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**THE INFLUENCE OF
NEGATIVE SELF-CONSCIOUS
EMOTIONS ON ATTENTIONAL
SCOPE**

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Psychology

by

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ABSTRACT

This project tests three predominant theories about how affect influences attentional scope: the affect-as-information account, the motivational intensity model, and the affect-as-cognitive feedback account. These theories propose different mechanisms to explain how affect alters attention, including valence or approach/avoidance orientations, motivational intensity, and reliance on accessible processing style, respectively. Empirical work testing these views has focused primarily on emotions such as anger, disgust, and sadness. The self-conscious emotions, and specifically shame and guilt, have been left out of this discourse.

This work tested these three theories by applying them to shame and guilt. Specifically, respondents completed a priming task designed to increase the accessibility of either global or local processing strategies, and then completed a mood induction designed to induce shame or guilt. Afterwards, they completed a measure of attentional scope to determine if global or local attentional strategies predominated. Experiment 1 revealed findings consistent with affect-as-information theory, in that the avoidance emotion, shame, promoted faster local processing than the approach emotion, guilt. Experiment 1, however, had some issues in that the effects appeared only on local, not global, trials and that the mood manipulation could be improved upon. Experiment 2 was designed with these weaknesses in mind but had to be moved out of the lab due to the pandemic. This change in procedure, as well as other changes, unintentionally created a variety of problems, and the study supported none of the predictions. Because of the problematic nature of Experiment 2, it does not adequately address how shame and guilt might influence attentional scope. Given these issues, the data at best tentatively support the affect-as-information account (Experiment 1).

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List of Abbreviations

Unabbreviated Term/Phrase	Abbreviation
Affect-as-Information Theory	AAI
Motivational Intensity Model	MIM
Affect-as-Cognitive-Feedback Theory	ACF

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The Influence of Negative Self-Conscious Emotions on Attentional Scope

Affect plays an important role in the regulation of cognitive processing. For instance, research indicates that happy moods promote a broad, global focus (i.e., big picture information) while negative moods promote a more narrow, local focus (i.e., the details; Frederickson & Branigan, 2005; Gasper & Clore, 2002; see Isbell et al., 2013, Schwarz & Clore, 2007, for review). However, more recent work has begun to refine this conceptualization of how moods and processing interact. Since this original account has been proposed, two competing theories about affect-cognition interactions have emerged: a) the effect of mood on global/local processing depends on the independent characteristics of specific moods (i.e., an account based on the motivational dimensions of affect, Gable & Harmon-Jones, 2010a; Harmon-Jones et al., 2012), and b) the effect of mood on global/local processing is malleable and not contingent on specific dimensions of affect (i.e., the affect-as-cognitive feedback account, Huntsinger et al., 2014; Isbell, et al., 2013). The current project contributes to this literature on affect and processing in two ways. First, the following studies test the various theoretical mechanisms proposed by the original account as well as the two new competing theories, by pitting them against one another. Second, these experiments expand existing work to affective states that have not yet been examined in this literature, specifically, shame and guilt.

Below, I review these three theoretical accounts of the effect of mood on global-local processing: 1) the affect-as-information account (AAI), 2) the motivational intensity model (MIM), and 3) the affect-as-cognitive-feedback account (ACF). In this project, I will focus the discussion of these theories on implications for attentional scope, rather than other cognitive measures (e.g., creativity, heuristics, cognitive categorization). Following this theoretical overview, I will expand into a discussion of integrating the emotions of shame and guilt into this

literature and why their inclusion might be important in terms of understanding and testing these three theories' competing perspectives.

The Affect-As-Information Account

The affect-as-information view (Schwarz & Clore, 1983) posited that affect provides information about the current situation, which can aid in cognitive processing. In this account, positive affect signals a safe environment which can promote global, heuristic processing. This effect is thought to arise because perceptions of safety suggest that individuals do not need to observe the external environment in a vigilant manner. When the environment is safe, people tend to think at a more abstract level; thus, positive moods promote reliance on general knowledge, heuristics, and encourage more global processing (Bless & Fielder, 1995; Frederickson, 2004; Gasper & Clore, 2002; Vallacher & Wegner, 1989). Negative affect signals an unsafe or potentially problematic environment. When the environment is unsafe, people tend to think at a more local, detailed level in order to understand and solve the problem. Thus, moods which indicate a problematic environment promote reliance on updating what one knows and encourage a more local, analytic style of processing (Bless et al., 1996).

One of the earlier examples of mood altering processing stems from work by Gasper and Clore (2002). Participants, who were induced to feel positive or negative, made similarity judgments based on either local or global components of a given figure. That is, they completed a task (see Figure 1) in which they were shown an initial figure made up of three to four shapes and then were asked to identify which subsequent figure was most similar to the original (which of the two bottom figures looks most similar to the top figure?). The options included one figure that matched the overall, global shape of the target object (the figure on the left since the outer form is a triangle), while the other option matched the local, details of the target object (the

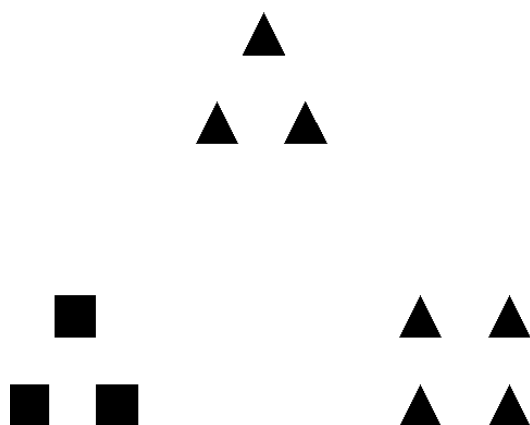


Figure 1. Example of Kimchi & Palmer (1982) task trial.

figure on the outer right since the individual elements are triangles). If the participant chose the global match, they were considered to be showing a global focus (and vice versa if they chose the local match).

Participants in positive moods (manipulated and resting) exhibited a global focus more than those in sad moods, who exhibited a more local focus. In

essence, people in positive moods were more likely to

see the forest rather than the trees (Gasper & Clore, 2002). Frederickson and Branigan (2005) used the same attentional scope task and found that respondents in specific positive states (i.e., amusement and contentment) also showed a greater global focus than those in neutral states.

Thus, the valence of the mood state – positive or negative (happy vs. anxious/sad) – was thought to determine what type of processing style was employed (Gasper & Clore, 2002).

Friedman and Förster (2008) argued that valence might not be the key and suggested that the information received from affect may be more related to whether the mood state signaled an approach or avoidance orientation. Specifically, they argued that approach-oriented states broadened attention while avoidance-oriented emotions narrowed attention. They reasoned that inasmuch as the goal of approach motivation is to achieve a desired end, broadened attention would allow people to open up to new means of attaining that specific goal. A narrowed attention, they argued, would limit this ability and distract an individual from the end goal by orienting their attention towards potential threats. Thus, narrowed attention is associated with avoidance-oriented affective states as this would allow individuals to note threats in order to avert potential harm (Friedman & Förster, 2008). Evidence for this view revealed that approach

and avoidance motor actions influenced creative insight (Friedman & Förster, 2000, 2002), and attentional flexibility (Friedman & Förster, 2005).

Although Friedman and Förster's model focused on approach and avoidance, some critics argued that the authors still emphasized a valence-only model (i.e., that positive affect was related to approach motivation and broadened while negative affect was related to avoidance motivation and narrowed; Harmon-Jones et al., 2011). The critique that both of these views primarily emphasized valence led to the development of theories related to other dimensions of affect (e.g., motivational intensity; Gable & Harmon-Jones, 2010a; Harmon-Jones et al., 2012).

The Motivational Intensity Model

This model explores how motivational intensity influences the broadening or narrowing of attentional focus (Gable & Harmon-Jones, 2010; Harmon-Jones et al., 2012). According to this view, emotions are associated with specific attentional outcomes based on the dimension of motivational intensity. High motivational intensity is defined as the likelihood of moving towards (approaching) or moving away from (avoiding) a stimulus (Harmon-Jones et al., 2012). Ranging on a scale from low to high, motivational intensity does not necessarily indicate the direction (approach/avoid) of motivation, but rather indicates the severity or strength of the impulse to move toward or away from a stimulus (Harmon-Jones et al., 2012). Both positive and negative affective states can vary to the degree in which they have high/low approach motivation or high/low avoidance motivation. According to this model, emotions that are high in motivational intensity (e.g., desire, disgust, anger) are connected to active goal pursuit (whether it be approaching or avoiding an object) and thus are suspected to narrow the scope of attention to help individuals zero in on their goals or attain a specific reward (Harmon-Jones et al., 2012). In contrast, emotions low in motivational intensity (e.g., sadness, amusement) may broaden

attention by signaling goal completion or encouraging disengagement from a terminally blocked goal, thus encouraging an individual to be open to new ideas (Harmon-Jones et al., 2012). Thus, neither valence nor approach/avoidance motivation is key, but rather whether the state created a strong impulse (or not) to approach or avoid a goal. That is, both approach and avoidance states can be high in motivational intensity and activate a narrowed focus.

To test this view, Harmon-Jones and his colleagues conducted numerous experiments, using a variety of different emotions that ranged in motivational intensity. Consistent with their predictions, they found that positive affective states low in motivational intensity (e.g., amusement) broadened attention as compared to those high in motivational intensity (e.g., desire; Gable & Harmon-Jones, 2008). Additional studies added

a neutral affect condition and then measured attentional scope using a version of the Navon (1977) task. In the Navon task, participants view a series of large letters composed of closely spaced smaller letters (e.g., an *L*

H	L	L
H	L	L
H	LLLLL	
H	L	L
HHHHHH	L	L

Figure 2. Examples of local (left) and global (right; for a target letter H) Navon (1977) letters trials

made of small *H*s; see Figure 2). Participants are asked to respond when they see a specific target letter (e.g., *T* or *H*). If the target letters were *T* and *H*, global trials would be those in which *T* or *H* are made up of a different smaller letter. In local trials, a large letter is composed of small *T*s or *H*s. Faster response times to global targets indicate a broad focus while faster responses to the local targets indicate a narrow focus. Neutral stimuli caused broadened attention in contrast to the appetitive stimuli (desserts) which resulted in more narrowed attention (Gable & Harmon-Jones, 2008). In contrast to previous literature arguing that sadness promotes a more local focus, Gable and Harmon-Jones (2010b) found that sadness (defined as low in motivational intensity) broadened attention while disgust narrowed as compared to neutral affect. Anger, conceptualized

as a high-approach-motivated negative affect also resulted in a narrowing of attention (Domachowska et al., 2016; Gable et al., 2015).

Contrary to the AAI account, the MIM argues that approach-motivated affect (positive or negative) narrows attention (Gable & Harmon-Jones, 2008). In a series of four studies, Gable and Harmon-Jones (2008) found that high approach-motivated positive affect (i.e., desire) resulted in reduced breadth of attention as compared to low approach-motivated positive affect (i.e., amusement). They additionally found that individuals high in trait approach motivation showed greater attentional narrowing (Gable & Harmon-Jones, 2008). While prior work argued that approach motivation broadened attention by allowing individuals to open themselves up to new ideas, the motivational intensity model argues that the goal pursuit related to approach motivation encourages narrowing. For example, anger is conceptualized as a high approach-motivated negative emotion. Gable and colleagues' (2015) found that anger narrowed cognitive scope across four studies. As compared to a neutral state, anger behaved similarly to a positive approach-motivated affect in narrowing attention. These results challenge Friedman and Förster (2010) by suggesting that approach-motivated affect narrows rather than broadens.

The motivational intensity model still emphasizes a single, independent component of affect as a predictor of cognitive outcomes (Friedman & Förster, 2011; Huntsinger, et al., 2014). Results for this model also seem to directly contradict prior work. Specifically, Gable and Harmon-Jones' (2010b) finding that sadness broadens attention directly contradicts earlier work suggesting that sad moods result in narrowed attention (Gasper & Clore, 2002; Gasper, 2004). Other work on anger indicates that anger broadens attention (Bodenhausen et al., 1994) contradicting evidence that it narrows attention (Gable et al., 2015). Critiques of the model also posited that the methodology used to manipulate states of high motivational intensity could be

confounded with manipulating local attentional focus (e.g., using videos of appetitive stimuli may prime both approach-motivated positive feelings and local attention; Friedman & Förster, 2011; Huntsinger et al., 2014). Although the motivational intensity model improved upon prior work by including another affective dimension, the theorization and conceptualization of the model left some gaps. An alternative model to this one is the affect-as-cognitive-feedback account.

The Affect-As-Cognitive-Feedback Account

Contrary to both prior accounts which emphasized a dedicated link between specific components of affect and cognition, the ACF account argues that emotional states provide feedback about the current information processing strategies already in use (Huntsinger et al., 2014; Isbell et al., 2013). While the AAI account proposed that affect directly tunes cognition towards a specific processing strategy (i.e., global if happy, local if sad), the affect-as-cognitive-feedback theory views affect as a more indirect and flexible influencer of information processing. In this account, affect serves as a “stop” or “go” signal that tells individuals whether the current processing style is working or needs to be altered. A “go” signal is promoted by positive affect, such as happiness, but also by emotions that signal certainty and confidence. For example, according to this theory, anger also confers positive value because it signals certainty (Isbell et al., 2016a). Thus, it is not just valence that dictates the stop or go signal, but multiple dimensions of discrete emotions may influence the broadening or narrowing of thought. Other negative or uncertain emotions, such as sadness, are thought to provide a “stop” signal indicating that the strategy in use is insufficient at meeting the needs of the situation. Thus, both positive and negative affect function as sources of information about the usefulness of an individual’s current processing style (Huntsinger et al., 2014; Isbell et al., 2013; Wyer et al., 1999).

When global processing is active, affect conferring positive value (e.g., happiness and anger) will endorse its use, while affect conferring negative value (e.g., fear and sadness) will discourage its use (Isbell et al., 2016a). The interesting aspect of this theory is that the opposite pattern emerges when local processing is dominant. A broadened attentional focus can result either from having a global orientation endorsed by affect providing a go signal or a current local focus invalidated by affect providing a stop signal. Similarly, narrowed attention could result from a preexisting local focus encouraged by affect providing a go signal, or a global focus that is discouraged by affect providing a stop signal. Whatever processing style is active in the moment will be either promoted or discouraged, depending on whether affect signals to go or to stop (Huntsinger et al., 2014; Isbell et al., 2013).

Huntsinger and colleagues (2010) investigated this perspective by manipulating whether a global or local processing style was accessible. For example, to prime either a global or local focus, participants were instructed to complete a lexical decision task in which they indicated whether a series of letters presented on the screen was a word or nonword. Before each series of letters appeared, participants saw a word related to global or local focus for 40 milliseconds (e.g., global, local, narrow, broad). Following this processing style manipulation, participants completed a mood manipulation designed to induce either a positive or negative mood. Then, participants' attentional scope was measured. Across two studies, global priming led to more focus on the forest in participants with happy moods and more focus on the trees in sad moods. In contrast, participants who were locally primed and in happy moods focused on the trees while those in sad moods focused on the forest. These results indicated that knowing whether a broad or narrow focus is currently in use is essential to understanding the influence of affect on attention and processing (Huntsinger et al., 2010).

Another series of studies investigated whether responses were due to existing biases to select global or local options. To address this criticism, Huntsinger (2012) measured attentional focus through use of a flanker task. The flanker task asks participants to focus on a centrally presented target letter (e.g., H) that is flanked on either side by response-compatible (e.g., HHHHH) or response-incompatible (SSHSS) letters. Participants are then instructed to identify the central letter as quickly as possible. The flanker task was assumed to be a better measure of attentional focus due to its ability to provide evidence that shifts in attentional broadening or narrowing indicate differences in attention at encoding (Rowe et al., 2007). Following attentional priming, when global attention was accessible, participants in a happy mood showed a larger flanker effect than those in the sad mood. When local focus was accessible, participants in a happy mood showed a smaller flanker effect than those in the sad mood. Additionally, when neither global nor local attention was made accessible, affect did not influence the scope of attention at all (Huntsinger, 2012).

The ACF theory also accounts for prior findings from both the AAI and MIM views. First, the ACF account can explain why prior work found that happy moods promoted global processing and sad moods promoted local processing. Specifically, the perspective argues that this effect was found because global processing tends to be the default strategy (Kimchi, 1992; Navon, 1977; Neisser, 1967). Thus, earlier studies might have found that happy moods promote global processing and sad moods promote local processing merely because global processing tends to be the default, accessible strategy (Clore & Huntsinger, 2007).

Second, proponents of this account also argue that it can explain evidence which seems to support the MIM. The MIM argues that the specific dimension of motivational intensity, across emotional states, predicts attentional breadth. The ACF account would argue that what

ultimately predicts attentional scope is the current accessible strategy. For example, the MIM predicts that anger will always narrow attention, while the affect-as-cognitive-feedback account would suggest that anger only narrows attention when a local processing strategy is primed or currently in use (Huntsinger et al., 2010; Isbell et al., 2016a). When a global strategy is accessible, the ACF theory suggests that anger would broaden attention in accordance with the strategy. Although the theory can account for the MIM, the motivational intensity model cannot explain the mood and processing strategy interactions occurring in recent work (Huntsinger et al., 2010; Huntsinger, 2012; Isbell et al., 2013; Isbell et al., 2016a). Thus, proponents of the ACF account argue it provides a more comprehensive theory of the affect-cognition relationship.

Incorporating Shame & Guilt

Literature investigating the affect and information processing relationship has examined a variety of discrete emotions, including anger (Gable et al., 2015), fear and sadness (Isbell et al., 2016a), and even disgust (Gable & Harmon-Jones, 2010b). Self-conscious emotions (e.g., shame, guilt, pride, embarrassment) have traditionally been left out of this discourse. However, self-conscious affect, and more specifically shame and guilt, have unique characteristics that make them valuable investigative tools for better understanding how and why affect influences attentional scope. Specifically, shame and guilt are two negative emotions that differ in approach-avoidance orientation and certainty (Schmader & Lickel, 2006; Smith & Ellsworth, 1985; Tangney et al., 1996). Before more fully describing these characteristics in relation to the three models, I will provide a brief background on shame and guilt below.

Shame is characterized by negative self-evaluation and the need to hide or disappear (Cohen, et al., 2011; Kim et al., 2011; Tangney et al., 1996). Rather than focusing on a specific moral misstep or social mistake, shame turns one's focus inward to make judgments about the

global self, not just the specific behavior (Lewis, 1971; Tangney et al., 1996). Guilt, in contrast, emphasizes the behavior as the source of impropriety or immorality and thus draws the individual's attention towards an action. Although the terms are often used interchangeably in popular culture, research has identified that shame and guilt represent unique affective, cognitive, and phenomenological experiences (Cavalera et al., 2018; Keltner & Buswell, 1996; Lindsay-Hartz, 1984; Pivetti et al., 2016; Tangney, 1992; Tangney et al., 1996; Tracy & Robins, 2004). Researchers identified that reports of shame typically differ from guilt in that participants recall shame as a more intense and aversive experience (Tangney et al., 1996). Research devoted to parsing out the distinction between the two affective states originally identified that shame is more associated with withdrawal-behaviors (e.g., hiding, denial, social withdrawal) while guilt is more associated with taking reparative action (e.g., apologizing, making amends; Lewis, 1971; Tangney & Dearing, 2002). Guilt has been associated with cooperative behaviors in social bargaining games (Ketelaar & Au, 2003), promotion focus (Higgins, 1997; Wolf et al., 2010), proscriptive morality and approach-based moral regulation (Sheikh & Janoff-Bulman, 2010; Wolf et al., 2010), as well as relative left frontal cortical activity—a correlate of approach motivation (Amodio et al., 2007). Shame, in contrast, was more strongly associated with avoidance behaviors (Schmader & Lickel, 2006), prevention focus (Wolf et al., 2010), prescriptive morality and avoidance-based moral regulation (Sheikh & Janoff-Bulman, 2010; Wolf et al., 2010), and was not linked to frontal cortical asymmetry (Amodio et al., 2007). Based on this distinction, researchers began to associate guilt with approach motivation and shame with avoidance motivation in accordance with prior theorizations (Tangney et al., 1996; Tracy & Robins, 2004; Wicker et al., 1983).

However, some recent literature has questioned this stringent categorization of the motivational components of both shame and guilt (Cohen et al., 2011; de Hooge et al., 2018; Leach & Cidam, 2015; Schmader & Lickel, 2006). Development and validation of the Guilt and Shame Proneness Scale (GASP) indicated that shame also may be associated with approach-oriented behaviors (Cohen et al., 2011). Much like the affect-cognition link, newer research suggests that shame (and potentially guilt) may have more flexible relationships with approach and avoidance motivations. Shame can be linked to constructive approach orientation while guilt can also be associated with withdrawal behaviors (Cohen et al., 2011; Leach & Cidam, 2015). Although literature is debating the approach-avoidance distinctions for both shame and guilt (see Leach & Cidam, 2015 for review), most studies have focused on the ability of shame to be related to approach behaviors (de Hooge et al., 2008, 2010, 2018) and have shown little evidence that guilt may be more associated with withdrawal behaviors. In the studies, shame is usually elicited using a hypothetical scenario that induces shame through public, individual failure (e.g., failing an intelligence test, having a presentation go poorly in front of colleagues; see De Hooge et al., 2010 for an overview of manipulations). Evidence for shame indicates that when the opportunity for reparations to occur presents itself, shame may lead to more approach-motivated behaviors (de Hooge et al., 2010, 2018; Gausel & Leach, 2011). Thus, shame is still linked to avoidance motivation, but only when the situation is non-reparable (Gausel & Leach, 2011; Leach & Cidam, 2015), whereas guilt appears to be more consistently associated with approach motivations. Although this debate continues, shame has shown consistent evidence of being related to withdrawal orientation (Gausel & Leach, 2011; Schmader & Lickel, 2006; Tangney et al., 1996). This work will primarily focus on shame as an avoidance-motivated emotion,

specifically by asking people to recall a shameful experience in which they sought to withdraw or avoid the situation.

Although shame and guilt differ in approach-avoidance orientation, what makes their relationship to attentional scope interesting is that predictions based on this and other dimensions will differ based on the theoretical framework one takes. Table 1 (pg. 16) displays how shame and guilt lead to differing outcomes depending on which theoretical perspective one employs. Operating within the AAI account, the shared negative valence of shame and guilt may suggest that they both narrow attention (Gasper & Clore 2002; Gasper, 2004). However, further work in this account would suggest that shame and guilt would produce different outcomes, based on their respective approach-avoidance orientations. Additional literature in this account argues that approach-motivated affect will broaden attention, while avoidance-oriented affect will narrow attention (Friedman & Förster, 2002, 2005, 2008). From this account, shame would be more likely to narrow attention while guilt would be likely to broaden.

From the MIM, different predictions would arise. Guilt's negative valence and strong approach-motivation suggest it may operate like other negative, approach-motivated states (e.g., anger) investigated in this literature (Gable et al., 2015). Research on approach-motivated affect found that it narrowed attention when approach motivation was high, but broadened attention when it was low (Gable & Harmon-Jones, 2008). Since guilt has consistently been associated with higher levels of approach-motivation and its correlates (Amodio et al., 2007; Harmon-Jones et al., 2013; Sheikh & Janoff-Bulman, 2010; Tangney et al., 1996), this model would predict guilt narrowing attention, in contrast to the previous prediction from the AAI account. Guilt's relationship with reparative behaviors involves a goal to repair or amend after mistakes (Fischbach et al., 2010; Tangney et al., 1996). Thus, according to the motivational intensity

model's reasoning, guilt's pursuit of this goal may be aided by narrowed attention as it focuses individuals on this end rather than the goal-irrelevant elements of their past transgression.

Shame's predictions within this model are more ambiguous, however. Previous investigations into avoidance-motivated affect within the MIM suggested that some high-avoidance motivated emotions (e.g., disgust) narrow attention. Low avoidance-motivated affect (e.g., sadness) broadened attention as compared to a neutral state (Gable & Harmon-Jones, 2010a). Shame may operate like either a high avoidance-motivation emotion or a low-avoidance motivated one, depending on the extent to which one wants to argue that shame is promoting some sort of reparative desire or action. Interestingly, some research suggests that shame may behave more like low motivational intensity emotions. Specifically, Han et al. (2014) argue and found that shame focuses people on the self as a global whole, which leads to global appraisals (Han et al., 2014). In contrast, they argue that guilt focuses people on the specific behavior, which leads to more local appraisals. From these findings, it appears that shame might result in global processing, and guilt in local processing.

The affect-as-cognitive-feedback account makes different predictions. Recall that in this view, the dimension of certainty can shape to what extent people go with or stop using accessible processing strategies. In early work, emotions with high certainty promoted more global, heuristic processing while emotions low in certainty led to more systematic processing (Tiedens & Linton, 2001). Previous work aligning with the ACF theory further investigated the dimension of certainty and its role in mental abstraction (Isbell et al., 2016a). When global processing was made the accessible processing strategy, experiencing emotions high in certainty (i.e., anger) resulted in participants using more global than local processing strategies as compared to emotions low in certainty (i.e., fear and sadness). The pattern was reversed when local

processing was made accessible (Isbell et al., 2016a). Specifically, results from this study indicate that high certainty emotions might function like a “go” signal, resulting in individuals being more likely to rely on accessible processing strategies; whereas low certainty emotions may function like a “stop” signal, resulting in people being less likely to rely on accessible processing strategies.

Considering shame and guilt, research measuring cognitive appraisals assessed the appraisal of certainty by asking participants to recall prior experiences of shame and guilt (Smith & Ellsworth, 1985). Although both shame and guilt signaled a moderate degree of certainty, participants recalled feeling slightly less certain during episodes of shame than guilt. Aligning this information with results from more recent work (Isbell et al., 2016a), guilt’s higher level of certainty will increase reliance on accessible processing styles more so than shame. Shame’s lower certainty may lead to being less likely to rely on accessible processing strategies. While the ACF account would, similar to the MIM, argue for guilt behaving like an approach emotion (signaling certainty and approach), its predictions differ by arguing that guilt will result in relying on the accessible processing strategy rather than automatically narrowing attention. Shame, then, due to its lower certainty and avoidance orientation may lead to being less likely to rely on accessible processing strategies, rather than resulting in a specific broadening or narrowing.

Within each theory, there are unique predictions related to how shame and guilt will influence attentional scope (for an outline of the hypotheses, see Table 1). From an affect-as-information account, shame and guilt are both negative, but differ in approach and avoidance, and thus we would expect to see guilt broaden and shame narrow due to its avoidance orientation (Friedman & Förster, 2000, 2005). Within the motivational intensity model, guilt’s negative

valence and strong approach-motivation suggests it may operate like other negative, approach-motivated states (e.g., anger) and narrow attentional scope (Amodio et al., 2007; Gable et al., 2015; Harmon-Jones et al., 2008). Given the evidence that shame focuses on negative evaluations of a global self, it may be likely to behave like a low motivational intensity emotion (e.g., sadness) and broaden attention (Gable et al., 2010b; Han et al., 2014). The affect-as-cognitive-feedback account presents alternate hypotheses due to its emphasis on shame and guilt interacting with accessible processing strategies. This account argues that guilt will signal certainty and approach and thus be more likely to rely on accessible processing strategies. Shame's lower certainty and avoidance orientation may lead to it acting as a "stop" signal and being less likely to rely on accessible processing strategies (Isbell et al., 2016a).

	Shame	Guilt
Affect-as-Information	Narrow attentional scope	Broaden attentional scope
Motivational Intensity	Broaden attentional scope	Narrow attentional scope
Affect-as-Cognitive-Feedback	Decrease reliance on accessible strategy	Increase reliance on accessible strategy

Table 1. Hypotheses for shame and guilt delineated within each theory.

The following studies were designed to test the effects of shame and guilt on attentional scope and to investigate a) if the effect of shame differs from that of guilt on attention, and b) if these effects are dependent on currently accessible information processing styles. The design of the experiments is modeled after the experimental design typically employed to test the ACF account. In the experiments, global or local processing is made accessible via a priming task (Huntsinger et al., 2010), shame or guilt are manipulated, and then attentional scope is measured using the Navon (1977) letters task.

Experiment 1

Method

Participants and Design. Three hundred and thirty-one participants completed the study in exchange for course credit. Participants were randomly assigned to one of four conditions in a 2 (global v. local processing prime) x 2 (shame v. guilt) experimental design. As per the preregistration (see Appendix A), we excluded participants who failed to write anything in the mood manipulation ($n = 2$), failed more than one attention check question ($n = 8$), or incorrectly answered more than 25% of the Navon letter trials ($n = 34$). Technical errors also resulted in some participants' data being incomplete ($n = 5$). The final sample consisted of 283 participants, 56% female ($n = 158$) and 44% male ($n = 124$), with a mean age of 18.86 years ($SD = 1.17$). The majority of the sample was White (68.4%), with 15.2% Asian participants, 7.1% African American participants, 7.4% Latinx, and 1.8% "other."

Materials and Procedure. Participants came into the lab to complete a study on emotion and attention. Following an informed consent, they learned that they would complete several tasks. After answering demographic questions, they were randomly assigned to complete a manipulation designed to prime global vs. local processing. Specifically, they completed a version of one of two map tasks (see Appendix A; Isbell et al., 2016b). Participants viewed, for 10 seconds each, eight images containing outlines of U.S. states and six cities labeled in each state. In the global condition, participants were to focus on the overall shape of the state, and, after viewing the image, had to identify which of three shapes matched the one that was just displayed. In the local condition, participants were to focus on the names of the cities within the state, and, after viewing the image, had to identify whether a specific city was on the preceding map.

After completing the map task, participants were randomly assigned to write about an experience of shame or guilt (de Hooge et al., 2018). To ensure that participants focused on the avoidance and approach aspects of the emotions, they were explicitly told to focus on instances that involve shame in which one wanted to avoid others and guilt in which one wanted to approach others. Participants received one of the instructions below, which were displayed for a minimum of 45 seconds:

Please recall a past event in which you felt **SHAME (GUILT)** about something you did and decided to **hide it or withdraw from others (make amends or approach others about it)**. To help you identify an appropriate event, it's important to know that shame-inducing (guilt-inducing) events often make you feel like **you are a bad person (bad about your actions or behavior)** and may make you feel small or worthless (responsible for any consequences (to yourself or others)).

Please take time to think about why you felt **SHAME(GUILT)** during this event. Try to see it in your mind's eye. Then, describe what events contributed to your feelings as vividly and in as much detail as possible. Please write about the event such that a person reading it may experience it as you experience it. Write about what you feel most ashamed (guilty) about and why.

Please do not write about any event that you do not wish to share or think about. If such an event comes to mind, please think of a different event or move on to the next exercise.

The following questions may help you with this task: What were you feeling? What made you feel that way? What was important for you? What led up to that feeling? Did that event set off some chain of thoughts or fantasies that enhanced your feelings? What were they?

Following the mood manipulation, participants completed a variation of the Navon (1977) task. For each trial, a large letter made up of smaller letters appeared on a computer screen (see Appendix A). Participants were asked to identify whether the image contained the letter H or the letter T. None of the images contained both Hs and Ts. The image remained on the screen until the participant responded (participants were told to answer as quickly as they could). All participants received an equal number of global targets (e.g., an H made of Fs) and local

targets (e.g., an F made of Hs) after being told to identify seeing Hs and Ts. Keys were color-coded such that participants were told to press the orange key (H key) when they saw the letter H and the yellow key (L key) when they saw the letter T. Participants completed 48 trials. Reaction time to both types of trials were measured and faster reaction times to global targets (local targets) overall indicated more global (local) processing.

After completing the Navon task, participants were asked to recall how they felt while writing about their event. They responded to items including shame, guilt, anger, embarrassment, and sadness on a scale from 1 (none) to 7 (a lot of). Additionally, participants were asked to indicate their likelihood to approach or avoid others when thinking about their recalled event on a scale from 1(avoid) to 7 (approach).

Results

Manipulation Check. As outlined in the preregistration, an independent samples t-test was conducted to compare reported feelings of shame and guilt across mood conditions. Participants in the shame condition ($M = 5.03$, $SD = 1.51$) reported feeling more shame than those in the guilt condition ($M = 4.54$, $SD = 1.64$), $t(280) = -2.654$, $p = .008$. However, those in the guilt condition ($M = 5.36$, $SD = 1.46$) did not report significantly more guilt than those in the shame prompt condition ($M = 5.24$, $SD = 1.74$), $t(275.94) = 0.653$, $p = .518$. In terms of approach and avoidance, the manipulation could have been stronger in that data only reveal a nonsignificant trend for respondents to report more approach in the guilt ($M = 4.03$, $SD = 1.60$) than the shame ($M = 3.67$, $SD = 1.66$) condition, $t(277) = 1.828$, $p = .069$.

Global – Local Focus: Because reaction time data from the Navon task were not normally distributed, they were log-transformed before being used in analyses (Fazio, 1990). Consistent with the preregistration, a mixed analysis of variance (ANOVA) was conducted with prime (global or local) and mood (guilt or shame) as between-subjects factors and type of Navon trial (reaction times for global or local trials) as a within-subjects factor. Participants were overall faster to global ($M = 2.923$) than local ($M = 2.959$) targets, $F(1, 278) = 79.60, p < .001, n_p^2 = .223$. Participants who received the shame manipulation ($M = 2.930, SE = .007$) were faster to all Navon targets as compared to those who received the guilt manipulation ($M = 2.951, SE = .007$), mood main effect, $F(1, 278) = 4.215, p = .041, n_p^2 = .015$. This effect, however, was qualified by a nonsignificant trend for an interaction between mood manipulation (shame or guilt) and trial type, $F(1, 278) = 3.693, p = .056, n_p^2 = .013$ (see Figure 3). Consistent with the AAI hypothesis that shame would narrow attention, but contrary to the preregistered hypothesis that the effect of shame would depend on the prime, participants in the shame condition were faster than those in the guilt condition on local Navon trials, $F(1, 278) = 6.144, p = .014, n_p^2 = .022$. However, the data indicated that this effect did not extend to the global trials, where those in the shame and guilt condition did

not differ, $F(1, 278) = 1.665, p = .198, n_p^2 = .006$. Within the guilt condition, participants were significantly faster to global trials ($M = 2.930, SD = .093$) than local trials ($M = 2.973, SD = .093$),

$F(278) = 56.031, p < .001, n_p^2 =$

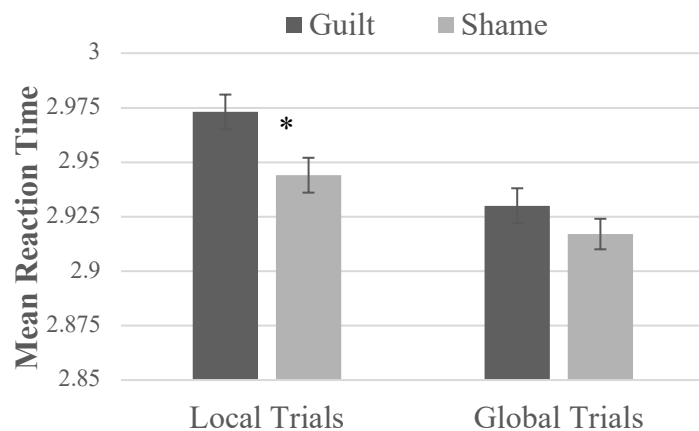


Figure 3. Participants' mean reaction times for global and local trials as a function of mood manipulation. Error bars indicate standard error.

.168. Within the shame condition, participants also were significantly faster to global trials ($M = 2.917$, $SD = .097$) than local trials ($M = 2.944$, $SD = .085$), $F(278) = 25.771$, $p < .001$, $n_p^2 = .085$. Taken together, these results contradict the MIM prediction that argued shame would broaden attention, because shame was ultimately faster on local trials. Inconsistent with preregistered predictions, they also do not support the ACF account because the effect of mood did not depend on the prime.

Moreover, the failure to find that prime interacted with mood was not due to the prime manipulation being ineffective. Specifically, the prime interacted with Navon trial, $F(1, 278) = 4.897$, $p = .028$, $n_p^2 = .017$. While

none of the contrast effects were significant, the data suggest that the prime potentially had a larger effect on local than global trials (see Figure 4). Specifically, the local prime, ($M = 2.950$, $SE = .008$), resulted in people being non-significantly faster

to identify local trials than the global prime ($M = 2.967$, $SE = .008$), $F(1, 278) = 2.209$, $p = .138$, $n_p^2 = .008$. But on the global trials, there was clearly no effect of prime, global prime ($M = 2.923$, $SE = .007$), local prime ($M = 2.923$, $SE = .007$), $F(1, 278) = .002$, $p = .969$, $n_p^2 < .001$.

Discussion

Experiment 1 indicated that shame narrowed attentional scope relative to guilt, but only on local trials. These results predominately support the AAI account suggesting that mood

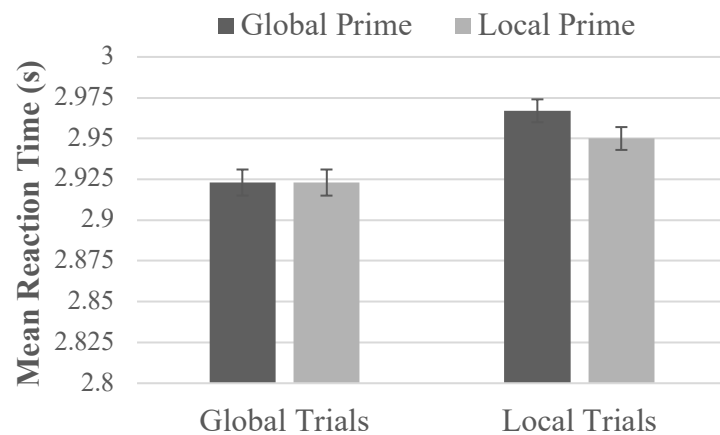


Figure 4. Participants' mean reaction times for global and local trials as a function of global-local prime. Error bars indicate standard error.

influences attentional scope based on trial type, and that shame may be narrowing due to its avoidance orientation. The lack of difference on global matches might indicate that the global predominance effect was so strong that it overpowered differences between shame and guilt on global trials (Navon, 1977). This argument may help explain why there was a mood effect on the local, but not global, trials.

The data did not provide support for either the motivational intensity model or the affect-as-cognitive-feedback account. In contrast to the MIM, we did not find evidence that guilt narrowed attention more so than shame. In terms of the ACF account, the effect of mood was never moderated by the priming manipulation. Furthermore, it is difficult to argue that the failure to find such an effect might be due to the priming manipulation being ineffective, because the data reveal that the priming manipulation directly altered processing of the Navon task.

Due to the importance of the approach/avoidance components of shame and guilt to the study, finding that shame and guilt conditions only tended to alter the approach/avoidance manipulation check suggests that there is room for improvement – either in how shame and guilt are manipulated or in terms of how approach and avoidance are measured. Knowing whether approach or avoidance is being used would help us understand what mechanisms might be at play as shame and guilt alter processing. Having a writing prompt that more acutely emphasizes this mechanism would contribute to this end. Specifically, research suggests that the writing prompts needs to address the element of reparability (Gausel & Leach, 2011; Leach & Cidam, 2015). Avoidance-oriented shame may appear primarily when individuals feel they have no ability or desire to make reparations (Gausel & Leach, 2011). Thus, the writing prompt may need to stress this point more clearly for participants to tap into this particular type of shame. Furthermore, approach and avoidance orientations may need to be measured in a way that more

clearly emphasizes the distinction between them. A single-item measure may not have been sufficient to capture this variation.

The lack of a control condition in Experiment 1 also limits the ability to test alternate predictions. Within the current results, we can identify relative differences between shame and guilt, but cannot address whether or not both shame and guilt promoted local or global processing relative to a control condition, just with one emotion doing so more strongly than the other. Without this comparison, it is difficult to identify whether shame and guilt might both be showing high motivational intensity and both narrowing attention (Gable & Harmon-Jones, 2010a). As discussed previously, shame may behave like low or high motivational intensity emotion (Gable & Harmon-Jones, 2010b). Although some evidence argues that it is more likely to broaden in accordance with low motivational intensity emotions (Han et al., 2014), the possibility remains that avoidance-motivated shame could produce more narrowing results in keeping with high motivational intensity emotions. Including a control condition allows for testing this hypothesis and other alternate explanations of why shame narrowed more so than guilt.

Experiment 2 was designed to address some of the weaknesses of Experiment 1. One major difference, however, was that Experiment 2 took place exclusively online due to the ongoing coronavirus pandemic. Despite best efforts to maintain the integrity of the experiment, this difference may have influenced the results. This will be examined in more detail in the Experiment 2 discussion. Keeping the structure of Experiment 1, participants were primed locally or globally. However, in order to extend and generalize the results of Experiment 1, participants in Experiment 2 were primed using a variation of the Navon Task previously implemented to test the ACF theory predictions (Huntsinger et al., 2010; Navon, 1977). Using

this task allowed for testing the ACF theory without relying on the map task exclusively. In addition, the mood manipulations in Experiment 2 were altered to address the limitations of the prompts used in Experiment 1 (de Hooge et al., 2010, 2018). Specifically, the prompts included additional details that may be necessary to elicit either approach or avoidance orientations in shame and guilt. This addition allowed for a clearer investigation into the AAI hypotheses as well as the MIM hypotheses. Also, Experiment 2 included a control prompt condition to allow for comparisons between shame and guilt relative to a control condition. Participants also completed a more detailed measure of approach/avoidance orientation, as well as measures of motivational intensity and certainty, as means to identify mechanisms that may be influencing responses.

Based on Experiment 1 results that supported the AAI theory, I hypothesized that shame would narrow attention more so than guilt, relative to a control condition. Maintaining earlier predictions, if the MIM is correct, I hypothesized that we would see guilt narrowing more than shame. If the ACF theory is correct, I hypothesized that there should be an interaction between mood and prime such that guilt increases reliance on the accessible processing style while shame decreases reliance.

Experiment 2

Method

Participants and Design. The effect size of the mood x trial type interaction ($n_p^2 = .02$) found in Experiment 1 was used to conduct a power analysis in G*Power 3.0 (Faul et al., 2007). To detect an effect size of $f = 0.175$ with at least 80% power ($\alpha = .05$), we needed to collect 426 participants (71 per cell). Aware that some participants would need to be dropped, we aimed to collect 480 participants (80 per cell). Experiment 2 participants ($N = 491$) completed the study

online in exchange for course credit. Participants were randomly assigned to one of six conditions in a 2 (global v. local processing prime) x 3 (shame v. guilt v. control) experimental design. As per the preregistration (see Appendix B), we excluded participants who incorrectly answered more than 1 attention check question, failed to complete the writing prompt ($n = 10$), incorrectly answered more than 25% of the Navon trials ($n = 14$), or who took less than 10 minutes or more than 35 minutes on the online study ($n = 59$). After exclusions, the final sample size was 408 participants. In the sample, 50.7% identified as male ($n = 207$), 48.3% as female ($n = 197$), and 1% identified as non-binary or transgender ($n = 3$). The mean age of the sample was 18.84 years ($SD = 1.65$). The majority of the sample was Caucasian (76.5%), with 9.6% Asian participants, 5.6% African American participants, 5.1% Latina/o, and 3.1% “other.”

Materials and Procedure. Participants first completed the priming manipulation and mood manipulation using Qualtrics survey software. They were primed using a variation of the Navon letters task used in Experiment 1 (Huntsinger et al., 2010). All participants completed a total of 48 trials. In the global condition, participants saw 40 global trials (80%) and 8 local trials (20%); in the local condition, those values were reversed. Following the priming task, participants then completed a writing prompt which asked them to describe one of the following: 1) a time where they experienced shame and avoided others because they were unable to make amends, 2) a time where they experienced guilt and approached others in order to make amends, or 3) a typical day in their life (see Appendix B for exact instructions). Following the mood manipulation, participants then were transferred to Pavlovia to complete the next portion of the study. Respondents completed 48 more trials of the Navon task with equal parts global and local trials. In addition to rating the affective items used in Experiment 1, participants completed a 7-item measure of approach/avoidance orientation (see Appendix B; Schmader & Lickel, 2006).

Participants then completed 3-item measures of motivational intensity and certainty (see Appendix B).

Results

Manipulation Check. As outlined in the preregistration, a one-way ANOVA was conducted to compare reported levels of emotions across mood conditions. Results indicated that mood conditions differed significantly on reported shame, $F(2, 405) = 187.160, p < .001, \eta_p^2 = .480$. Participants in the shame condition ($M = 5.14, SD = 1.47$) reported more shame than those in the guilt condition ($M = 4.33, SD = 1.68$), $t(405) = 4.41, p < .001$. Participants in the shame condition also reported more shame than those in the control condition ($M = 1.89, SD = 1.27$), $t(405) = 18.45, p < .001$. Additionally, those in the guilt condition reported more shame than those in the control condition, $t(405) = 13.73, p < .001$. Similar to Experiment 1, participants in the guilt condition ($M = 5.15, SD = 1.51$) did not report significantly more guilt than those in the shame condition ($M = 5.06, SD = 1.59$), $t(404) = -.492, p = .875$. However, participants in the guilt condition did report significantly more guilt than those in the control condition ($M = 1.83, SD = 1.25$), $t(404) = 19.030, p < .001$. Participants in the shame condition also reported more guilt than those in the control condition, $t(404) = 18.68, p < .001$.

To examine the hypothesis that guilt promotes more approach than avoidance, and shame promotes more avoidance than approach, the approach and avoidance items were aggregated to create average approach and avoidance scores for each participant. In the preregistration, we proposed to test mood differences on approach and avoidance using a one-way ANOVA. However, in hindsight, we recognized it would be better to include the prime condition and to

compare relative approach and avoidance¹. These scores were then submitted to a mixed ANOVA with approach and avoidance as within-subjects factors and mood and prime condition as between-subjects factors. There was no main effect of prime condition on approach/avoidance orientation, $F(1, 401) = .068, p = .794, n_p^2 < .001$. However, there was a significant main effect of mood, $F(2, 401) = 250.537, p < .001, n_p^2 = .555$. This main effect was qualified by a significant interaction between mood and approach/avoidance, $F(2, 401) = 33.76, p < .001, n_p^2 = .144$. Consistent with the hypothesis that guilt promotes more approach than avoidance, participants in the guilt condition reported significantly higher levels of approach ($M = 5.30, SD = 1.28$) than avoidance orientation ($M = 4.06, SD = 1.43$), $F(1, 401) = 89.14, p < .001, n_p^2 = .182$. Participants in the shame condition reported significantly higher levels of avoidance ($M = 5.08, SD = 1.44$) than approach orientation ($M = 4.82, SD = 1.29$), $F(1, 401) = 4.01, p = .046, n_p^2 = .010$. Participants in the control condition also reported more approach ($M = 2.35, SD = 1.29$) than avoidance orientation ($M = 2.05, SD = 1.44$), $F(1, 401) = 6.24, p = .013, n_p^2 = .015$.

As preregistered, motivational intensity scores were submitted to a one-way ANOVA with mood condition as the factor. There was a significant difference between moods, $F(2, 404) = 74.393, p < .001, n_p^2 = .269$. While we hypothesized that guilt would have higher levels of motivational intensity in shame, there was not a significant difference between guilt ($M = 4.135,$

¹ Results from the preregistered one-way ANOVA analysis showed a significant difference between mood conditions on mean approach and avoidance scores ($F(2, 404) = 215.42, p < .001, n_p^2 = .516$, and $F(2, 404) = 165.26, p < .001, n_p^2 = .450$, respectively). Planned contrasts indicated that participants in the guilt condition reported higher levels of approach orientation than those in the shame or control conditions ($t(404) = -3.025, p = .003, d = .376$, and $t(404) = 19.078, p < .001, d = 2.308$, respectively). Participants in the shame condition also reported higher levels of approach orientation than those in the control condition, $t(404) = 16.135, p < .001, d = 1.932$. Participants in the shame condition reported higher levels of avoidance orientation as compared to those in the guilt or control conditions ($t(404) = 5.745, p < .001, d = .714$, and $t(404) = 17.771, p < .001, d = 1.850$, respectively). Participants in the guilt condition also reported higher levels of avoidance orientation as compared to the control condition, $t(404) = 11.685, p < .001, d = 1.413$.

SD = .702) and shame ($M = 4.292$, $SD = .737$) conditions, $t(404) = -1.339$, $p = .374$, $d = .220$.

However, people in the guilt condition and shame condition did report higher levels of motivational intensity than those in the control condition ($M = 3.032$, $SD = 1.250$, $t(404) = 9.627$, $p < .001$, $d = 1.089$, $t(404) = 11.117$, $p < .001$, $d = 1.230$, respectively).

Consistent with the preregistration, to test the hypothesis that guilt would be higher in certainty than shame, certainty scores were submitted to a one-way ANOVA with mood condition as the factor. There was a significant difference between all of the mood conditions on certainty, $F(2, 405) = 33.931$, $p < .001$, $\eta_p^2 = .144$. Consistent with the hypothesis that guilt should have higher levels of certainty than shame, participants in the guilt condition ($M = 4.347$, $SD = 1.17$) reported more certainty than those in the shame condition ($M = 3.591$, $SD = 1.476$), $t(405) = 4.523$, $p < .001$, $d = .568$. The control condition, however, had the highest levels of reported certainty ($M = 4.912$, $SD = 1.359$) compared to guilt ($t(405) = 3.489$, $p = .002$, $d = .446$) and shame ($t(405) = 8.229$, $p < .001$, $d = .931$).

Global-Local Focus. As per the preregistration, reaction times were logarithmically transformed before being submitted to a mixed ANOVA with prime (global v. local) and mood (shame v. guilt v. control) as between-subjects' factors and trial type (global v. local) as a within-subjects factor. In contrast with typical global bias participants were not significantly faster on global trials ($M = 2.899$, $SD = .069$) than local trials ($M = 2.904$, $SD = .081$), trial type: $F(1, 402) = 2.561$, $p = .110$, $\eta_p^2 = .006$. Furthermore, directly contrasting Experiment 1 and inconsistent with any of the preregistered AAI or MIM hypotheses, no significant main effect of mood appeared in

Experiment 2, $F(2, 402) = 1.073, p = .343, \eta_p^2 = .005$. There was also no significant interaction between mood and trial type, $F(2, 402) = .045, p = .956, \eta_p^2 < .001$.

There was, however, a significant main effect of prime such

that those in the local prime condition ($M = 2.892, SD = .071$) were faster to all trials as compared to those in the global condition ($M = 2.911, SD = .072$), $F(1, 402) = 7.854, p = .005, \eta_p^2 = .019$. This main effect of prime was qualified by a significant interaction between prime condition and trial type, $F(1, 402) = 24.82, p < .001, \eta_p^2 = .058$. Results indicated that the priming manipulation was effective in that participants in the global condition were significantly faster to global trials ($M = 2.902, SD = .072$) than local trials ($M = 2.920, SD = .086$), $F(1, 402) = 22.232, p < .001, \eta_p^2 = .052$. Participants in the local prime condition were significantly faster to local trials ($M = 2.887, SD = .085$) than global trials ($M = 2.897, SD = .071$), $F(1, 402) = 5.575, p = .019, \eta_p^2 = .014$. However, when looking exclusively at trial types, participants in the local prime condition ($M = 2.887, SD = .085$) were significantly faster to local trials than those in the global condition ($M = 2.920, SD = .086$), $F(1, 402) = 17.406, p < .001, \eta_p^2 = .042$

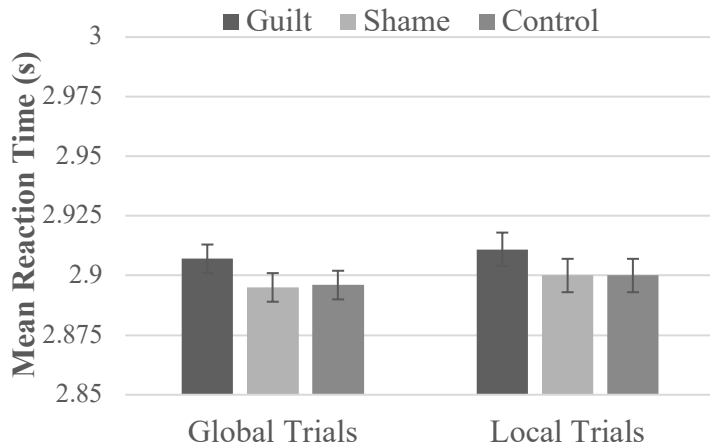


Figure 5. Experiment 2 participants' mean reaction times for global and local trials as a function of mood condition. Error bars indicate standard error.

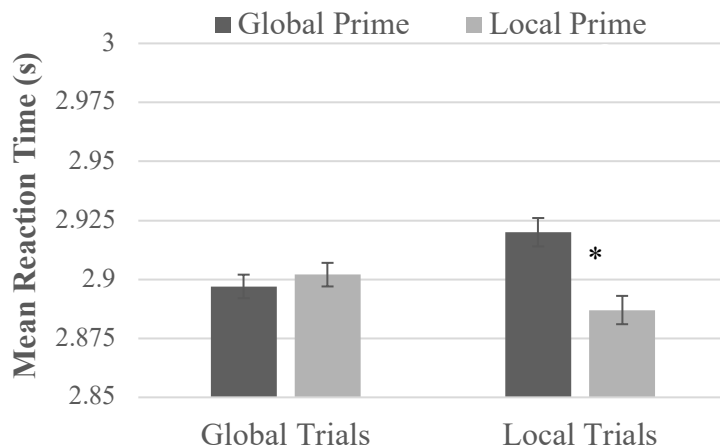


Figure 6. Experiment 2 participants' mean reaction times for global and local trials as a function of global-local prime. Error bars indicate standard error.

(see Fig. 4). Consistent with some results from Experiment 1, there was no significant difference between the prime conditions on global trials, $F(1, 402) = .674, p = .412, n_p^2 = .002$.

Although there was an effect of the prime, the prime did not interact with mood as the preregistered ACF hypotheses predicted. There was no significant interaction between prime and mood, $F(2, 402) = .158, p = .854, n_p^2 = .001$. There was also no significant three-way interaction between prime, mood, and trial type, $F(2, 402) = 1.772, p = .171, n_p^2 = .009$.

Additionally, as pre-registered, we ran moderated mediation analyses to test whether approach/avoidance orientation, motivational intensity, or certainty mediated the effect of mood on attentional scope (see Figure 7). As any differences occurred almost exclusively on local trials, we chose to use the computed mean of local trials as the dependent variable in these analyses. Given the strong relationship between the prime and attentional scope variable, we included priming condition as a moderator. We also chose to use a difference score for approach/avoidance orientation; we subtracted participants' mean avoidance scores from their mean approach scores. The moderated mediation was tested using Hayes' PROCESS macro v3.5 in SPSS 27 with Model 15. There was no mediation effect, index of moderated mediation: $b = .0073, SE = .0088, [-.0108, .0241]$.

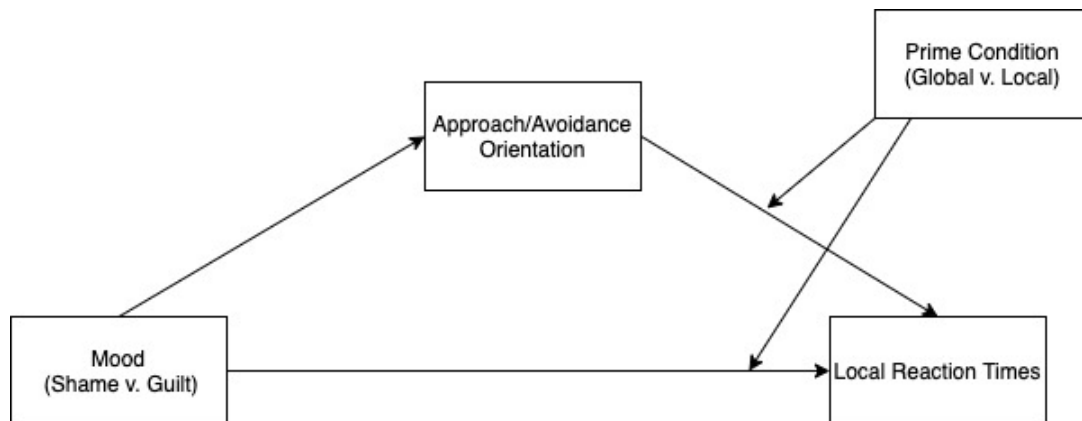


Figure 7. Example diagram of moderated mediation analyses.

The same analysis was conducted again investigating motivational intensity and then certainty as mediators. There was no mediation effect for motivational intensity, index of moderated mediation: $b < .0001$, $SE = .0016$, $[-.0033, .0036]$. Additionally, there was no mediation effect for certainty, index of moderated mediation: $b = .0021$, $SE = .0044$, $[-.0061, .0117]$.

Discussion

Experiment 2 was designed to replicate Experiment 1 using a strong priming manipulation, adding a control condition, and including a more targeted mood manipulation. The data indicate that the priming manipulation was successful, and the control condition succeeded in eliciting a state with low levels of shame and guilt. Although the mood manipulation did not necessarily strengthen differences between shame and guilt, it did not significantly alter approach/avoidance orientations. Unfortunately, the results from Experiment 2 failed to replicate those found in Experiment 1.

In particular, the absence of any mood effects in Experiment 2 fails to support hypotheses from either the AAI or MIM accounts. Additionally, the lack of interaction between the prime condition and mood, or a three-way interaction, also does not support hypotheses from the ACF. Although there was no interaction, there was a significant main effect of prime. Because the Navon task was used as both the prime and the dependent variable, the prime was clearly relevant to completing the outcome measure. Furthermore, the data indicate that the prime was highly effective in orienting participants towards global or local features of the stimuli. Thus, the relevance and effectiveness of the prime might have minimized mood effects by creating a clear processing goal or objective. While the lack of a mood effect does not provide additional theoretical clarity, it could indicate that in the presence of stronger priming manipulations on

processing, mood might be less salient or less likely to be consulted and hence not alter processing. That is, if the priming manipulation was so strong that it provided a clear means to process the stimuli, then there is little need for mood to be consulted as a source of information about how to proceed (Forgas, 1995). Indeed, in support of this hypothesis, the only significant effects were that the priming manipulation altered reaction times to the global/local stimuli. Even so, using the Navon task as both the priming manipulation and the DV in Experiment 2 did not alter the fact that most of the significant differences in the study still took place on local trials.

The COVID-19 pandemic also influenced changes to the experiment. Specifically, Experiment 2 moved entirely online and did not require participants to enter the lab to complete the study. Switching to online programs for this study (i.e., using PsychoPy/Pavlovia instead of Eprime) significantly minimized the amount of control and introduced the potential for more error. First, moving online allowed participants to take the study at their own pace. While the majority of participants did complete the study within the time limits set in the preregistration, we still had to exclude quite a few ($n = 59$) people because they took too little or too much time to complete the experiment, both indicating potential lack of attention to the task at hand. Furthermore, gathering reaction time data online is not as precise as extracting it from lab-based software (Bridges et al., 2020). While we did choose to use the software shown to have one of the best precision times for online reaction time data collection (Bridges et al., 2020), there is still the potential for less accuracy using online software.

Conducting the study online also could have influenced the effectiveness of the mood manipulation. Because the study was online, it is probable that participants might not have completed the study in a quiet, focused environment thus limiting their ability to fully tap into their emotions. While mood manipulation responses were read over to ensure participants did

complete the prompt without writing nonsense, they were not systematically analyzed for content. Due to the pandemic, it is possible that even participants in the control condition might have been experiencing a certain level of negative emotions (e.g., anxiety, sadness). This trend towards negative emotions could still have influenced responses, even if they were not explicitly experiencing shame or guilt. The control condition prompt asked participants to write about their average day. However, given the change in our typical day-to-day activities due to COVID-19, this might have prompted participants to think about how their average day has changed due to the pandemic, not to just detail their everyday activities. While we had a manipulation check to ask participants about felt levels of shame and guilt, we did not include a measure of feeling neutral or indifferent which may have been helpful in identifying whether the control condition did, in fact, feel more or less negative than participants in the other two conditions.

Based on all of the shifts in procedure for Experiment 2 due to COVID-19, the data from this experiment have a variety of issues. While the data are not without meaning, the differences between the two studies' methods likely contributed to the inconsistencies between them. Although Experiment 2 is discussed alongside Experiment 1 in the general discussion, the limitations outlined in this discussion should be kept in mind when trying to determine what this work contributes toward current theorizing about affective influences on attentional scope.

General Discussion

These two studies examined how shame and guilt influence attentional scope. The studies tested three hypotheses derived from the major theories regarding affect and cognition and extended them to shame and guilt. These emotions provide a novel backdrop from which to test the important mechanisms that underly each theory (e.g., valence, motivation, certainty, and accessible processing strategy). Unfortunately, the studies revealed mixed results, with

Experiment 1 providing the strongest support for the affect-as-information account, and Experiment 2 failing to reveal any significant mood effects.

Experiment 1 best supported the AAI account's hypotheses, in that it indicated that shame narrowed attention more so than guilt. Experiment 2 contained a strong priming manipulation (which might have overpowered any mood effects) that altered attentional scope on local, but not global, trials. While the inconsistent results do not unilaterally support one particular theoretical explanation, they do provide us with more information about how shame might operate in regard to attentional scope. Specifically, when an arguably less powerful prime is present, shame, but not guilt, promoted local processing.

One element to keep in mind for future research is that in both studies, the mood manipulation check revealed differences in shame, but not guilt. That is, the shame condition reported more shame than the guilt condition, but both conditions reported the same level of guilt. Thus, the effects seen in these studies might indicate differences in high versus low levels of shame, rather than shame versus guilt. Additionally, overall means for shame and guilt were high in both conditions and both studies. While research on shame and guilt has found and emphasized differences on a variety of dimensions, it also acknowledges that these emotions can—and often do—co-occur (Smith et al., 2002; Tangney, 1995). Although individuals can differentiate between the experiences when asked (Tangney et al., 1996; Keltner & Buswell, 1996), it is still unlikely to elicit exclusively “guilt-free shame” and “shame-free guilt.” Even though shame and guilt theoretically differ on the components needed to test these accounts, their increased likelihood of co-occurrence might inhibit the ability to contrast them in the way prior work has done with emotions such as sadness/happiness, sadness/disgust, and sadness/anger (Gable & Harmon-Jones, 2010b; Gasper & Clore, 2002; Isbell et al., 2016a).

Another issue to consider is that while previous research has reported mood effects on both trial types (Gable et al., 2010b; Huntsinger et al., 2010), these studies did not. The data only found effects on local, but not global, trials, indicating that manipulations altered the extent to which people narrowed their attention, rather than the extent to which they broadened it. If, as previously suggested, results were actually revealing differences between levels of shame, this could be one explanation as to why differences primarily appeared within local trials. Given the findings that shame narrowed attention more so than guilt, the results from Experiment 1 might have been showing the extent to which shame narrowed attention at differing levels (e.g., high levels of shame showed narrowing effects, low levels of shame did not show narrowing effects) rather than whether shame broadened *or* narrowed in relation to guilt. Since there was a consistent level of guilt maintained, it seems unlikely that there would be vast differences on both trial types across conditions, especially if shame is more likely to narrow.

Theoretical Implications

Affect-as-Information

Prior work from the AAI account posits that differences in approach/avoidance orientation should result in varying mood influences on attentional scope. However, the degree to which emotions need to differ on this dimension (and potentially others) is not explicit in the existing literature for this account. A significant portion of the evidence for the AAI account compares emotions that differ in both approach/avoidance and valence (Frederickson & Branigan, 2005; Gasper & Clore, 2002, 2004). Results from Experiment 1 provide support for the idea that two emotions that are similar in valence, but have different approach/avoidance orientations have unique effects on attentional scope, and that the avoidance emotions are more likely to narrow people's focus. The lack of replication in Experiment 2, despite manipulation

check results in the hypothesized directions, could reflect merely that the prime in the study was too strong, overpowering the information provided by one's mood. Together, these studies seem reflective of previous work that reveals mood effects only appear when the information provided by them is experienced to be relevant to the task at hand.

Motivational Intensity Model

Ultimately, neither experiment showed support for the MIM. Evidence for the MIM has studied negative emotions with theorized differences in motivational intensity (i.e., sadness and disgust; Gable & Harmon-Jones, 2010b), but prior work from this model has only compared them to a control condition rather than directly to another negative emotion within a single study (Campbell et al., 2021; Gable & Harmon-Jones, 2010b; Gable et al., 2015). Thus, null results for either of the MIM hypotheses could suggest that negative emotions, when compared directly to one another, differ only very slightly on motivational intensity. In support of this view, Experiment 2 did not find that guilt and shame differed significantly on motivational intensity.

Recent work from Campbell et al. (2021) provides some logic as to why we found minimal support for the MIM. Specifically, Campbell et al. (2021) argued that the proposed relationships between discrete emotions and motivational intensity was previously theorized and assumed without corroborative evidence. Across several studies, they found that motivational intensity was closely related to valence, and that the evidence for the MIM may actually reflect extremities of valence rather than a separate construct of motivational intensity (Campbell et al., 2021). If, indeed, this is the case, finding minimal differences between guilt and shame is expected as they are unlikely to differ vastly in intensity of negative valence (Tangney et al., 1996). Thus, these two experiments may serve as evidence for Campbell et al.'s (2021) critique of the MIM in that a direct comparison of two negative emotions that differ on other important

dimensions (i.e., approach/avoidance and certainty) did not show strong differences in altering attentional scope. While there was an effect of mood in Experiment 1, those results were in the opposite pattern than proposed by the MIM. Altogether, these results combined with present critiques of the MIM suggest that more evidence needs to be provided for distinguishing motivational intensity, first as a separate construct, and second, as the mechanism that underlies mood effects on attentional scope.

Affect-as-Cognitive-Feedback Theory

Based on the ACF theory, we hypothesized that guilt would increase reliance on the accessible processing strategy (i.e., the prime) while shame would decrease reliance. We did not see these predictions in either Experiment 1 or Experiment 2. Neither study included a significant interaction between the processing strategy prime and the mood condition as was seen in previous studies (Huntsinger et al., 2010; Huntsinger, 2012; Isbell et al., 2016a) under this account. Instead, in both experiments there was only a main effect of the priming condition, revealing that the prime was effective (i.e., global prime increased attention to global features, local prime increased attention to local features). In Experiment 2, the priming effect was very strong, perhaps because the priming task and the dependent variable employed the same stimuli – the Navon task. While previous studies have used the Navon task as both the processing prime and the attentional scope measure (Huntsinger et al., 2010), it is possible that for our purposes, use of the Navon as a priming task was *too* strong in the sense that it did not allow for mood effects to be made visible.

These results suggest that there could be an optimal level of processing strategy accessibility under which mood effects might operate, or an optimal level of mood under which the priming is more salient. For example, in previous work, priming manipulations varied across

studies and in relationship with the mood manipulation. In studies that used similar mood induction procedures as these, the priming manipulations used were the map task as seen in Experiment 1 (Isbell et al., 2016b), and the Navon task as used in Experiment 2 (Huntsinger et al., 2010). However, other studies that used the Navon task often used different mood induction procedures such as having participants listen to music, read stories (Huntsinger, 2012), or watch video clips (Isbell et al., 2016a). Furthermore, the studies that used the Navon task as the priming manipulation were generally comparing positive and negative moods (Huntsinger et al., 2010), or emotional states such as sadness and anger (Isbell et al., 2016a) with mood inductions that isolated these two states well. Thus, it might be that the priming manipulation needs to be unrelated to the dependent variable when mood manipulations compare emotions of similar valence, such as in Isbell et al. (2016a), or that the relationship between prime and mood varies as a function of the mood induction procedure in previous studies in this paradigm. Future work should consider how uses of different priming tasks and mood manipulation methods might influence evidence for this and other theories (von Mühlennen et al., 2018).

Limitations and Future Directions

Changes to the experimental procedure in Experiment 2 due to COVID-19 and in an attempt to address concerns from Experiment 1 ultimately contributed to mixed results. The matching prime and outcome measure likely obscured any mood effects, and the mood manipulation might not have been as salient due to participants' taking this at home. Given that the majority of studies in this literature have conducted in-lab studies (Gasper & Clore, 2002; Gable & Harmon-Jones, 2010b; Huntsinger et al., 2010), future work on these emotions should be conducted in more optimal and controlled environments.

Across both experiments, participants in the shame and guilt conditions reported similar levels of guilt in both experiments, while differing on shame. The difficulty in parsing apart these two emotions has been documented and demonstrated across the literature (Tangney et al., 1996; de Hooge et al., 2008; Niedenthal et al., 1998; Schmader & Lickel, 2006). While the present work followed past effective methodologies (Keltner & Buswell, 1996; de Hooge et al., 2018), the strong likelihood of co-occurrence between shame and guilt might mean that future work should choose to isolate one while accounting for the other and compare to an emotion that is unlikely to co-occur with either. Future research also might want to focus on manipulating guilt as it was similar in both conditions and in both studies, while shame differed.

It should be noted that these studies focused on a specific type of shame. Future research should address how the type of shame manipulated might influence these findings. This work only tested avoidance-motivated shame, but there might be shame that is approach-motivated (de Hooge et al., 2018). Some researchers argue that approach-motivated shame occurs when the opportunity to repair the situation, or repair our image to others, is present (Gausel & Leach, 2011; Leach & Cidam, 2015). In the presence of a reparable situation, shame may prompt us to approach others and initiate action (de Hooge et al., 2018). As such, extending this work to include approach-motivated shame might provide new information as to how variance within the same emotion may uniquely alter attentional scope. Furthermore, if, as the AAI account suggests, approach/avoidance orientation is the mechanism through which mood influences attention, then we might see approach-motivated shame functioning similarly to guilt and differently from other avoidance-oriented emotions.

Furthermore, the present work investigated attentional focus strictly by use of reaction time data on the Navon task. Additional work could employ other attentional focus measures to

enhance the generalizability of the results. For example, research on mood effects and attentional scope have used other tasks such as the Kimchi-Palmer task (1982; Gasper & Clore, 2002) and flanker tasks (Huntsinger, 2012) to assess attentional scope. Furthermore, some research has included eye-tracking (Fang et al., 2017) and electrophysiological measures (Liu et al., 2014; Moriya & Nittono, 2011; Nadig et al., 2019; Pitchford & Arnell, 2019, 2021) to replicate and extend these results. Inclusion of other tasks and measurements may help clarify differences between guilt and shame and elucidate under what conditions they are likely to influence attentional scope.

Conclusions

In sum, these studies extend existing work on affect and attention by investigating how two self-conscious emotions, differing in a variety of dimensions, alter attentional scope. By testing each of the theories with shame and guilt, this work emphasizes how variations in each underlying dimension (valence, motivation, and certainty) could contribute to attentional tuning. Through connecting these key dimensions of each view with corresponding differences between shame and guilt, these two experiments illustrate how these theories can be applied to affective states that are often understudied or dismissed from research on emotion and attention. While the differences in results between Experiments 1 and 2 did not generate clear evidence for one specific theory, overall, the results provided the most evidence in support of the AAI perspective. Specifically, data indicated that shame may narrow attention more so than guilt, although this effect was not replicated under heavier priming conditions. Broadly, these studies provide preliminary evidence that shame might promote focusing more on the trees than the forest.

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Appendix A: Experimental 1 Materials

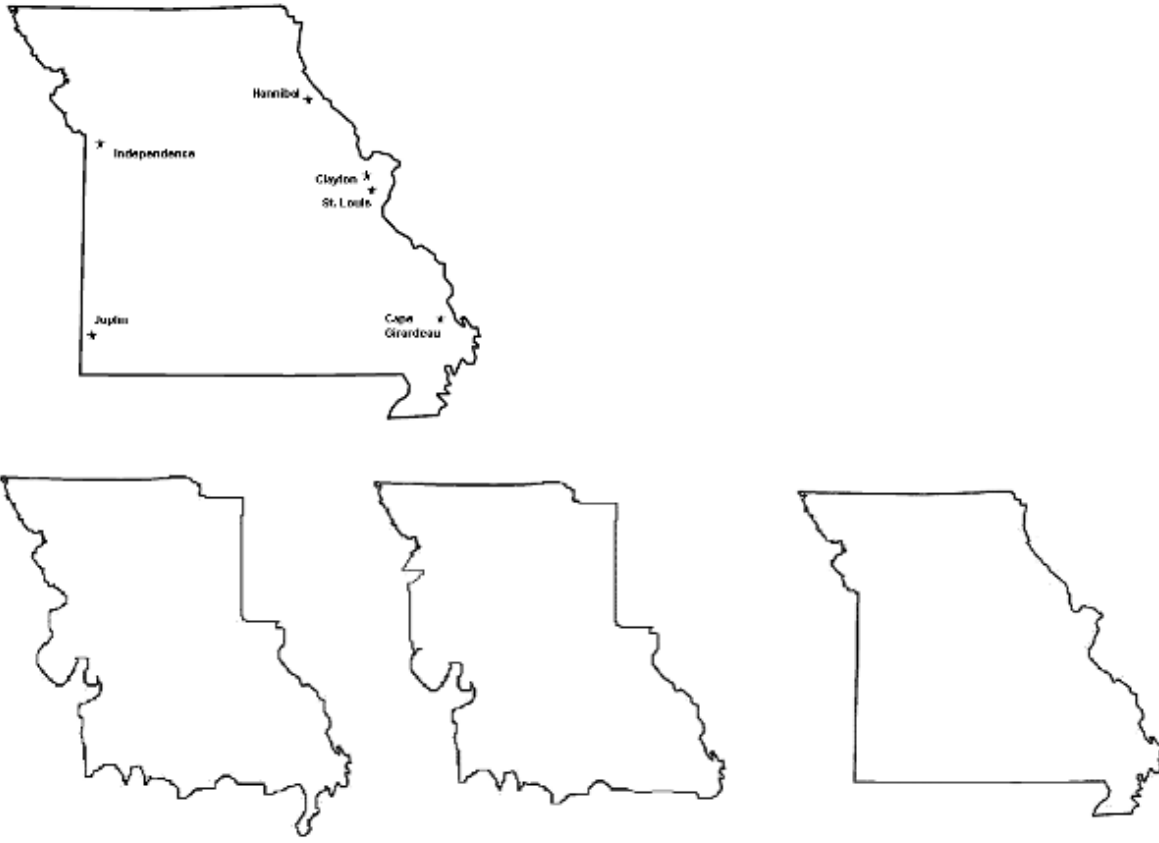
Experiment 1 Preregistration: <https://aspredicted.org/blind.php?x=ni8uj4>

Isbell et al. (2016b) Map Task

Global Task Condition:

Preliminary Instructions:

For this task, you will see a picture of a state (e.g., Pennsylvania, California), which will remain on the screen for ten seconds. Please study the general shape of the state, as you will be tested on them after viewing the state. There will be 7 trials in all. Click continue to see an example. The picture will remain on the screen for 10 seconds. Please study the general shape of the state.



Which one is the correct shape? (The images take a moment to load)

First

Second

Third

Figure A-1. Example trial for global version of Isbell et al. (2016b) Map Task.

Local Task Condition

Preliminary Instructions:

For this task, you will see a picture of a state (e.g., Pennsylvania, California) which will remain on the screen for ten seconds. Please study the names of the cities, as you will be tested on them after viewing the state. There will be 7 trials in all. Click continue to see an example. The picture will remain on the screen for 10 seconds. Please study the names of the cities.



Was Independence a city named on the map?

- Yes
- No

Figure A-2. Example trial for local version of Isbell et al. (2016b) Map Task.

Navon (1977) Letters Task (For examples of Navon trials, see Figure 2 on page 5)

Example Preliminary Instructions:

Please place your right index finger on the orange key and your right ring finger on the yellow key. On the following screens, you will see a series of images comprised of large letters made up of smaller letters. You are being asked to identify whether you see the letter H or the letter T in any of the images. These letters will never appear together in one image. If you see H, press the orange key and if you see the letter T, press the yellow key. Please respond as quickly as possible. Press enter to see some sample trials.

Appendix B: Experiment 2 Materials

Experiment 2 Preregistration: <https://aspredicted.org/blind.php?x=4y7me8>

Shame Writing Prompt:

Please recall a past event in which you felt **SHAME** about something you did and **decided to hide it or withdraw from others because you were unable to make amends**. To help you identify an appropriate event, it's important to know that shame-inducing events often make you feel like **you are a bad person** and may make you feel small or worthless.

Please take time to think about why you felt **SHAME** during this event. Try to see it in your mind's eye. Then, describe what events contributed to your feelings as vividly and in as much detail as possible. Please write about the event such that a person reading it may experience it as you experience it. Write about what you feel most ashamed about and why.

Please do not write about any event that you do not wish to share or think about. If such an event comes to mind, please think of a different event or move on to the next exercise.

The following questions may help you with this task: What were you feeling? What made you feel that way? What was important for you? What led up to that feeling? Did that event set off some chain of thoughts or fantasies that enhanced your feelings? What were they?

Please describe the event and your feelings as vividly and in as much detail as you can. You will be given about 5 minutes.

Guilt Writing Prompt:

Please recall a past event in which you felt **GUILT** about something you did and **decided to approach others about it in order to make amends**. To help you identify an appropriate event, it's important to know that guilt-inducing events often make you feel **bad about your actions or behavior** and may make you feel responsible for any consequences (to yourself or others).

Please take time to think about why you felt **GUILT** during this event. Try to see it in your mind's eye. Then, describe what events contributed to your feelings as vividly and in as much detail as possible. Please write about the event such that a person reading it may experience it as you experience it. Write about what you feel most guilty about and why.

Please do not write about any event that you do not wish to share or think about. If such an event comes to mind, please think of a different event or move on to the next exercise.

The following questions may help you with this task: What were you feeling? What made you feel that way? What was important for you? What led up to that feeling? Did that event set off some chain of thoughts or fantasies that enhanced your feelings? What were they?

Please describe the event and your feelings as vividly and in as much detail as you can. You will be given about 5 minutes.

Control Writing Prompt:

Try to think of a day in which nothing really exciting or upsetting occurred and you went about life without many interruptions.

Please take time to think about what events occurred throughout the day. Try to see it in your mind's eye. Then, describe these events as vividly and in as much detail as possible. Please write about the event such that a person reading it may experience it as you experience it.

Please do not write about any event that you do not wish to share or think about. If such an event comes to mind, please think of a different event or move on to the next exercise.

The following questions may help you with this task: What happened throughout the day? How did you feel? What was important for you throughout the day?

Schmader & Lickel (2006) Approach/Avoidance Measure

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Approach Items:

1. I felt like I should do something after the event to make it better
2. I felt like I should apologize for what happened
3. I tried to do something after the event to make it better

Avoidance Items:

4. I wanted to be completely unassociated with the event.
5. At the time, I remember wishing that I could hide or remove my association to what happened
6. I felt like I wanted to disappear from the situation
7. I wanted to distance myself as much as possible from the event.

Motivational Intensity Items

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. I felt a strong urge to change something about the situation.

2. I did not feel a strong urge to do anything.

3. I felt a strong need to modify my role in the situation.

Certainty Items

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. I felt certain

2. I felt able to make decisions

3. I knew what to do.