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Elucidating the relationships between shame, anger, and self-destructive behaviors: The role of aversive responses to emotions

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ABSTRACT

Shame and anger are distinct yet interrelated emotions that have both been implicated in the occurrence of impulsive, self-destructive behavior (ISDB); however, the intricacies of these relations remain sparsely examined. Some research, mostly with anxiety and depression, suggests that an aversive reaction to the experience of negative emotions can result in efforts to escape or avoid such experiences. The current study sought to extend this model to the experience of shame. Consistently, we predicted that aversive reactions to shame would be associated with anger, which would be associated with ISDB. Four hundred and seventy-five undergraduate students completed a series of online questionnaires. Serial mediation was performed and r-square indicated that 35.55% of the variance in impulsive behavior was explained by this model. As predicted, shame had a significant indirect effect on anger through aversive reactions to emotions and on ISDB through aversive reactions to emotions and anger. Unexpectedly the reverse model, with an aversive reaction to anger predicting shame and ISDB, was also significant suggesting possible bidirectional relations between these constructs. This study is among the first to examine a possible mechanism by which shame can lead to ISDB, providing potential points of intervention for treatment.

1. Introduction

Shame and anger are distinct, complex, and interrelated emotions. As with all emotions, they function by providing information about one's environment and prompting behavioral responses (e.g., behaviors that promote survival in response to fear). Shame can be considered an emotional state in which an individual perceives themselves as having an enduring, global defect. Though often confused with guilt, the distinction between these emotions is important as guilt typically involves feeling bad about a specific behavior, but does not generalize to one's sense of self (Tangney, Wagner, Hill-Barlow, Marschall, & Gramzow, 1996). In some contexts, shame regulates interpersonal behavior by indicating when one has violated social and ethical standards and typically elicits withdrawal, which may preserve social relationships in which individuals share resources (e.g., food or childcare; Dunbar & Shultz, 2007; Stuewig, Tangney, Heigel, Harty, & McCloskey, 2010; Tangney et al., 1996). Anger is typically considered an activating emotion that can motivate protective or assertive behavior in response to perceived threats, whether those threats are external (e.g., being threatened by another individual) or internal (e.g., painful memories or emotions; Plutchik, 2001).

Even though these emotions have a functional purpose, they can become dysregulated (i.e., out of proportion to a given situation) and prompt behaviors that interfere with an individual's productivity or survival. For example, in some contexts, shame can lead to self-punishment or anger can lead to unnecessary physical altercations. Of particular concern, both shame and anger have been associated with impulsive, self-destructive behaviors (ISDB) including engagement in suicidal and non-suicidal self-injury, substance abuse, and unprotected sex (Brown, Comtois, & Linehan, 2002; Bryan, Morrow, Eteinne, & Ray-Sannerud, 2013; Hawkins et al., 2014; Randles & Tracy, 2013; Stuewig et al., 2015). Given these associations, it is not surprising that elevated shame and anger predict greater symptom severity for several psychological disorders, including depression (e.g., Bennett, Traub, Mace, Juarascio, & O'Hayer, 2016; Fava et al., 1993), anxiety disorders (e.g., Cassiello-Robbins & Barlow, 2016), and borderline personality disorder (BPD; e.g., Scott et al., 2017). These findings are particularly concerning given that shame and anger may interfere with help-seeking for

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mental health (Cassiello-Robbins & Barlow, 2016; Clement et al., 2015).

Given shame's association with behavioral withdrawal and avoidance (covert behaviors), the relations between shame and ISDBs that are overt in nature (e.g., self-harm, etc.) appears counterintuitive. Research on emotional processes might lend some insight into these relations. Such work has demonstrated that an aversive reaction to the experience of a negative emotions (i.e., the perception of these experiences as unacceptable and uncontrollable) can lead to the use of avoidance-based emotion regulation strategies (e.g., suppression; Barlow, 1991; Brown & Barlow, 2009; Campbell-Sills, Barlow, Brown, & Hoffman, 2006; Mennin, Heimberg, Turk, & Fresco, 2005). These emotion regulation efforts paradoxically reduce emotional intensity in the short-term while maintaining dysregulated emotions in the long-term (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Tull & Roemer, 2007). Over time, the repeated experience of some emotions as unacceptable coupled with efforts to escape or avoid them can lead to the development of emotional disorders (e.g., mood, anxiety, and related disorders; Campbell-Sills et al., 2006).

While primarily applied to the experience of emotions such as anxiety and depression, extant theoretical and empirical evidence offers some support for understanding this process as applied to the experience of shame. Theorists suggest shame can be so painful that it is often suppressed and replaced by other negative emotions, especially anger (Scheff & Retzinger, 1991; Tangney et al., 1996; Thomaes, Stegge, Olthof, Bushman, & Nezlek, 2011). Preliminary empirical support comes from several undergraduate samples in which proneness to shame predicted dysregulated anger responses, including anger arousal, hostility, and a propensity to blame others for negative events (Tangney et al., 1996; Tangney, Wagner, Fletcher, & Gramzow, 1992). Early longitudinal research identified this relation as directional, with higher levels of shame predicting later increases in hostility, and the reverse relation yielding insignificant results (Heaven, Ciarrochi, & Leeson, 2010).

Consistent with the aforementioned framework, aversive reactions to the experience of shame may lead to avoidant coping that is manifested as anger, which is typically associated with more overt action tendencies (e.g., ISDBs). A recent study explored the pathway through which shame (both situational shame, and trait [global] shame) leads to ISDB by examining shame, anger (i.e., anger rumination and trait anger), BPD-related self-destructive behaviors, and other BPD features (i.e., affective lability, identity disturbances, negative relationships; Peters, Geiger, Smart, & Baer, 2014). These researchers found significant directional pathways from situational and global shame to anger rumination, and from global shame to trait anger. Further, the relation between both types of shame and BPD features was mediated by both types of anger. However, only trait anger mediated the relation between global shame and self-destructive behavior. Interestingly, the reverse pathways (i.e., increased anger and anger rumination leads to increased shame which leads to increased BPD features or destructive behavior) were not significant, in line with previous research suggesting a directional relation between shame and anger. Peters and colleagues (2014) noted that their work supports the theory that anger can be experienced in response to shame as a way to avoid the uncomfortable feelings associated with shame; however, this hypothesis was not tested empirically.

The current study sought to replicate and extend the work of Peters' and colleagues (2014) by testing aversive reactions to emotions as a possible mechanism by which shame might lead to anger. Relations between characterological shame, anger, and ISDB were also explored, both independently and within a serial mediation model. We predicted that 1) shame and anger would be independently associated with ISDB, and 2) there would be an indirect effect of shame on self-destructive behavior through both aversive reactions to emotion and anger.

2. Method

2.1. Participants

Participants were 475 undergraduate psychology students at a university in the United States who volunteered to complete an online questionnaire battery (see Measures) in exchange for course credit. The sample was predominantly female (76.4%) with an average age of 18.97 years ($SD = 1.78$, range 18–43). The majority of the sample (48.6%) identified as African American or Caucasian. Due to an administrative error in the survey, the options for "Black or African American" and "Caucasian" were combined, which made it impossible to further parse apart the race with which a portion of our sample identified. However, the demographic composition of the class of 2019 (38.2% Caucasian and 5.6% Black or African American), suggests that the sample was most likely predominantly Caucasian (Undergraduate Admissions, 2015). Additionally, 38.1% identified as Asian, 8.0% as more than one race, 0.4% as Native American, 0.6% as Pacific Islander, and 4.0% did not report their race; 12.8% identified as Hispanic or Latino. Modal family income was over $100,000 per year. Consistent previous literature (i.e., Eisenberg, Gollust, Golberstein, & Hefner, 2007; Ibrahim, Kelly, Adams, & Glazebrook, 2013), a portion of the current sample indicated that they had a current mood or anxiety disorder (8.8%) and 4.8% had a current diagnosis of both.

2.2. Measures

2.2.1. Anger

The Clinical Anger Scale (CAS; Snell, Gum, Shuck, Mosley, & Hite, 1995) is a 21-item self-report assessment of the psychological, physiological, affective, cognitive, and behavioral symptoms that constitute clinical anger. Each item consists of four statements, and respondents select which of the statements best reflects how they feel. For instance, they may select one of the following four options: *I do not feel angry*, *I feel angry*, *I am angry most of the time now*, or *I am so angry and hostile all the time that I can't stand it*. The CAS has demonstrated a unidimensional factor structure, and had strong internal consistency in the study sample (Cronbach's alpha = 0.91).

2.2.2. Characterological shame

The Experience of Shame Scale (ESS, Andrews, Qian, & Valentine, 2002) is a self-report measure that assesses eight facets of shame that load onto three subscales: characterological shame (related to shame regarding: personal habits, manner with others, sort of person (you are), and personal ability), behavioral shame (shame about doing something wrong, saying something stupid, and failure in competitive activities), and bodily shame (about your body or a part of it). This study analyzed the 12-item characterological shame subscale (ESS_char). Items ask how the participant has felt during the past year (e.g., *Have you felt ashamed of your personal habits?)* and respondents rate items on a 4-point scale, from 1 (*Not at all*) to 4 (*Very much*). This subscale was chosen because it captures a stable aspect of shame which, given the cross-sectional nature of this study, may be more likely to be associated with anger as opposed the other shame subscales that may assess more transient experiences. In the current study, this subscale had high internal consistency (Cronbach's alpha = 0.93).

2.2.3. Impulsive self-destructive behavior

The Five Factor Borderline Inventory (FFBI; Mullins-Sweatt et al., 2012) is a measure of BPD traits in line with the five-factor model (FFM) of general personality (McCrae & Costa, 2003). The FFBI consists of 12, 10-item subscales, which assess aspects of BPD that are correlated explicitly with respective components of the five-factor model. For the purposes of this study, the Behavioral Dysregulation subscale was used (FFBI_N5). Examples of items from this subscale include "I'll drink or use drugs a lot when I'm upset" and "I have done a lot of things

impulsively that I later regret." This scale was designed to correspond to FFM impulsivity (e.g., Mullins-Sweatt et al., 2012) and it is associated with the self-harm subscale of the Borderline Scale of the Personality Assessment Inventory as well as several measures of impulsivity (DeShong, Lengel, Sauer-Zavala, O'Meara, & Mullins-Sweatt, 2015). This subscale demonstrated adequate reliability in this sample (Cronbach's alpha = 0.80).

2.2.4. Aversive reactions to emotions

The Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011) was included to assess experiential avoidance (i.e., the tendency to avoid negative internal experiences). The MEAQ is rated on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*) and is comprised of six subscales. For this study, the 13-item Distress Aversion subscale (MEAQ_DA; *If I could magically remove all of my painful feelings I would*) was used, because it captures the aversive reaction to emotions described in the aforementioned literature on emotional processes. This subscale had good internal consistency in the present study (Cronbach's alpha = 0.87).

2.3. Procedures

The university's institutional review board (IRB) approved all study procedures. Participants registered for the study via the SONA system, an online platform that facilitates student participation in research in exchange for course credit, and completed the survey through Qualtrics, a website designed for online data collection. After completing a consent form, they completed a demographics form and all measures. Questionnaires used in this study were derived from a larger online battery.

3. Data analytic strategy

3.1. Analyses and data transformation

Analyses were conducted using SPSS 20.0. Item-level imputation, in which the mean of a participant's responses was substituted for the missing value, was used when 30% or fewer of the items on a given scale (or subscale) were unanswered (Ake, 2005; Fox-Wasylyshyn & El-Masri, 2005; Roth, Switzer, & Switzer, 1999). Listwise deletion was used when more than 30% of the items were missing. Given that participants were able to skip items/measures they did not want to complete, rates of listwise deletion varied across measures (2.95% for shame [ESS_char] and anger [CAS], 4.00% for aversive reactions to emotions [MEAQ_DA], and 5.05% for ISDB [FFBI_N5]). The rate of listwise deletion was 11.79% for the PROCESS statistics (described below); this rate was higher because these statistics removed any participants who did not complete any of the measures used in the analyses. All data were screened for skewness and kurtosis in order to test assumptions of data normality (Tabachnick & Fidell, 2000). The CAS scale showed skew greater than five times the standard error of the skew (skew = 2.23, *SE* = 0.12) and was corrected using log transformations, after which it demonstrated acceptable skew (skew = −0.14, *SE* = 0.17).

Serial mediation analyses were conducted using the SPSS macro PROCESS (model 6). This analysis assumes that the specified mediators function in a causal order, making it an ideal way to test the hypothesized paths (Hayes, 2012). To test for serial mediation, the FFBI_N5 (ISDB) was entered as the outcome variable, ESS_char (shame) as the predictor, and MEAQ_DA (aversive reactions to emotions) followed by CAS (anger) as the serial mediators. A second model reversing the placement of anger and shame was also tested. PROCESS uses an ordinary least-squares path analysis to estimate the model coefficients and determine both the direct and indirect effects of each variable. Bootstrapping was used to obtain bias-corrected 95% confidence intervals for each path in the model (see Preacher & Hayes, 2008). A path was considered significant if the 95% confidence interval did not include zero.

Table 1
Intercorrelations, means, and standard deviations (untransformed) for study variables.

Variable	1	2	3	4	N	Mean	SD
1. ESS_ch	–				461	25.23	8.56
2. MEAQ_DA	0.31**	–			456	43.83	12.08
3. CAS	0.39**	0.22**	–		461	6.98	7.25
4. FFBI_N5	0.45**	0.28**	0.46**	–	451	24.48	7.39

Note. CAS = Clinical Anger Scale; ESS_ch = experience of shame scale, characterological shame subscale; FFBI_N5 = Five Factor Borderline Inventory, behavioral dysregulation subscale; MEAQ_DA = Multidimensional Experiential Avoidance Questionnaire, distress aversion subscale.
* $p < .05$.
** $p < .01$.

4. Results

4.1. Descriptive statistics and intercorrelation of measures

Descriptive statistics and intercorrelations for untransformed scores on all study measures can be found in Table 1. The mean score on measures of shame, aversive reactions to emotions, and ISDB were within one standard deviation of that reported in previous research using undergraduate students (Andrews et al., 2002; Gámez et al., 2011; Haas & Miller, 2015). The mean anger score was within one standard deviation of that endorsed by outpatients at a university-affiliated treatment center (Hawkins et al., 2014). All measures were significantly positively correlated.

4.2. Serial mediation

In both serial mediation models, which used the same predictor variables but in different orders, all predictor variables accounted for 35.33% of the variance in ISDB ($F(3,415) = 75.56$, $p < .001$).

The first serial mediation model, using shame as the independent variable, is displayed in Fig. 1 (N = 419). The total effect of shame on the outcome was significant ($b = 0.40$, $SE = 0.04$, 95% CI [0.32, 0.47]) and the direct effect (i.e., the effect of shame on ISDB controlling for the mediators) was also significant ($b = 0.24$, $SE = 0.04$, 95% CI [0.17, 0.31]). In support of the first hypothesis, shame and anger were both directly associated with ISDB. All other paths were significant as well. As hypothesized, the indirect path from shame = > distress aversion = > anger = > ISDB was significant ($b = 0.01$, $SE = 0.01$, 95% CI [0.01, 0.03]). Additionally, the indirect effect from shame = > distress aversion = > ISDB was significant ($b = 0.03$, $SE = 0.01$, 95% CI [0.01, 0.06]). Finally, the indirect path from shame = > anger = > ISDB was also significant ($b = 0.14$, $SE = 0.02$, 95% CI [0.10, 0.18]). Effect size estimates (percent of total effect) are provided in Table 2. These were calculated by dividing the estimate for each specific path by the estimate of the total effect of shame on ISDB. Of the indirect paths, the path from shame = > anger = > ISDB accounted for the largest proportion of the variance (30%) of the total effect of shame on ISDB. Notably, the indirect effects together accounted for 40% of the variance in the total effect of shame on ISDB. The fact that 60% of the remaining variance is accounted for by the direct effect indicates the effect of shame on ISDB is still strong when accounting for anger and experiential avoidance, suggesting the specified mediating pathways only account for part of how shame leads to ISDB.

The reverse model, examining anger as the independent variable, is displayed in Fig. 2 (N = 419). The total effect of anger on the outcome was significant ($b = 10.03$, $SE = 0.82$, 95% CI [8.43, 11.64]). Similar to

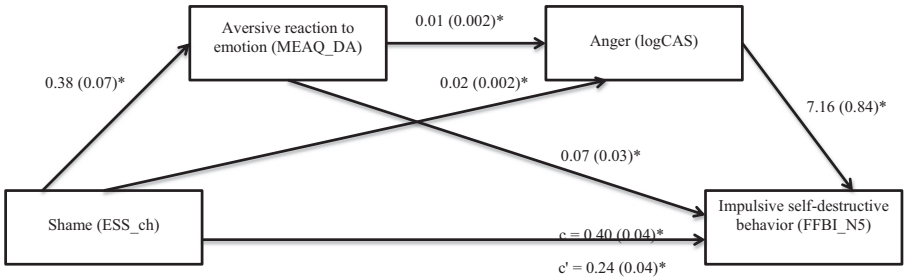

Fig. 1. Serial mediation model predicting impulsive, self-destructive behavior via shame, an aversive reaction to emotions, and anger (N = 419). *Note.* Numbers listed are standardized beta coefficients with standard error in parentheses. The total effect (c path) from shame to impulsive self-destructive behaviors is provided above that line; the direct effect (c′ path) remaining when mediators are included is provided below. * = $p < .05$.

the first model, the direct path (from anger to ISDB controlling for mediators) was significant and accounted for 72.8% of the total effect. Additionally, the indirect path from anger = > distress aversion = > ISDB was significant ($b = 0.03$, $SE = 0.01$, 95% CI [0.01, 0.05]), as was the indirect path from anger = > distress aversion = > shame = > ISDB ($b = 0.01$, $SE = 0.01$, 95% CI [0.01, 0.02]). Finally, the indirect path from anger = > shame = > ISDB was also significant ($b = 0.10$, $SE = 0.02$, 95% CI [0.07, 0.14]). Table 2 provides effect size estimates for the indirect paths; among the indirect paths, the path from anger = > shame = > ISDB accounted or the largest proportion of the variance (19.8%) of the total effect of anger on ISDB.

5. Discussion

This study sought to replicate and extend the work of Peters et al. (2014) by exploring a mechanism through which shame can lead to anger and self-destructive behavior. As predicted, shame and anger were both independently associated with ISDB. Additionally, there was an indirect effect of shame on ISDB through both aversive reactions to emotion and anger. Given the cross-sectional nature of these data, these results should be interpreted cautiously. These findings appear to be consistent with the hypothesized model that increased anger and subsequent self-destructive behavior may function as efforts to avoid shame. As the findings in this study suggest, some patients may experience anger as a way to avoid unpleasant feeling of shame (Scheff & Retzinger, 1991; Thomaes et al., 2011). These preliminary results are consistent with research on other emotions such as anxiety and depression, in which dysregulated emotions are maintained when aversive reactions to emotional experiences lead to efforts to escape or avoid them; avoidant coping, in turn, provokes rebound effects in which the suppressed emotion returns with greater frequency and intensity (Campbell-Sills et al., 2006). The potential for shame to lead to anger may offer an explanation as to why shame-related behavior sometimes takes the form of overt behavior such as ISDB and other times is more covert (e.g., withdrawal; Tangney et al., 1996).

In addition to the full serial mediation path, indirect paths through each mediator alone (anger and aversive responses to emotions) were also significant, as was the direct path from shame to self-destructive behavior. The indirect path via aversive responses to emotions alone is also consistent with previous work suggesting ISDBs themselves may function as efforts to avoid negative emotions (e.g., Bentley, Nock, & Barlow, 2014). The path via anger alone, which accounted for the largest portion of the variance, replicated previous findings (Peters et al., 2014), and suggests that the shame-anger link may serve other functions in addition to avoidance of negative emotions. Given that anger can be a cathartic and rewarding experience, especially if it is in response to provocation (Bushman, Baumeister, & Phillips, 2001; Chester et al., 2016; Chester, 2017; Peters, Chester, Walsh, DeWall, & Baer, 2018; Ramírez, Bonniot-Cabanac, & Cabanac, 2005), part of why shame-prone individuals tend to become angry may be to experience subjective feelings of reward or empowerment, in addition to removing the negative feelings associated with shame.

The reverse model, using anger as the independent variable, was also examined. Here, the indirect path from anger to aversive reactions to emotions to ISDB was significant; this path makes strong conceptual sense, given literature noting relations between anger and such behaviors (e.g., Brown et al., 2002; Bryan et al., 2013; Hawkins et al., 2014; Randles & Tracy, 2013; Stuewig et al., 2015). Unexpectedly, and in contrast with some literature (e.g., Peters et al., 2014; Heaven et al., 2010), indirect paths to ISDB via shame were also significant, including the path linking anger to shame through aversive reactions to emotions and one linking them anger to shame directly. These findings suggest possible bidirectional and/or reciprocal relations among these constructs (e.g., anger may lead someone to yell at a friend and then feel shame about their behavior leading to ISDB). Due to the cross-sectional nature of these data, the results should be interpreted with caution. Longitudinal and experimental designs are necessary to further explore the directionality of these relations. However, we believe that these cross-sectional data are useful for initial preliminary examination of the relations between shame, anger, aversive reactions to emotions, and ISDB. Further, they provide a good starting point from which research regarding these constructs might continue.

Table 2
Effect coefficients, confidence intervals, and effect size (percent of total effect of IV on DV) for serial mediation models (N = 419).

	Estimate	95% CI	% of total effect
Effects from shame to ISDB			
Total	0.40*	0.32, .47	
Indirect via aversive reactions to emotions	0.03*	0.01, .05	7.5*
Indirect via aversive reactions to emotions and anger	0.01*	0.00, .02	2.5*
Indirect via anger	0.12*	0.09, .16	30.0*
Direct	0.24*	0.17, .31	60.0*
Effects from anger to ISDB			
Total	10.03*	8.43, 11.64	
Indirect via aversive reactions to emotions	0.50*	0.16, 1.02	5.0*
Indirect via aversive reactions to emotions and shame	0.24*	0.10, .46	2.4*
Indirect via shame	1.99*	1.27, 2.84	19.8*
Direct	7.30*	5.63, 8.97	72.8*

Note. Estimates provided are unstandardized, * = p < .05. % of total effect was calculated by dividing the estimate for a given path (indirect or direct) by the estimate of the total effect for each model.

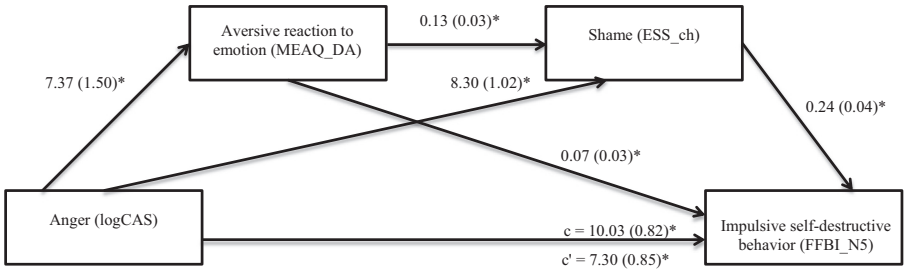

Fig. 2. Serial mediation model predicting impulsive, self-destructive behavior via anger, an aversive reaction to emotions, and shame (N = 419). *Note.* Numbers listed are standardized beta coefficients with standard error in parentheses. The total effect (c path) from anger to impulsive self-destructive behaviors is provided above that line; the direct effect (c′ path) remaining when mediators are included is provided below. * = $p < .05$.

Given the multiple potential pathways from both shame and anger to self-destructive behaviors, careful functional analysis may be important to determine the mechanisms at play for any one individual. Additional factors not examined in the present study may also influence these pathways. For example, a patient who also has aversive reactions to feelings of anger may not be likely to get angry in response to shame and might instead feel anxious. On the other hand, those for whom anger is either less distressing or more rewarding may be more likely to experience anger in response to shame. Factors such as gender (Harper & Arias, 2004) and culture (Kirchner et al., 2017) may also influence the potential function of these emotions and their sequelae.

Elevated shame and anger are common across a wide range of emotional disorders and predict greater disorder severity (e.g., Bennett et al., 2016; Cassiello-Robbins & Barlow, 2016). Given the interrelated nature of common negative emotions (shame, anger, anxiety, sadness), these results suggest that the use of treatments that can flexibly address several dysregulated emotions may be indicated. Treatments such as Dialectical Behavior Therapy (DBT; Linehan, 2015), Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2012), and the Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders (UP; Barlow, Farchione et al., 2018) focus on altering dysfunctional responses to emotions and could intervene well on the previously described processes that are thought to maintain dysregulated emotions. Indeed, preliminary evidence suggests that DBT and ACT reduce shame and anger in patients seeking treatment for borderline personality disorder and substance use disorders, respectively (Luoma, Kohlenberg, Hayes, & Fletcher, 2012; Neacsiu, Rompogren, Eberle, & McMahon, 2018; Rizvi, & Linehan, 2005). No research has examined the effects of the UP on shame. While there is a strong theoretical rationale for the application of these treatments to dysregulated shame and anger, more empirical support is needed.

The results of this study should be considered in the context of its limitations. First, the data used were part of a cross-sectional dataset collected from undergraduate students and the analyses were correlational in nature. Therefore, we were not able to examine how these constructs interact over time (e.g., whether shame led to anger or anger led to shame). The use of longitudinal data is necessary in order to allow for a more nuanced understanding of how these constructs unfold over time and, as previously mentioned, particularly to establish directionality, or lack thereof, in the shame-anger relation. Second, the measure of an aversive reaction to emotions used in this study was fairly broad. We were unable to assess whether participants had aversive reactions to shame, anger, or to both emotions, leaving us unable to determine whether ISDB was predominantly driven by an aversive reaction to one emotion or the other. Using a measure specifically capturing aversion to shame, such as the Shame-Aversive Reactions Questionnaire (Schoenleber & Berenbaum, 2010), may provide a clearer test of the hypothesized model. While we are not aware of a measure assessing aversive reactions to anger specifically, one would be of interest in future research. Third, given that the sample was comprised of undergraduate students, generalizability is limited and these results require replication in both clinical samples and samples with greater ethnic and socioeconomic diversity. Finally, extending this work with task-based measures and experimental designs would strengthen support for this model.

Overall, this study is one of the first to examine a possible mechanism by which shame can lead to ISDB providing potential points of intervention. Further, when appropriate, understanding anger as a way to avoid shame provides treatment targets that can be utilized in the context of existing interventions, potentially leading to more effective treatment.

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Conflicts of interest

No authors claim any conflicts of interest.

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