, Ardino et al., 2014; Shin et al., 2019). For example, early life trauma, such as experiences of emotional, physical, and/or sexual abuse, can alter stress responses and increase the risk of developing dissociative symptoms in later life. A recent review of over 1,500 studies revealed that trauma exposure not only precedes but is also moderately associated with dissociation within the general population and clinical populations (Brand & Frewen, 2017). At the more severe end of the dissociative spectrum, individuals typically present with comorbid depression, anxiety, substance abuse, eating disorders, and self-injurious behaviors (APA, 2013; Leonard et al., 1999).

In the context of trauma and psychological disorders, dissociation is often characterized as the inability to integrate sensory and emotional elements of an event, involving subjective experiences of strangeness, disconnection, and shifts in perception (Dalenberg et al., 2012). Dissociation may involve subjective detachment from reality, emotional numbing, and shifts in consciousness, leading to experiences of unreality and disconnection (Černis et al., 2020). Ultimately, this process of disconnection inhibits the capacity to integrate emotional experiences into consciousness. This detachment is often linked with alexithymia, a construct defined as the diminished ability to identify and describe one's feelings, suggesting a profound impact on emotional awareness and regulation (Bagby et al., 1994; Elzinga et al., 2010; Grabe et al., 2000). Studies have shown that dissociation and alexithymia are interconnected constructs that can impact emotional experiences and regulation. For instance, Reyno and colleagues (2020) argue that both dissociation and alexithymia are believed to arise from a disconnection between

conscious aspects of self-experiences and internal perceptions (i.e., mental self), and as a result, there is difficulty in integrating thoughts, feelings, and experiences into consciousness and memory. The intertwining of dissociation and alexithymia, especially in the context of trauma, hints at complex underlying mechanisms that impede the healthy processing of emotions. They are both seemingly subconscious attempts to defend the self from overwhelming experiences and to cut oneself off from internal and external dangers, be they physiological or emotional.

Despite dissociation's typically maladaptive connotations, some literature proposes its role as an adaptive mechanism in managing overwhelming emotional experiences (Grabe et al., 2000; Hall, 2003). As Herman (2015) posits, the core function of dissociation is providing temporary relief from distress, as a kind of "psychological anesthesia." Contemporary theories echo this sentiment, presenting dissociation as a means of compartmentalizing and diminishing the emotional and cognitive intensity of distressing experiences, enabling a form of psychological survival (Boysen, 2011; Polanco-Roman et al., 2016). Individuals experiencing dissociation may exhibit a detachment from their emotions, leading to a sense of emotional numbing, reduced emotional reactivity, or emotional neutrality as a way to cope with overwhelming feelings or as a means of escape (Gershuny & Thayer, 1999).

Shin and colleagues (2019) explored the impact of acute dissociation on emotional responses in a group of healthy, non-clinical participants. Their study revealed that those subjected to a dissociation induction perceived negative images as less distressing and demonstrated a slight tendency to view positive images as less enjoyable, compared to the control group. This pattern indicates that emotional numbing, potentially used as a coping strategy during dissociative episodes, might simultaneously diminish the intensity of positive emotional experiences. The study aligns with the proposition that dissociation leads to a

dampening of emotional processing, including emotional numbing (Giesbrecht et al., 2008). However, a significant caveat in Shin and colleagues' (2019) study is the reliance on self-reported emotions, which presents challenges in conclusively interpreting emotional states.

Extensive research delineates emotions into two categories: explicit, which are consciously processed and expressed, and implicit, which operate below the level of conscious awareness. This hypothesis forms the core of the dual-processing theory of emotions, which asserts that emotional processing can occur both automatically, without conscious awareness, and through controlled, conscious cognitive evaluation and regulation (Gawronski & Bodenhausen, 2006). While explicit emotions are fully recognized and articulated, implicit emotions are subconsciously experienced and may not be consciously acknowledged or expressed (Lane & Schwartz, 1987). This nuanced understanding of emotional experiences requires an integration of both, explicit and implicit emotional processes (Quirin & Lane, 2012), underscoring the dynamic interplay between the conscious and unconscious facets of emotional processing. However, traditional approaches, such as those highlighted in the study by Shin and colleagues (2019), typically utilize explicit measures, relying on self-report questionnaires for individuals to deliberately evaluate their emotional states. Though these explicit measures provide critical insights, they may overlook the subtleties of implicit or unconscious emotional experiences, suggesting the need for methods that can capture the breadth of emotional processing, including tools like the Implicit Measure of Distinct Emotional States (IMDES; Bartoszek & Cervone, 2017, 2022).

Dissociation remains an elusive phenomenon within psychological research (Butler, 2006), with a scarcity of insights into the unconscious emotional processes that manifest during dissociative states. Investigating dissociation will deepen our comprehension of how individuals

navigate trauma and stress, enhancing our understanding of dissociative disorders and their psychological implications. Despite the stigma and underdiagnosis historically associated with dissociative disorders, their recognition and integration into psychiatric and psychological discourse are on the rise. Incorporating the dual-processing theory of emotion, which delineates emotional experiences into both implicit, subconscious processes and explicit, conscious processes (Gawronski & Bodenhausen, 2006), the current study seeks to explore the nuanced effects of acute dissociation on these two dimensions of emotional responsivity among college-aged participants.

Consistent with the emotional numbing theory, it is hypothesized that the dissociation induction will attenuate explicit emotional responses as captured by self-report measures (Shin et al., 2019). Specifically, it is expected that participants in the control group will more readily acknowledge experiencing targeted emotions, such as sadness, compared to those in the dissociation group. Conversely, drawing on the dual-processing theory of emotion, it is hypothesized that implicit emotional measures will reveal a distinct pattern, with participants across both groups unconsciously displaying experiences of the dampened emotions, such as sadness (Gawronski & Bodenhausen, 2006). This prediction highlights the dual-processing theory's assertion that emotional processing operates on both an unconscious (i.e., automatic) and conscious (i.e., controlled) level, suggesting that dissociation may differentially impact these two pathways, thereby influencing the overall emotional experience. Additionally, this study aims to extend the current body of knowledge by proposing a strong positive relationship between overall dissociative experiences and levels of alexithymia (Elzinga et al., 2010; Grabe et al., 2000), along with a strong positive association between reported trauma events and general dissociative experiences (Brand & Frewen, 2017; Craparo, Ardino et al., 2014). This

investigation seeks to deepen our understanding of the intricate connections between dissociation, emotional processing, alexithymia, and trauma.

Method

Participants

Participants were recruited from an undergraduate university psychology subject pool located in New Jersey. Participants received partial course credit for their participation. There were no exclusion criteria and participants were not pre-screened for any psychiatric illnesses or current mood states. A total of 148 participants were recruited for the study. Of these, a total of 16 (10.8%) individuals who took part in the study were ultimately excluded from the analyses. Six (4.1%) participants were removed due to incomplete participation and/or insufficient engagement. Consistent with Bartoszek and Cervone's (2022) procedures, an additional 10 (6.8%) participants were removed because they rated fewer than 75% (<15) of the actual trial images on the IMDES.

Thus, analyses were based on 132 participants (89 female, 41 male, and two non-binary; M_{age} = 20.29; *SD* = 3.367). The majority of participants identified as either Hispanic or Latino (29.5%), White (24.2%), Black or African American (16.7%), or Biracial (15.2%). Participant characteristics are reported in Table 1.

Materials and Measures

All measures and tasks were programmed using Qualtrics software. The study was administered to participants via the university's pool management system, SONA Systems.

Experimental Measures

Dissociation Induction. The dissociation induction method used in this study involves a well-established procedure validated by Miller and colleagues (1994), specifically designed to

elicit an acute dissociative state. This method is particularly advantageous for its simplicity and replicability. Participants were seated in a comfortable chair facing a computer screen positioned at eye level. A two-inch diameter dot, black against a white background for maximum contrast, was displayed on the computer screen. Participants were instructed to stare directly at the dot and were told that it was important to maintain focus on the dot without diverting their gaze. The dot remained displayed on the screen for a continuous duration of 10 minutes.

Emotion Induction. The emotion induction procedure utilized in this study was designed to elicit a specific emotional state (i.e., sadness) using a guided visualization technique. This method is based on the protocol developed by Cervone and colleagues (1994), which has been validated in previous research for reliably inducing emotional responses through guided imagery. The audio used for the emotion induction was a carefully scripted narrative lasting approximately five and a half minutes. It depicted a highly emotive scenario in which the listener was led to imagine the gradual decline and eventual death of a best friend due to a terminal illness. Participants were instructed to close their eyes and vividly imagine themselves in the scenario, focusing on the feelings and thoughts one might experience in such a situation.

Implicit Measure

Implicit Measure of Distinct Emotional States (IMDES; Bartoszek & Cervone, 2017, 2022). The IMDES, developed by Bartoszek and Cervone (2017, 2022), serves as a psychometric tool designed to assess implicit emotional responses through the evaluation of abstract images. The IMDES is particularly valued for its ability to capture subtle and unconscious emotional reactions that participants themselves might not be consciously aware of or able to articulate. The IMDES involves presenting participants with a series of abstract images, which allow for individual interpretation, thus tapping into the implicit emotional

experiences that guide perception. Participants viewed 25 pieces of abstract expressionist artwork one at a time on the computer screen and, in a forced-choice format, judged the emotion that they believed the artist tried to convey. Instructions informed participants that they "will see paintings of digital abstract expressionism" and that their task "will be to judge the emotion the artist tried to express in each painting." Consistent with Bartoszek & Cervone's (2022) procedures, an abstract image was displayed for five seconds on each trial and participants were allotted three seconds to select one of four response options: "anger," "fear," "sadness," or "happiness." The cycle continued automatically until all 25 abstract images were presented. The composite scores of the IMDES were derived from the ratings of the last 20 abstract images, as the first five abstract images were treated as practice trials.

The IMDES has been validated through rigorous testing, showing strong convergent validity with other established measures of emotional processing. Moreover, it demonstrates discriminant validity, effectively distinguishing between different emotional states (Bartoszek & Cervone, 2017, 2022).

Self-Report Measures

Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1994). The PANAS-X, developed by Watson and Clark in 1994, is a widely used psychological tool designed to assess distinct dimensions of mood and emotion. It is particularly valuable in research for measuring both the positive and negative aspects of affect separately. The PANAS-X extends the original PANAS (Watson et al., 1988) by including additional scales that provide a finer-grained analysis of emotional states. The full version of the PANAS-X consists of 60 items, which encompass various emotional states beyond basic positive and negative affect. However, many studies, including the current one, select specific subscales

relevant to their research focus due to the comprehensive nature of the tool. Participants reported, using a five-point Likert scale (from 1 = “Not at all” to 5 = “Extremely”), the extent to which each of the 20 adjectives described emotions they experienced “at this moment.” Each adjective referred to one of four PANAS-X subscales: fear, hostility (i.e., anger), sadness, or joviality (i.e., happiness); the order of the adjectives presented was randomized.

The PANAS-X demonstrates strong convergent validity, with its subscales correlating well with other established measures of mood and emotion. Discriminant validity is also robust, evidenced by the tool's ability to distinguish between different affective states effectively (Watson & Clark, 1994). In terms of reliability, the PANAS-X shows high internal consistency, as indicated by Cronbach's alpha values of .89 for the positive affect scale and .85 for the negative affect scale, suggesting excellent internal reliability (Crawford & Henry, 2004).

Clinician-Administered Dissociative States Scale (CADSS; Bremner et al., 1998). The CADSS, developed by Bremner and colleagues in 1998, is designed to assess dissociative states in clinical and research settings. It is particularly useful for measuring changes in dissociative symptoms in response to specific stimuli, such as the dot-staring task mentioned. The CADSS consists of 19 subjective items that are designed to assess various aspects of dissociation, including depersonalization, derealization, and amnesia. The instrument also features observer-rated items; however, in many research contexts, such as this study, only the subjective items are employed. During the administration of the CADSS, participants were instructed to think back to their experiences during the dissociative induction component of the experiment and respond by selecting either “yes” or “no” to each item (e.g., “did you feel disconnected from your own body?”; “did things seem to be unreal to you, as if you were in a dream?”). The total score is determined by adding together all "yes" responses, which provides a

comprehensive measure of dissociation. Additionally, the CADSS functioned as a manipulation check to verify that participants subjected to the dissociation induction reported experiencing dissociative symptoms.

The CADSS has demonstrated excellent internal consistency, with a Cronbach's alpha of .95, indicating that the items are highly correlated and reliably measure the construct of dissociation (Bremner et al., 1998). Moreover, the CADSS has shown good convergent validity, evidenced by significant correlations with other established measures of dissociation, such as the Dissociative Experiences Scale-II (DES-II; Carlson & Putnam, 1993) and the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D; Steinberg, 1993). These correlations affirm that the CADSS is effectively measuring dissociative states as theoretically expected.

Brief Trauma Questionnaire (BTQ; Schnurr et al., 1999). The BTQ, developed by Schnurr and colleagues in 1999, is a streamlined self-report instrument designed to quickly assess exposure to potentially traumatic events. It is a derivative of the earlier Brief Trauma Interview, a structured clinical interview, developed by the same research group. The BTQ is used extensively in clinical settings and research to screen for trauma exposure and to assess the risk of post-traumatic stress disorder (PTSD). The BTQ comprises a series of 10 questions that inquire about exposure to different types of traumatic events known to potentially result in psychological trauma. These events include, but are not limited to, personal assault, sexual assault, combat exposure, accidents, natural disasters, and witnessing death or serious injury. Each item is designed to be answered simply with "yes" or "no," indicating whether the respondent has ever experienced the specified event. Scoring the BTQ involves tallying the number of "yes" responses, which provides a quantitative measure of the breadth of an individual's exposure to traumatic events. The total score can be used as an indicator of the

cumulative burden of trauma exposure, which is a significant factor in the risk for developing trauma-related symptoms and disorders such as PTSD (Schnurr et al., 1999).

While psychometric data are limited, research has shown that the BTQ demonstrates strong interrater reliability, as evidenced by Cohen's Kappa coefficients greater than .70 (Koenen et al., 2009). This high level of agreement between different raters underscores the clarity and precision of the questionnaire's items. Moreover, the BTQ has been validated against clinical diagnoses and detailed trauma assessments, demonstrating strong criterion validity (Morgan et al., 2001).

Dissociative Experiences Scale-II (DES-II; Carlson & Putnam, 1993). The DES-II, initially developed by Carlson and Putnam in 1993, is an enhanced version of the original scale created by Bernstein and Putnam in 1986. This self-report tool is designed primarily to screen for a range of dissociative symptoms and is commonly used both clinically and in research settings to identify potential cases of dissociative disorders. The DES-II consists of 28 items that measure dissociative experiences across various dimensions, including amnesia, depersonalization, derealization, and identity alteration. Each item describes a specific potential dissociative experience, and respondents are asked to indicate what percentage of the time (0-100%) they experience each symptom in their daily lives. The scale provides a continuum of dissociation, from normal (i.e., non-pathological) experiences, such as daydreaming, to more severe dissociative phenomena. Scoring of the DES-II involves calculating the average of all item responses, yielding a total score that reflects the general level of dissociative experiences. A higher score indicates more frequent and intense dissociative experiences.

The DES-II has shown favorable high test-retest reliability, with average correlations around .86, suggesting that the scale consistently measures dissociative experiences over time

(Carlson & Putnam, 1993). The scale also shows excellent internal consistency, with a Cronbach's alpha of .93 (Holtgraves & Stockdale, 1997). This high level of reliability indicates that the items on the scale are well correlated and measure the same underlying construct.

Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994). The TAS-20, developed by Bagby and colleagues in 1994, is one of the most widely used self-report instruments for assessing alexithymia. Alexithymia is characterized by difficulties in identifying, describing, and working with one's own feelings. The TAS-20 consists of 20 items that measure three key facets of alexithymia: (1) difficulty identifying feelings (DIF), which assesses the extent to which individuals can identify and distinguish between different types of feelings and bodily sensations that accompany emotional arousal; (2) difficulty describing feelings (DDF), which measures the ability to express feelings to other people; (3) externally-oriented thinking (EOT), which reflects a cognitive style that is focused on external events and concrete thinking, rather than introspection and the exploration of feelings. Participants respond to each item on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The total score is obtained by summing responses to all 20 items, which can range from 20 to 100. Higher scores indicate greater levels of alexithymia. Each subscale is also scored individually to provide deeper insights into the specific aspects of the alexithymia that might be more pronounced.

The TAS-20 has demonstrated acceptable to good internal consistency, with a Cronbach's alpha coefficient typically around .81, indicating that the items are sufficiently correlated and collectively measure the construct of alexithymia (Bagby et al., 1994). Additionally, the measure has shown good test-retest reliability with a coefficient of .77, suggesting that responses are stable over time in the absence of any intervention (Bagby et al., 1994).

Grounding Exercise

5-4-3-2-1 Grounding Exercise (Smith, 2018). The 5-4-3-2-1 Grounding Exercise, as outlined by Smith (2018), is a widely used technique designed to mitigate acute psychological distress and enhance present-moment awareness. It is particularly effective in counteracting feelings of dissociation and disconnection from the environment. This grounding exercise employs a multi-sensory approach where participants are guided to gradually redirect their attention to the immediate environment, engaging progressively with their five senses. The exercise generally includes the following steps: (1) name five objects you can see; (2) mention four items you can touch; (3) list three sounds you can hear; (4) note two scents you can smell; and (5) describe one flavor you can taste.

Given the dissociative nature of the induction used in this study, the 5-4-3-2-1 Grounding Exercise was incorporated as a therapeutic tool following the dissociation induction. This was essential for helping participants reorient themselves to reality and reduce any residual effects of the dissociation experience, thereby ensuring their psychological well-being and readiness to proceed with subsequent parts of the study. Participants had the opportunity to document these sensory observations in a narrative style.

Procedures

Ethical approval was obtained from the university's Institutional Review Board (IRB). Participants were recruited and scheduled through SONA Systems, the university's participant recruitment system.

Upon arrival at the laboratory, participants were greeted by a trained research assistant (RA) and were asked to sign an informed consent form. To conceal the actual aim of the study, participants were told that the research was investigating how visual and auditory information compete for attentional resources.

Participants were escorted to the examination room where they were seated at a desk equipped with a computer and headphones. They were randomly assigned to one of two conditions: (1) the dissociation induction group, or (2) the control group. To ensure focus and engagement during the study, research assistants instructed participants from both groups to secure their phones in a lockbox and to keep their headphones on for the duration of the session. Participants in the dissociation induction group were directed to fixate on a dot displayed on their screen, positioned about an arm's length away, for a continuous period of 10 minutes (Miller et al., 1994). Those in the control group were simply asked to sit quietly for the same duration (neutral activity as defined by Shin et al., 2019). Following the dissociation or neutral activity, all participants listened to a guided visualization designed to evoke sadness, lasting approximately five and a half minutes, as outlined by Cervone and colleagues (1994).

After the emotion induction, participants engaged with the Implicit Measure of Distinct Emotional States (IMDES; Bartoszek & Cervone, 2017, 2022). They viewed 25 abstract expressionist artworks on a computer screen and assessed the emotion depicted in each, as per the instructions to identify the emotion the artist intended to express. Each artwork was shown for five seconds, followed by a three-second period for participants to choose from one of four emotions: "anger," "fear," "sadness," or "happiness." This sequence was automated, with the first five images serving as practice and only the ratings from the subsequent 20 images being used to calculate the IMDES composite scores (Bartoszek & Cervone, 2022). The IMDES was employed to examine the implicit emotional responses of participants following the emotional induction procedure.

Following completion of the IMDES (Bartoszek & Cervone, 2022), participants proceeded to evaluate their explicit emotional states using the Positive and Negative Affect

Schedule - Expanded Form (PANAS-X; Watson & Clark, 1994). This well-established self-report tool consists of a series of adjectives that participants rate based on their current feelings, thereby providing a quantitative measure of their positive and negative emotional states at that moment. Subsequently, participants were administered the Clinician-Administered Dissociative States Scale (CADSS; Bremner et al., 1998), which was used to provide quantitative data on the levels of dissociation experienced by participants. In the current study, the CADSS was also used as a manipulation check to ensure that the dot-staring task effectively induced a dissociative state.

After completing the CADSS (Bremner et al., 1998), participants moved on to a series of three self-report measures designed to assess various psychological constructs relevant to the study's objectives. First, participants completed the BTQ (Schnurr et al., 1999), which was used to evaluate participants' historical exposure to traumatic events. Next, the DES-II (Carlson & Putnam, 1993) was administered to assess the frequency of dissociative episodes. Finally, participants completed the TAS-20 (Bagby et al., 1994) to evaluate the participants' ability to identify, describe, and process their emotions.

Following the completion of the primary measures, all participants were offered the opportunity to engage in the 5-4-3-2-1 grounding technique (Smith, 2018). This exercise was included in the study to help participants recenter and reconnect with their immediate environment after potentially distressing or disorienting experimental tasks. During this exercise, participants were encouraged to systematically note and record details of their sensory experiences—five things they could see, four they could touch, three they could hear, two they could smell, and one they could taste. They were given the option to document these

observations in narrative form, allowing for a richer and more personalized account of their grounding experience.

Finally, participants were asked to provide basic demographic information, such as age, gender, and ethnicity, and to share their perceptions about the study's purpose. At the conclusion of each session, the research assistant presented a debriefing statement that clarified the objectives and nature of the study. Additionally, every participant received a list of resources that included contact details for the primary investigator, the academic advisor, and the university's Student Counseling Center, ensuring they had access to further support if needed.

Results

Data was analyzed with SPSS v. 29 software. It was estimated that the sample size of 132 would allow 81% power to detect a medium effect size using a mixed Analysis of Variance (ANOVA; $\alpha = 0.05$).

Experimental Manipulation Check

In addition to measuring participants' self-reported experiences of dissociative states, the Clinician-Administered Dissociative States Scale (CADSS; Bremner et al., 1998) served as a manipulation check to ensure that the dot-staring task, as outlined by Miller et al. (1994), was effective in inducing acute dissociation. A one-way between-subjects analysis of variance (ANOVA) was conducted to examine the effect of condition (i.e., control vs. experimental) on CADSS scores. The analysis revealed that there were no significant differences between groups, $F(1, 130) = 2.056$, $p = .154$, $\eta_p^2 = .016$, suggesting that the dot-staring task was not more effective in inducing dissociation compared to the neutral task. Nonetheless, total CADSS scores were slightly more elevated in the dissociation-induction group ($M = 7.05$, $SD = 4.38$) compared to the control group ($M = 6.00$, $SD = 3.99$).

Although the manipulation was ineffective, two-way mixed ANOVAs were conducted to explore differences in implicit and self-reported explicit emotions between participants in the experimental group (i.e., induced dissociation) and the control group (i.e., no dissociation induced).

Differences in Implicit and Explicit Emotional States Between Groups

Prior to analysis, the implicit (IMDES) and explicit (PANAS-X) measures of emotion underwent z-transformation to standardize their distributions, given their different scales of measurement. Z-transforming variables involved subtracting the mean of each variable from its observations and dividing by the standard deviation. This process resulted in variables with a mean of 0 and a standard deviation of 1, facilitating comparison and interpretation across variables. Tests of normality indicated that all IMDES variables were normally distributed. Most of the PANAS-X variables were normally distributed; however, the PANAS-X variable for happiness underwent square root transformation to stabilize its variance and improve the normality of its distribution. Square root transformation involved taking the square root of each observation in the variable. This transformation was applied to address heteroscedasticity and skewed distribution, ensuring the appropriateness of parametric statistical analyses.

Two-way mixed ANOVAs were conducted to examine differences in implicit and self-reported explicit emotions between participants in the experimental group (i.e., induced dissociation) and the control group (i.e., no dissociation induced). Although sadness was the target emotion of this study, separate analyses for all four emotions (i.e., sadness, fear, anger, and happiness) were conducted.

The main effect of sadness was non-significant, $F(1, 130) = 0.000$, $p = .991$, $\eta_p^2 = .000$, indicating no difference between implicit and explicit sadness responses. Additionally, the

interaction effect between sadness and condition was non-significant, $F(1, 130) = 0.537$, $p = .465$, $\eta_p^2 = .004$, suggesting that the effect of sadness did not significantly differ between the experimental and control groups. Furthermore, the main effect of condition was non-significant, $F(1, 130) = 1.643$, $p = .202$, $\eta_p^2 = .012$, indicating no overall differences in emotional responses between the experimental and control group. Table 2 presents the main findings regarding the effects of acute dissociation on implicit and explicit measures of sadness. Figure 1 illustrates the average sadness emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental). Table 3 highlights the descriptive statistics, including means and standard deviations, for the average sadness emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental).

The main effect of fear was non-significant, $F(1, 130) = 0.000$, $p = .991$, $\eta_p^2 = .000$, indicating no difference between implicit and explicit fear responses. Additionally, the interaction effect between fear and condition was non-significant, $F(1, 130) = 0.559$, $p = .456$, $\eta_p^2 = .004$, suggesting that the effect of fear did not significantly differ between the experimental and control groups. Furthermore, the main effect of condition was non-significant, $F(1, 130) = 0.641$, $p = .425$, $\eta_p^2 = .005$, indicating no overall differences in emotional responses between the experimental and control group. Table 4 presents the main findings regarding the effects of acute dissociation on implicit and explicit measures of fear. Figure 2 illustrates the average fear emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental). Table 5 highlights the descriptive statistics, including means and standard deviations, for the average fear emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental).

The main effect of anger was non-significant, $F(1, 130) = 0.000$, $p = .989$, $\eta_p^2 = .000$ indicating no difference between implicit and explicit anger responses. Additionally, the interaction effect between anger and condition (i.e., experimental vs. control group) was non-significant, $F(1, 130) = 0.778$, $p = .379$, $\eta_p^2 = .006$, suggesting that the effect of anger did not significantly differ between the experimental and control groups. Furthermore, the main effect of condition was non-significant, $F(1, 130) = 0.004$, $p = .948$, $\eta_p^2 = .000$, indicating no overall differences in emotional responses between the experimental and control groups. Table 6 presents the main findings regarding the effects of acute dissociation on implicit and explicit measures of anger. Figure 3 illustrates the average anger emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental). Table 7 highlights the descriptive statistics, including means and standard deviations, for the average anger emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental).

The main effect of happiness was non-significant, $F(1, 130) = 0.000$, $p = .997$, $\eta_p^2 = .000$ indicating no difference between implicit and explicit happiness responses. Additionally, the interaction effect between happiness and condition (experimental vs. control group) was non-significant, $F(1, 130) = 0.049$, $p = .824$, $\eta_p^2 = .000$, suggesting that the effect of happiness did not significantly differ between the experimental and control groups. Furthermore, the main effect of condition was non-significant, $F(1, 130) = 0.002$ $p = .961$, $\eta_p^2 = .000$, indicating no overall differences in emotional responses between the experimental and control groups. Table 8 presents the main findings regarding the effects of acute dissociation on implicit and explicit measures of happiness. Figure 4 illustrates the average happiness emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental). Table 9 highlights the

descriptive statistics, including means and standard deviations, for the average happiness emotion responses (i.e., implicit and explicit) between groups (i.e., control versus experimental).

Correlational Data

Multiple correlational analyses were conducted to measure the strength and direction of various variables; these analyses are presented in Table 10.

A correlational analysis (Pearson's *r*) was conducted to compare mean scores on the Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994) and Dissociative Experiences Scale (DES-II; Carlson & Putnam, 1993) to determine the strength and direction of the association between alexithymia and dissociative experiences. The frequency of general dissociative experiences was positively correlated with levels of alexithymia, $r(130) = .412$, $p < .001$. As mentioned in earlier sections of this paper, the TAS-20 has the following subscales: difficulty describing emotions, difficulty identifying emotions, and externally oriented thinking (Bagby et al., 1994). As such, correlational analyses (Pearson's *r*) were conducted to compare mean scores on the TAS-20 subscales and DES-II. The frequency of dissociative experiences was positively correlated with difficulty describing emotions, $r(130) = .356$, $p < .001$, as well as with difficulty identifying emotions, $r(130) = .515$, $p < .001$. However, the frequency of dissociative experiences was negatively correlated with externally oriented thinking, $r(130) = -.176$, $p = .044$.

Furthermore, a correlational analysis (Pearson's *r*) was conducted to compare mean scores on the Dissociative Experiences Scale (DES-II; Carlson & Putnam, 1993) with the Brief Trauma Questionnaire (BTQ; Schnurr et al., 1999) to determine the strength and direction of the association between self-reported experiences of trauma and dissociative experiences. The results demonstrated that the frequency of general dissociative experiences was positively correlated with self-reported traumatic experiences $r(130) = .332$, $p < .001$.

Discussion

The present study sought to elucidate the relationship between acute dissociation and its effects on explicit and implicit emotional responsivity in a sample of college-aged individuals. Participants were randomly assigned to either the experimental group, which received the dissociation induction, or the control group, which did not receive the dissociation induction. Dissociation was induced through Miller and colleagues' (1994) dot-staring task, a previously validated method of inducing acute dissociation, which requires participants to stare at a dot for 10 minutes. Consistent with the emotional numbing theory (Shin et al., 2019), it was hypothesized that individuals receiving the dissociation induction would exhibit dampened explicit emotional responses (as measured by the PANAS-X; Watson & Clark, 1994) compared to those in the control group. More specifically, individuals in the control group will be more likely to report experiencing the target emotion (i.e., sadness) compared to those in the dissociation group. However, and in line with the dual-processing theory of emotions (Clore & Huntsinger, 2007), it was hypothesized that a different pattern of results would emerge in measures of implicit emotional responses (as measured by the IMDES; Bartoszek & Cervone, 2017; 2022), such that these dampened emotions (i.e., sadness) would be reported unconsciously in both, the control and experimental groups. Contrary to the hypothesized outcomes, the findings revealed no significant differences in emotional responsivity, both implicit and explicit, between participants in the dissociation induction group and those in the control group. These results suggest that acute dissociation, as induced by the dot-staring task (Miller et al., 1994), did not significantly affect participants' explicit (self-reported) and implicit emotional responsivity to sadness, fear, anger, and happiness. The absence of significant findings challenges previous assumptions regarding dissociation's uniform dampening effects on emotional responsivity

(Giesbrecht et al., 2008), as well as the differential impact of implicit and explicit emotional responses (Clore & Huntsinger, 2007).

It is important to note that the manipulation check (using the CADSS; Bremner et al., 1998) revealed no significant differences in dissociation levels between the dissociation induction group and the control group. These results suggest that the dot-staring task used to induce dissociation, as validated by Miller and colleagues (1994), was not effective at sufficiently eliciting an acute state of dissociation. This aligns with previous research suggesting that experimentally induced dissociation may not replicate the depth or impact of dissociation experienced in real-life trauma (Lynn & Rhue, 1994). Therefore, the absence of significant findings may reflect limitations in the experimental design rather than a direct challenge to the emotional numbing theory and the dual processing theory of emotion. This limitation is further compounded by the possibility that variables such as attention-deficit/hyperactivity disorder (ADHD), post-traumatic stress disorder (PTSD), depression, and anxiety could have influenced participant engagement and responses, despite not being controlled for in the study design.

The emotional numbing theory posits that dissociation serves as a psychological mechanism to protect an individual from overwhelming emotions by reducing the intensity of emotional experiences, leading to a state of diminished emotional responsiveness or numbing, particularly in the context of trauma (Foa et al., 1992). Within the framework of the emotional numbing hypothesis, the study's findings could suggest that emotional numbing may be more complex and context-dependent than previously understood (Shin et al., 2019). The conditions under which emotional numbing occurs, such as the type, severity, and duration of trauma, as well as individual differences in trauma response (i.e., coping strategies), may significantly influence the manifestation and detectability of emotional numbing in research settings (Lanius

et al., 2010; Stein et al., 1997). The lack of significant findings might also be attributed to individual differences in susceptibility to dissociation and emotional reactivity, as well as the specific context in which dissociation is induced or experienced. Research has indicated that factors such as prior trauma history, baseline emotional reactivity, and psychological resilience can significantly influence how dissociation affects emotional processing (Brewin et al., 2000). This highlights the importance of considering the multifaceted nature of emotional numbing and its manifestation across different contexts and individuals.

According to the dual-processing theory of emotion, dissociation was expected to differentially affect implicit and explicit emotional processing (Gawronski & Bodenhausen, 2006; Sheppes et al., 2011). Specifically, dissociation was hypothesized to dampen explicit emotional responsivity due to its nature of causing a disconnection from current experiences and emotions, potentially leading to reduced emotional awareness or reporting. On the other hand, implicit emotional processes, being automatic and less subject to conscious control, were hypothesized to remain relatively unaffected by dissociation (Gyurak et al., 2011). However, the study's results did not support this differential impact, suggesting that the nature and induction of acute dissociation in this context did not significantly disrupt the participants' emotional processing as measured. The methodology, including the dissociation induction technique and the emotional responsivity measures, may not have been ideally suited to detect the nuanced distinctions between implicit and explicit emotional processing (Giesbrecht et al., 2008). This limitation underscores the challenge of operationalizing and measuring complex emotional processes within experimental settings, which may not fully capture the depth of these phenomena as conceptualized by the dual process theory. These findings contribute to the

ongoing debate surrounding the nature of dissociation and its effects on emotional processing, advocating for a reevaluation of their presumed relationship.

A few noteworthy findings of this study include the significant positive correlations between general dissociative experiences (as measured by the DES-II; Carlson & Putnam, 1993) and levels of alexithymia (as measured by the TAS-20; Bagby et al., 1994), as well as between dissociative experiences (as measured by the DES-II; Carlson & Putnam, 1993) and self-reported traumatic experiences (as measured by the BTQ; Schnurr et al., 1999). This aligns with previous research indicating that both alexithymia and dissociation are not only correlated, but that they may serve as coping mechanisms in response to trauma (Brand & Frewen, 2017; Craparo, Gori et al., 2014). The significant associations found between dissociative experiences, alexithymia, and trauma exposure underscore the importance of considering the role of dissociation in the context of trauma and stress-related disorders. This is consistent with literature indicating that trauma and dissociation are closely linked, with dissociative symptoms often emerging as a coping mechanism in response to trauma, potentially leading to difficulties in identifying and describing emotions (Bagby et al., 1994; van der Hart et al., 2010).

Limitations & Future Directions

Taken together, the results of the current study emphasize the intricacy of dissociative experiences and their potential impact on emotional responses. However, the findings must be interpreted with caution, considering the potential limitations of this study. The absence of counterbalancing in the experimental design may have introduced order effects, where the sequence of condition exposure could influence participants' responses. This limitation raises concerns regarding the potential for systematic bias, particularly biases associated with fatigue, practice effects, or habituation, which might affect the generalizability of the findings (Pollatsek

& Well, 1995). Future studies could enhance the robustness of these findings by employing a counterbalanced design to ensure that the results are not confounded by the order in which stimuli are administered. Moreover, the integration of visual dissociative induction with auditory emotion induction in this study suggests complex interactions that may influence emotional processing (Esenkaya & Proulx, 2016). Given that dissociation typically involves a detachment or disconnection from the environment, the induced visual dissociative state may alter the way auditory emotional cues are processed, potentially leading to modified emotional responses. It is plausible that the dissociative state, induced through visual means, could either dampen or, paradoxically, enhance the emotional impact of auditory stimuli depending on individual differences in dissociative susceptibility and the intensity of the dissociative experience. These findings highlight the necessity for further research to disentangle the nuanced effects of cross-modal interactions on emotional perception and response in dissociative states. Future investigations should consider employing diverse sensory modalities in the induction processes to fully explore the breadth of sensory integration effects on emotional experiences within dissociative contexts.

As mentioned above, the absence of significant differences in emotional responsivity between groups calls into question the effectiveness of the dot-staring task as a validated measure of dissociation induction. Miller and colleagues (1994) suggest that other methods, such as the mirror-gazing task, may be more effective at inducing acute dissociation. As such, future research could benefit from comparing different dissociation induction procedures and their impact on implicit and explicit emotional responses. Furthermore, the reliance on self-report measures for assessing dissociative states and emotional responses introduces the potential for bias and inaccuracies in reporting. The measures of emotional responsivity used in this study

might not have been sufficiently sensitive to detect subtle changes in emotional processing associated with dissociation. This suggests a potential gap in the tools used to assess emotional responses, as dissociative experiences can encompass a wide range of emotional and cognitive alterations not easily captured by standard measures (Giesbrecht et al., 2008). The complexity of dissociation and its impact on emotional processing call for the development and use of measures that can capture the nuanced effects of dissociation on emotional responsivity. Additionally, future research could benefit from incorporating more objective measures of dissociation and emotional responsivity, such as physiological or neurobiological markers, to provide a more comprehensive understanding of these phenomena (Lanius et al., 2010).

The absence of pre-screening for psychiatric conditions is yet another limitation of this study, as it introduces variability in baseline dissociative tendencies and emotional processing capacities across the sample, potentially confounding the results. In addition to accounting for potential medical and psychiatric conditions, research conducted in populations with chronic dissociative experiences may provide additional insights into the interplay between dissociation and emotional responsivity (Cloitre et al., 2004). Future studies could further benefit from employing longitudinal designs to understand the temporal relationship between dissociation and emotional processing changes over time, offering insights into the persistence and fluctuation of dissociative experiences (Dalenberg et al., 2012). Given the significant correlations found between dissociative experiences, alexithymia, and trauma exposure, research should further investigate the specific characteristics and impacts of trauma-related dissociation. Studies could focus on different types of traumas (e.g., childhood abuse, and combat trauma) to discern how various traumatic experiences influence dissociation and emotional processing patterns (Dalenberg et al., 2012).

By deepening our understanding of the relationship between dissociation, emotional processing, and trauma, we can enhance assessment procedures and therapeutic outcomes for individuals experiencing dissociative symptoms and associated emotional difficulties. The interplay between dissociation and emotional processing suggests that clinicians should employ a multifaceted diagnostic approach. This approach should not only assess the presence of dissociative symptoms but also evaluate their impact on emotional awareness and expression. Tools like the Dissociative Experiences Scale (DES-II; Carlson & Putnam, 1993) can be invaluable in diagnosing dissociative symptoms comprehensively (Briere et al., 2005; Dell, 2006). Additionally, integrating assessments for alexithymia could provide insights into the emotional processing difficulties associated with dissociation.

Given the significant correlations between dissociation, alexithymia, and trauma exposure, trauma-focused interventions become crucial in the therapeutic process. Approaches such as Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) and Eye Movement Desensitization and Reprocessing (EMDR) are effective in treating trauma-related dissociation and improving emotional regulation (Cohen et al., 2017; van der Hart et al., 2010). These interventions can help patients process trauma memories safely and develop healthier coping mechanisms, potentially mitigating the emotional numbing often associated with dissociation. Additionally, incorporating interventions aimed at enhancing emotional awareness and regulation can be beneficial for individuals with dissociative symptoms. Techniques drawn from Dialectical Behavior Therapy (DBT), which includes skills training in areas such as mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness, can be particularly beneficial (Linehan, 1993). These strategies can help individuals become more attuned to their emotional experiences, facilitating better management of dissociative symptoms and associated

emotional challenges. By considering these clinical implications, mental health professionals can better support individuals experiencing dissociation, offering interventions that address both the dissociative experiences and their impact on emotional processing. Tailoring therapeutic approaches to the specific needs and experiences of each individual will be key in facilitating recovery and improving overall well-being.

In conclusion, while the study did not find evidence that acute dissociation significantly impacts emotional responsivity, the study's findings contribute to the existing literature by challenging and extending our understanding of dissociation's effects on emotional processing. The significant correlations between dissociative experiences, alexithymia, and trauma highlight the complex nature of dissociation as a psychological phenomenon. The findings contribute to the ongoing dialogue on dissociation, suggesting avenues for future research and potential therapeutic interventions. Further research is needed to explore these dynamics using varied methodological approaches and to consider individual differences and contextual factors that influence the manifestation of dissociation and its impact on emotional processing.

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Tables

Table 1

Participants' self-reported ethnic/racial background

Ethnicity		***N***	**Percentage**
Hispanic, Latino, or Spanish Origin		39	29.50%
White		32	24.20%
Black or African American		22	16.70%
Biracial		20	15.20%
Asian		9	6.80%
Middle Eastern or North African		4	3.00%
Other		4	3.00%
	African/East African	1	0.80%
	Egyptian	1	0.80%
	Haitian	1	0.80%
	West Indian/Trinidadian	1	0.80%
American Indian or Alaska Native		1	0.80%
Native Hawaiian or Other Pacific Islander		1	0.80%

Table 2

The Effects of Acute Dissociation on Implicit and Explicit Measures of Sadness

Source	**Type of Effect**	***F***	**Significance (*p*-value)**	**Partial Eta Squared (η_p^2)**
Within-Subjects Contrasts	Main Effect of Sadness	.000	.991	.000
Within-Subjects Contrasts	Interaction Effect Between Sadness & Condition	.537	.465	.004
Between-Subjects Contrasts	Main Effect of Condition	1.643	.202	.012

Note. The main effect of sadness compares differences between implicit versus explicit measures of sadness; the results indicate that there is no significant difference between implicit and explicit sadness responses ($p = .991$). The interaction effect between sadness and condition (experimental versus control group) is not significant, indicating that the effect of sadness does not significantly differ between groups ($p = .465$). The main effect of condition examines overall differences in average responses between experimental and control groups; the results indicate that there are no significant differences in average sadness responses between the experimental group and the control group ($p = .202$).

Table 3

Descriptive Statistics for Sadness Responses

	Condition	***N***	**Mean**	**Standard Deviation**
Explicit Sadness (PANAS-X)	Control	67	-.1251944	.93813009
	Experimental	65	.1290465	1.05164758
Implicit Sadness (IMDES)	Control	67	-.0479795	.89333956
	Experimental	65	.0494558	1.10407707

Note. The experimental group received the dissociation induction; the control group did not receive the dissociation induction.

Table 4

The Effects of Acute Dissociation on Implicit and Explicit Measures of Fear

Source	Type of Effect	*F*	Significance (*p*-value)	Partial Eta Squared (η_p^2)
Within-Subjects Contrasts	Main Effect of Fear	.000	.991	.000
Within-Subjects Contrasts	Interaction Effect Between Fear & Condition	.559	.456	.004
Between-Subjects Contrasts	Main Effect of Condition	.641	.425	.005

Note. The main effect of fear compares differences between implicit versus explicit measures of fear; the results indicate that there is no significant difference between implicit and explicit fear responses ($p = .991$). The interaction effect between fear and condition (experimental versus control group) is not significant, indicating that the effect of fear does not significantly differ between groups ($p = .456$). The main effect of condition examines overall differences in average responses between experimental and control groups; the results indicate that there are no significant differences in average fear responses between the experimental group and the control group ($p = .425$).

Table 5

Descriptive Statistics for Fear Responses

	Condition	***N***	**Mean**	**Standard Deviation**
Explicit Fear (PANAS-X)	Control	67	-.0937957	.92995410
	Experimental	65	.0966817	1.06598849
Implicit Fear (IMDES)	Control	67	-.0135677	.83923313
	Experimental	65	.0139852	1.14898287

Note. The experimental group received the dissociation induction; the control group did not receive the dissociation induction.

Table 6

The Effects of Acute Dissociation on Implicit and Explicit Measures of Anger

Source	Type of Effect	*F*	Significance (*p*-value)	Partial Eta Squared (η_p^2)
Within-Subjects Contrasts	Main Effect of Anger	.000	.989	.000
Within-Subjects Contrasts	Interaction Effect Between Anger & Condition	.778	.379	.006
Between-Subjects Contrasts	Main Effect of Condition	.004	.948	.000

Note. The main effect of anger compares differences between implicit versus explicit measures of anger; the results indicate that there is no significant difference between implicit and explicit anger responses ($p = .989$). The interaction effect between anger and condition (experimental versus control group) is not significant, indicating that the effect of anger does not significantly differ between groups ($p = .379$). The main effect of condition examines overall differences in average responses between experimental and control groups; the results indicate that there are no significant differences in average anger responses between the experimental group and the control group ($p = .948$).

Table 7

Descriptive Statistics for Anger Responses

	Condition	***N***	**Mean**	**Standard Deviation**
Explicit Anger (PANAS-X)	Control	67	-.0575589	1.02046769
	Experimental	65	.0593299	.98281993
Implicit Anger (IMDES)	Control	67	.0496284	.93007396
	Experimental	65	-.0511555	1.07217946

Note. The experimental group received the dissociation induction; the control group did not receive the dissociation induction.

Table 8

The Effects of Acute Dissociation on Implicit and Explicit Measures of Happiness

Source	Type of Effect	*F*	Significance (*p*-value)	Partial Eta Squared (η_p^2)
Within-Subjects Contrasts	Main Effect of Happiness	.000	.997	.000
Within-Subjects Contrasts	Interaction Effect Between Happiness & Condition	.049	.824	.000
Between-Subjects Contrasts	Main Effect of Condition	.002	.961	.000

Note. The main effect of happiness compares differences between implicit versus explicit measures of happiness; the results indicate that there is no significant difference between implicit and explicit happiness responses ($p = .997$). The interaction effect between happiness and condition (experimental versus control group) is not significant, indicating that the effect of happiness does not significantly differ between groups ($p = .824$). The main effect of condition examines overall differences in average responses between experimental and control groups; the results indicate that there are no significant differences in average happiness responses between the experimental group and the control group ($p = .961$).

Table 9

Descriptive Statistics for Happiness Responses

	Condition	***N***	**Mean**	**Standard Deviation**
Explicit Happiness (PANAS-X)	Control	67	-.0103941	.92985377
	Experimental	65	.0107139	1.07470817
Implicit Happiness (IMDES)	Control	67	.0163846	.97338255
	Experimental	65	-.0168887	1.03403198

Note. The experimental group received the dissociation induction; the control group did not receive the dissociation induction.

Table 10

Correlational Analyses

		TAS-20 Total	TAS-20 DDF	TAS-20 DIF	TAS-20 EOT	DES-II	BTQ
TAS-20 Total	Pearson Correlation (*r*)	1	.841**	.837**	.345**	.412**	.157
	Significance (*p*)		<.001	<.001	<.001	<.001	.073
TAS-20 DDF	Pearson Correlation (*r*)	.841**	1	.614**	.135	.356**	.003
	Significance (*p*)	<.001		<.001	.124	<.001	.968
TAS-20 DIF	Pearson Correlation (*r*)	.837**	.614	1	-.097	.515**	.257**
	Significance (*p*)	<.001	<.001		.267	<.001	.003
TAS-20 EOT	Pearson Correlation (*r*)	.345**	.135	-.097	1	-.176*	-.090
	Significance (*p*)	<.001	.124	.267		.044	.304
DES-II	Pearson Correlation (*r*)	.412**	.356**	.515**	-.176*	1	.332**
	Significance (*p*)	<.001	<.001	<.001	.044		<.001
BTQ	Pearson Correlation (*r*)	.157	.003	.257**	-.090	.332**	1
	Significance (*p*)	.073	.968	.003	.304	<.001	

Note. The Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994) produces a total composite score, indicated as 'TAS-20 Total,' as well as three inter-related factors, including: (1) difficulty describing feelings, indicated as 'TAS-20 DDF'; (2) difficulty identifying feelings, indicated as 'TAS-20 DEF'; (3) externally oriented thinking, indicated as 'TAS-20 EOT'. The Dissociative Experiences Scale (Carlson & Putnam, 1993) is indicated by 'DES-II'. The Brief Trauma Questionnaire (Schnurr et al., 1999) is indicated by 'BTQ'.

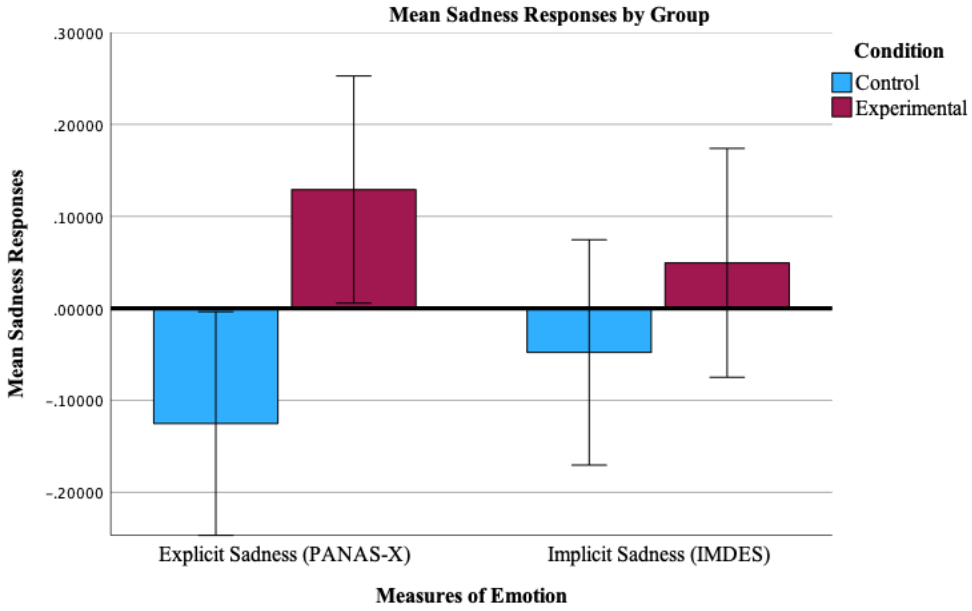
* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Figures

Figure 1

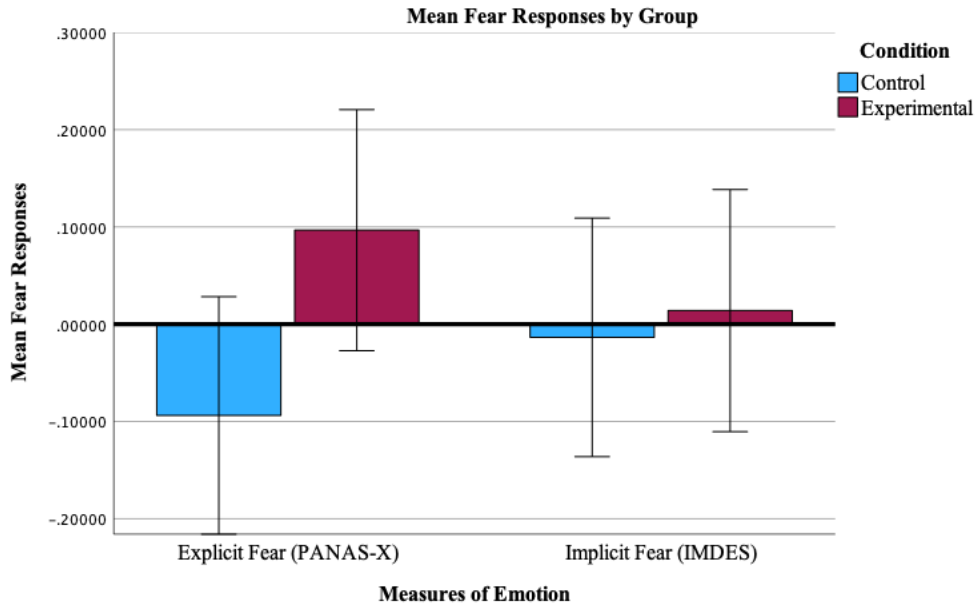
Average Sadness Responses



Note. Error bars denote +/- 1 standard error.

Figure 2

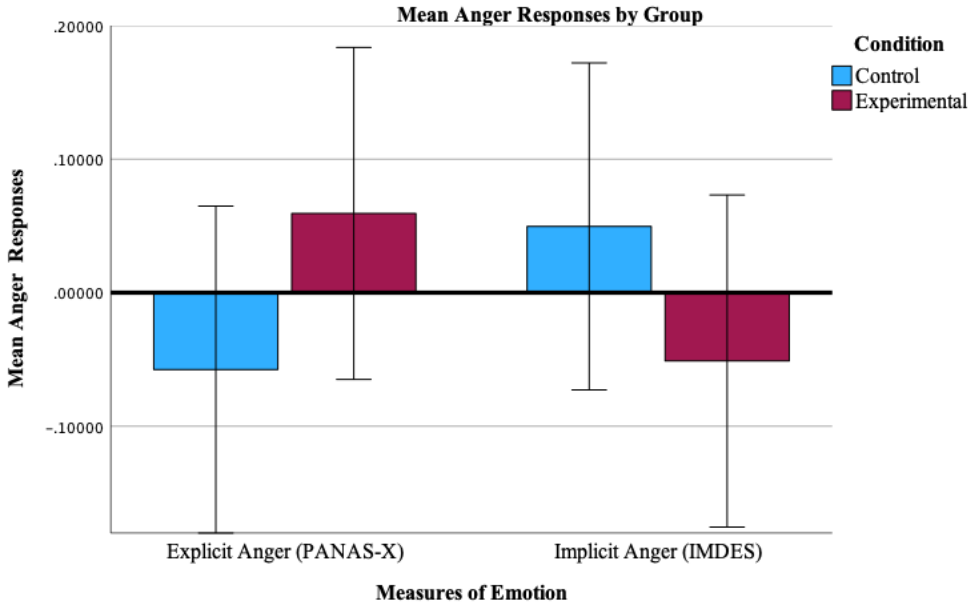
Average Fear Responses



Note. Error bars denote +/- 1 standard error.

Figure 3

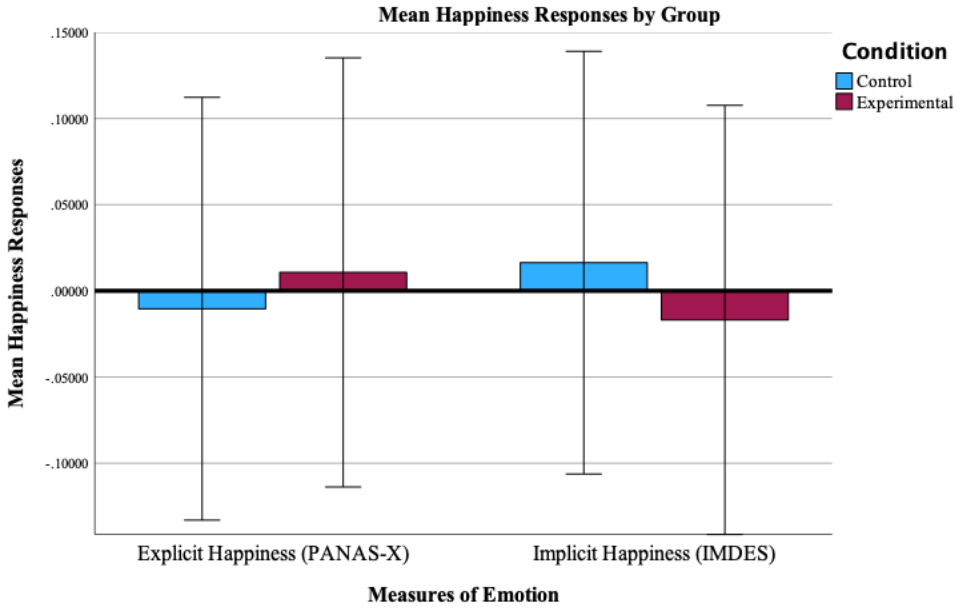
Average Anger Responses



Note. Error bars denote +/- 1 standard error.

Figure 4

Average Happiness Responses



Note. Error bars denote +/- 1 standard error.