

RUNNING HEAD: Emotion and Persuasion

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**Emotion and Persuasion:
Cognitive and meta-cognitive processes impact attitudes¹**

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Abstract

This article addresses the multiple ways in which emotions can influence attitudes and persuasion via primary and secondary (meta-) cognition. Using the elaboration likelihood model of persuasion as a guide, we review evidence for five fundamental processes that occur at different points along the elaboration continuum. When the extent of thinking is constrained to be low, emotions influence attitudes by relatively simple processes that lead them to change in a manner consistent with the valence of the emotion. When thinking is constrained to be high, emotions can serve as arguments in favor of a proposal if they are relevant to the merits of the advocacy or they can bias thinking if the emotion precedes the message. If thinking is high and emotions become salient after thinking they can lead people to rely or not rely on the thoughts generated either because the emotion leads people to like or dislike their thoughts (affective validation) or feel more confident or doubtful in their thoughts (cognitive validation). When thinking is unconstrained, emotions influence the extent of thinking about the persuasive communication. Although prior theories have addressed one or more of these fundamental processes, no other approach has integrated them into one framework.

One of the most fundamental and encompassing aspects of human existence is the experience of emotion. People often rely on their emotions, either intentionally or unintentionally, to shape their judgments and decisions regarding life satisfaction, risk assessments, economic choices, social relationships, and so forth (e.g., Forgas, 2001). Because of their importance, emotions have been studied extensively in the domain of attitudes and persuasion (see Petty, Fabrigar, & Wegener, 2003). The available research in these contexts reveals that a person's *incidental emotions* (i.e., emotions stemming from factors outside of the persuasive message itself) can influence evaluative judgments through multiple cognitive and meta-cognitive processes.² Much of this research has been conducted under the umbrella of the dominant dual and multi-process theories of persuasion. In order to provide a general framework to understand what effects emotions can produce and to organize the mechanisms by which emotions produce their effects we rely on the Elaboration Likelihood Model of persuasion (ELM; Petty & Cacioppo, 1986; Petty & Briñol, 2012).

Briefly described, the ELM holds that changes in attitudes and other social judgments result from different processes depending upon the extent of elaboration the individual is engaging in at the time of influence. The level of elaboration is a function of two broad variables, how motivated and how able the person is to think about the influence attempt. The extent of thinking at the time determines the specific role that emotions play in the influence process. That is, the ELM proposes that judgments can be modified by processes that involve relatively high or low amounts of issue-relevant thinking and emotions can work to influence judgments in different ways depending on the overall extent of elaboration. Furthermore,

² Although the current review focuses on incidental emotions, emotions that are an integral part of the persuasive message itself (e.g., fear appeals) have also been studied, though not as extensively (e.g., see Maloney, Lapinski, & Witte, 2011, for a review).

another core idea is that the extent of thinking involved in creating a judgment determines how consequential that judgment will be (i.e., the extent to which the judgment is enduring and impactful; see Petty, Haugtvedt, & Smith, 1985).

In accord with the ELM, we argue that the psychological processes relevant to the impact of emotions on attitudes can be organized into a finite set that operate at different points along an elaboration continuum. Under low thinking conditions, emotions, like other variables, can influence attitudes via a variety of low effort (“peripheral route”) processes such as classical conditioning. When the likelihood of thinking is relatively high, these same emotions can impact persuasion by other mechanisms such as affecting the direction of the thoughts that come to mind, or determining whether people use those thoughts (“central route”). Furthermore, emotions can influence attitudes by influencing the amount of thinking that takes place when elaboration is not constrained to be very low or high. We describe each of these processes in more detail shortly and provide examples.

We begin our review of the processes by which emotions influence attitudes by focusing first on dimensions of primary cognition. Primary thoughts are those that occur at a direct level of cognition and involve our initial associations of some object with some attribute. Following a primary thought, people can also generate other thoughts, which occur at a second level and involve meta-cognitive reflections on the first-level thoughts and the processes leading to them (Jost, Kruglanski, & Nelson, 1998; Petty, Briñol, Tormala & Wegener, 2007). In the second part of this review, we focus on meta-cognitive processes, describing recent work that reveals that emotions can influence attitudes by affecting how people feel and think about their own thoughts and thought processes (e.g., Petty, Briñol, & Tormala, 2002). Finally, we distinguish among the processes by which emotions operate, and specify the conditions under which the various

mechanisms are particularly likely to occur. Among other things, identifying the specific processes by which emotions affects attitudes is informative about the immediate and long-term consequences of persuasion.

THE IMPACT OF EMOTIONS ON PRIMARY COGNITION

The ELM has described four ways in which emotions, like any other variable present in the persuasion setting, can influence attitudes by impacting primary cognition. These are: (1) serving as a simple cue when the likelihood of thinking is low, (2) serving as a piece of substantive evidence (i.e., an argument), and (3) affecting the direction of processing (i.e., introducing a bias to the ongoing thinking) when thinking is high, and (4) affecting the amount of thinking that takes place when the extent of thinking is not already constrained by other variables to be very high or low. In this section we briefly describe how and when emotions can influence attitudes by serving in each of these roles at different points along the elaboration continuum.

Emotions Can Serve as Simple Cues When Elaboration is Low

According to the ELM, when people are not very motivated or able to think carefully about an influence attempt, persuasion relevant variables such as emotion have an impact on attitudes through relatively low effort (peripheral route) processes (Petty, Schumann, Richman, & Strathman 1993). In these situations, emotions impact attitudes in accord with their valence. That is, if the attitude object is associated with a positive emotional state (e.g., happiness), that object will be liked more than if associated with a negative emotional state (e.g., fear).

There are many instances in the literature of emotions affecting evaluation of stimuli in accord with their valence when thinking was likely not very extensive. The voluminous literature on evaluative conditioning provides many examples whereby attitudes were made more

negative by pairing them with unpleasant stimuli or actions and more positive by pairing them with pleasant stimuli or actions (see De Houwer, Thomas, & Baeyens, 2001; Walther, Weil, & Dusing, 2011). In series of studies (Jones, Fazio, & Olson, 2009), for instance, cartoon characters were paired with emotionally evocative pictures. Attitudes toward the cartoon characters consistently became more positive when the paired pictures elicited positive rather than negative emotional reactions.

A number of specific low effort psychological processes have been proposed to explain the effects of emotions when thinking is low, including classical conditioning (Staats & Staats, 1958), use of emotion-based heuristics (e.g., “I feel good, so I must like it”; Chaiken, 1987; Schwarz & Clore, 1983), misattribution of one’s emotional state to the attitude object (Zillmann, 1983), and direct affect transfer (e.g., Murphy & Zajonc, 1993; Payne, 2005). In each of these accounts, although the emotion actually arises from a factor that is incidental to the persuasive message or attitude object (e.g., a foul odor in the room, smiling), when thinking is low, the emotion nonetheless impacts attitudes toward the associated target of influence in accord with its valence. Furthermore, although the various individual accounts of low effort emotional impact differ in various ways, they all agree that the impact of emotion doesn’t require much in the way of cognitive motivation or capacity, and the effect of the emotion is consistent with its valence. Finally, we note that some research that has varied the extent of thinking has shown that these low effort mechanisms are more impactful when thinking is likely to be low (e.g., Bornstein, 1989; Priester, Cacioppo & Petty, 1996).

Emotions Can Serve as Arguments or Bias Cognition When Elaboration is High

Although the simplest and most straightforward effect of emotions on attitudes is as a simple cue under low thinking conditions, emotions can also be impactful when motivation and

ability to think are high such as when the topic of the communication is personally relevant and people have the time and resources to process it. However, in these situations, the mechanisms by which emotions exert their impact are different. In particular, when thinking is high, emotions can be processed as arguments or can bias the ongoing cognitive activity.

Emotions can serve as arguments. First, in thoughtful situations one's emotions can be scrutinized as a piece of evidence relevant to the merits of an attitude object as articulated by Martin's *mood as input* approach (Martin, Ward, Achee, & Wyer, 1993). In accord with the ELM, when the amount of thinking is high, people assess the relevance of *all* of the information in the context and that comes to mind in order to determine the merits of the attitude object under consideration. Thus, people can examine their emotional states as possible arguments or reasons for favoring or disfavoring the attitude object.

For example, in one study, Martin, Abend, Sedikides, and Green (1997) presented people who were either feeling happy or sad with either a happy or sad story. Participants were asked to evaluate the story and their liking for it. In those circumstances the emotion people felt when reading the story was likely to be perceived as a central merit of the story since the target story was obviously meant to bring about a particular feeling. Consistent with this notion, participants' evaluative rating of the target story was highest when the mood before the emotion matched rather than mismatched the intended effect of the story. Thus, when the purpose of the target story was to make people feel sad and people did feel sad, sadness actually led to higher ratings of the story than did happiness. Note that this is opposite to the effect that these emotions would have as simple cues under low thinking conditions (for a related analysis using fear inductions and horror stories, see Andrade & Cohen, 2007). This "argument effect" for emotion is comparable to how other non-emotional variables are treated in the ELM such as when an

attractive spokesperson serves as evidence for a relevant product (e.g., a skin cream) under high thinking conditions but as a simple positive cue for an irrelevant product (e.g., a new car) when thinking is low (Petty & Cacioppo, 1984; Pierro, Mannetti, Kruglanski, & Sleeth-Keppler, 2004).

Emotions can bias thinking. A second role for emotions under high thinking conditions comes from associative network theories of memory which hold that emotions can enhance the retrieval of emotionally congruent information and inhibit emotionally incongruent information (Blaney, 1986; Bower, 1981). That is, these models make a fairly straightforward prediction that when an emotion such as happiness is induced above some threshold, activation spreads throughout the network to associated information. Thus, when happy, a heightened accessibility of memories and experiences associated with happiness will come to mind and can therefore color one's assessment of the information presented. Stated simply, a positivity bias in thinking can occur when people are happy which would make interpretations of message arguments more favorable than they would have been in a non-happy state and can lead positive events and outcomes mentioned in a message to be seen as more likely (Johnson & Tversky, 1983). The opposite can occur for negative emotions.

Interestingly, if under high thinking conditions there is a positive bias in thinking as a result of feeling happy, attitudes would become more favorable in positive versus negative emotional states, the same result as under low thinking conditions. However, the mechanism should be different. In one study examining different roles for emotions under high and low thinking conditions, Petty, and colleagues (1993) demonstrated how individuals who varied in their propensity to think (as assessed with the need for cognition scale; Cacioppo & Petty, 1982) can show similar outcomes for emotions that are mediated differently. In one study, participants viewed a series of commercials, the critical one being for a pen. Participants' incidental emotion

was manipulated by embedding the commercial in a television program that invoked either a positive or a neutral affective state. Both high and low NC participants developed more favorable attitudes toward the pen when they were happy. However, the effect of emotion on attitudes was mediated by the favorability of the thoughts generated in response to the message for those high in NC (i.e., emotion biased thought production), but not for those low in NC (i.e., a direct effect of emotion was obtained).

In the Petty et al. (1993) research, happiness led to the generation of more positive thoughts among high thinkers. Other research has shown that happiness can not only increase the likelihood of generating thoughts, but it can also increase perceptions of the likelihood of positive consequences and decrease the likelihood of negative consequences, at least when thinking is high. In one study (Wegener, Petty, & Klein, 1994) among those high in need for cognition, happiness (compared to sadness) increased the persuasiveness of a message that focused on the positive things that would happen if a recommended policy was adopted, but reduced the persuasiveness of a message that focused on the negative things that would happen if the same policy was not adopted. Importantly, the impact of emotion on attitudes was mediated by the perceived likelihoods of the consequences mentioned in the message.

The congruence of emotion (e.g., happy/sad) and message framing (positive/negative) is not only influential for matches in valence. In another study (DeSteno et al., 2004), participants were placed in a sad or angry state before being exposed to arguments that articulated the sad or angering consequences that would occur if a new policy was not adopted. When the emotion was matched to the message frame, persuasion was higher than when it was not and these effects were once again mediated by the perceived likelihoods of the events. Importantly, the matching effect was only present among high need for cognition individuals.

Matching the emotional content of arguments (e.g., happy, sad or angering consequences) to the type of emotion experienced is one way to enhance persuasion when thinking is high. Other kinds of matching are also possible. For example, some emotions are more compatible than other emotions with certain kinds of arguments. In one demonstration of this, Rucker and Petty (2004) relied on the finding that some emotions are more active than others which are more passive. They found that when people were given a choice of two vacation locations -- one advertised as a place full of activity and the other advertised as a place of relaxation -- those who were made to feel angry preferred the active resort, but those made to feel sad preferred the relaxing resort. A conceptually similar matching effect was obtained by Griskevicius, Shiota, and Nowlis (2010) who found that feeling pride versus contentment increased preference for self-enhancing over comforting products.³

In closing this section it is worth noting that when thinking is relatively high, people might come to realize that their emotions could be affecting their judgments. Sometimes people will recognize this influence as appropriate and as noted above, emotions, when scrutinized for merit, can even serve as arguments in favor or against some judgment. However, if people believe that their judgments are somehow being biased or influenced by their emotions inappropriately, they may try to adjust or correct their judgments in a direction opposite to the expected bias (Wegener & Petty, 1997). Most correction processes are meta-cognitive in nature since they often require thinking about one's judgments and the extent to which emotions serve as a potential contaminating influences (e.g., Berkowitz, Jaffee, Jo, & Troccoli, 2000; DeSteno, Petty, Wegener, & Rucker, 2000; Ottati & Isbell, 1996). Of course, not only do people

³ Emotions can also influence other aspects of thinking such as when positive emotions make thoughts more creative and flexible (Isen, 1999) or induce a global rather than a local focus (e.g., Fredrickson & Branigan, 2004). We have emphasized the dimensions most relevant for understanding persuasion.

sometimes try to correct for the unwanted influence of their emotions on their subsequent evaluations but they can also try to ignore how they feel, negate their emotions, suppress them, or think about something else when making their judgments (e.g., Schwarz & Bless, 1992; Wegner, Erber, & Zanakos, 1993).

Emotions Can Influence the Amount of Thinking When Elaboration is Unconstrained

As we have seen, emotions can influence attitudes when conditions are pre-set to foster high or low amounts of thinking. For example, when a message is accompanied by various distracting stimuli, people know that they can't exert much effort in processing and when a message is very high in personal relevance, they know that it is important to think carefully. Variables such as distraction (Petty, Wells, & Brock, 1976) and personal relevance (Petty & Cacioppo, 1979) can be manipulated to determine how much people think. Similarly, there are individual differences in propensity to think (Cacioppo & Petty, 1982) and emotions can work differently for people who are relatively high or low in this distribution (Petty et al., 1993). However, in many situations, people will not already have a clear idea of how much they are willing or able to think (e.g., personal relevance is unclear, propensity to think is moderate). Under such moderate or unconstrained elaboration conditions, the salient concern for people is likely to be how much effort they should devote to the influence attempt. People cannot think about every message they receive and preserving cognitive resources is important. In such unconstrained contexts emotional states have been shown to impact persuasion by influencing the extent of processing that occurs. That is, under these moderate conditions of elaboration, the emotions a person is experiencing can be helpful in deciding whether to think carefully or not about the persuasive proposal.

Happiness versus sadness. Most studies on extent of processing have compared the

emotion of happiness to sadness. According to Worth and Mackie (1987), happiness interferes with cognitive capacity as compared to a neutral state resulting in a decrease in elaborative processing. According to the *feelings-as-information* viewpoint (Schwarz & Clore, 1983) sadness and other negative states indicate that the current environment is problematic, motivating a high level of effortful processing, whereas positive states indicate that the current environment is safe, indicating that a low level of cognitive effort is satisfactory. Tiedens and Linton (2001) came to the same conclusion based on an appraisals theory of emotion (Ellsworth & Smith, 1988) in which happiness is associated with confidence and sadness with doubt. Because of the confidence associated with happiness, people think there is less need to process the message than when they are feeling more doubtful (sad). In accord with all of these notions that happiness should decrease information processing relative to sadness, the bulk of early research on this topic has shown that people in a happy state were less influenced by the quality of the arguments in a message than those in a sad state. Instead, happy individuals tended to be more influenced by simple cues (e.g., Worth & Mackie, 1987; Tiedens & Linton, 2001).

Not all frameworks invariably expect happiness to be associated with less information processing than sadness, however. According to the *hedonic contingency* view (Wegener & Petty, 1994), individuals in a happy mood wish to maintain this state and are thus highly sensitive to the hedonic implications of messages that they encounter. Because of this, they may be motivated to avoid processing information that might threaten their happiness (such as the counter-attitudinal communications used in most prior research). In accord with this view, Wegener, Petty, and Smith (1995) found that happiness did not reduce processing relative to sadness when the message presented was proattitudinal and uplifting rather than counterattitudinal and mood threatening. In contrast, in this situation happiness produced larger

argument quality effects on attitudes than sadness. Subsequent research has found that in accord with the hedonic contingency view, positive mood is most likely to lead to careful processing when mood management concerns are salient and processing will not reduce mood. For instance, in one study (Cote, 2005) message processing goals (entertainment versus performance) were manipulated along with expectations about how processing the message would make people feel (positive or negative), current mood (pleasant or unpleasant) and message argument quality (strong or weak). This research revealed a four way interaction showing that unpleasant mood produced higher information processing than positive mood for all conditions except when participants were given an enjoyment goal and the task was expected to be pleasant.

Finally, another conceptualization, the *mood congruency* perspective (Ziegler, 2010), argues that message processing is enhanced when mood based expectancies are disconfirmed rather than confirmed. Because people who are happy generally have more positive expectancies, a counterattitudinal message might be less expected than a proattitudinal message and therefore receive more processing (Ziegler, 2013). Note that on the surface, at least, this seems to suggest a prediction opposite to the hedonic contingency view. To resolve these inconsistencies, Ziegler noted that not all counterattitudinal messages would be expected to be mood threatening. In a study aimed at resolving the competing predictions (Ziegler, Schlett, & Aydinli, 2013), it was found that the mood congruency predictions were upheld when a counterattitudinal message was not mood threatening (i.e., the counterattitudinal message tended to be processed more by happy than by neutral or sad participants), but the hedonic contingency view was supported when the same message was made to be threatening by inducing reactance (i.e., the counterattitudinal message tended to be processed less by happy than neutral or sad

participants).

Anger versus surprise. Although most research has examined happiness versus sadness as an instigator of information processing, other emotional states have sometimes been studied. Perhaps the most investigated is anger versus some control emotion, and the results have been contradictory. For example, Moons and Mackie (2007) found that people in an angry state processed information in a persuasive message more than those in a neutral state and thus their attitudes were more influenced by the quality of the arguments in the message. However, Tiedens and Linton (2001) found just the opposite. That is, in their research, anger, compared to worry, was associated with a decrease in amount of thinking as revealed by a reduction in argument quality effects in a persuasion paradigm. Similarly, Bodenhausen, Sheppard and Kramer (1994) found that anger (in comparison to sadness and neutral mood states) led people to be especially likely to use stereotypes and heuristic cues to make judgments rather than rely on the individuating information (see also Lerner, Goldberg, & Tetlock, 1998). Although it seems clear from past research on persuasion that anger can either increase (Moons & Mackie, 2007) or decrease (Tiedens & Linton, 2001) information processing when the emotion is induced prior to the presentation of the message or task, it is not clear when these different effects occur.

We have recently proposed a *differential appraisals hypothesis* that can provide one possible explanation for how both of these can occur and the circumstances under which they are most likely (Briñol, Petty, et al., 2014). Specifically, we argue that whether anger leads to more or less thinking about the persuasive message can depend on the kind of appraisal that is highlighted (see Smith & Ellsworth, 1985). That is, if angry individuals focus on the confidence that accompanies anger, they may feel certain about their own views and avoid processing new information. In these circumstances, anger would be associated with reduced argument quality

effects. On the other hand, if angry individuals focused on the unpleasantness of the emotion and came to view their current opinions negatively (rather than more confidently), angry people would elaborate information more extensively. In these circumstances, anger would lead to enhanced argument quality effects.

In order to test the differential appraisals prediction for anger, we conducted a series of studies comparing the effects on information processing of anger (a negative, unpleasant emotion that is associated with feelings of confidence) and surprise which is a relatively pleasant state (Watson & Tellegen, 1985; Wilson, et al., 2005) that is associated with doubt or uncertainty (Tiedens & Linton, 2001). Of course, surprise can sometimes be negative in valence. However, when compared with anger, surprise is typically a relatively more positive emotion.

In this series of studies, Briñol and colleagues (2014) used a classic persuasion paradigm and examined whether a given emotion can have opposite effects on information processing depending on whether the emotion is appraised along a cognitive (confidence/doubt) or affective (pleasant/unpleasant) dimension. The emotion of anger was compared to surprise because of their opposite appraisals on the pleasantness and confidence dimensions. In one of the studies, participants first were assigned to write about personal episodes in which they felt anger or surprise. Following this emotion manipulation and before reading the persuasive message, a mindset manipulation was introduced which was intended to vary the extent to which the participants assessed their emotional state via the cognitive appraisal of confidence or the affective appraisal of pleasantness. Mindset was manipulated by asking participants to fill in the missing letters in a word-completion task. Participants in the affective mindset condition had to fill in the letters of words related to feelings (e.g., feel, emotion, pleasant) and several neutral words (e.g., table, chair). In contrast, participants in the cognitive mindset condition filled in the letters of words

related to thinking (e.g., thought, elaboration, brain, argument) as well as the letters of the same neutral words. In the affective mindset condition, participants were expected to focus primarily on the pleasantness or unpleasantness accompanying their emotion, whereas in the cognitive mindset condition, participants were expected to focus primarily on the confidence or doubt accompanying their emotion. Following these two inductions, participants received strong or weak arguments about a campus issue and they reported their attitudes toward the advocacy.

The results were consistent with the differential appraisal prediction. In the cognitive appraisal conditions, anger produced less thinking than surprise (as revealed by a reduced argument quality effect on attitudes). This is because feeling angry should lead people in a cognitive mindset to be more confident in the accuracy of their existing views than surprise, thereby reducing the need to process new information. In contrast, when participants focused on the affective appraisal of pleasantness, anger produced more thinking than surprise (as shown by an increased argument quality effect). This is because feeling angry should lead people in an affective mindset to feel worse about their existing views than surprise thereby increasing their desire to process new information.

The Briñol et al. (2014) research is unique in varying the type of appraisal that is activated and then examining the consequences of those different appraisals for the very same emotion. Thus, these findings contribute not only to the literature on emotion and persuasion but also to the literature on appraisal theories of emotion (e.g., Ellsworth & Smith, 1988; Lerner & Keltner, 2000; Smith & Ellsworth, 1985). Most notably, these results open the door to many other appraisal variations for other complex emotions such as disgust and fear.

Summary. The results of the studies on emotions and information processing under unconstrained elaboration conditions that we reviewed clearly indicate that whether a given

emotion will be associated with enhanced or reduced information processing depends on a variety of factors such what goals the person has at the time (e.g., entertainment versus performance) or what mindset they are in (affective versus cognitive) or what assumptions they make about what effects processing the message will have (e.g., will it be depressing or uplifting). Notably, however, in accord with the ELM, emotions tend to influence the extent of information processing when the level is not already preset by other variables in the persuasion situation.

THE IMPACT OF EMOTIONS ON SECONDARY COGNITION

The previous section focused on how emotions change what or how much people think about a persuasive message thereby influencing attitudes and persuasion. Emotions can not only influence these processes, but can also impact what people think about their own thoughts (Briñol, Petty & Barden, 2007). The notion that emotions can affect reliance on thoughts stems from the finding that emotional states can relate to appraisals of confidence or doubt. For example the emotion of happiness leads people to feel more confident than the emotion of sadness or a neutral state (Ellsworth & Smith, 1985; Tiedens & Linton, 2001). If this confidence is applied to one's thoughts, it would lead to greater use of those thoughts (cognitive validation). Furthermore, a positive emotion such as happiness can lead people to feel more pleasant than a sad or neutral state. If this feeling of pleasantness is applied to one's thoughts (e.g., I like my thoughts; my thoughts make me feel good) it would also lead to greater use of those thoughts (affective validation). In this section, we first review work on the emotions of happiness and sadness, for which these two appraisals (i.e., confidence and pleasantness) operate in the same direction, and then we move to more complex emotions, such as anger and surprise, for which the confidence and pleasantness appraisals are opposite.

Happiness (vs. Sadness) Can Affect Reliance on Thoughts

Previous research on emotion has shown that feeling happy can increase the reliance a wide variety of information that happens to be accessible at the time, including behavioral scripts (Bless, Clore, Schwarz, Golisano, Rabe, & Woelke, 1996), expectations (Bodenhausen, Kramer, & Susser, 1994), and general categories (Isen & Daubman, 1984). These studies suggest that happy versus sad states can influence the validity with which people hold their available thoughts, regardless of the type or nature of those thoughts (Clore & Huntsinger, 2007; Huntsinger & Clore, 2012). Applied to persuasion, this leads to the prediction that if thoughts are favorable to the advocated position, then happiness (as opposed to sadness) will facilitate the use of those thoughts, leading to more persuasion. On the other hand, if thoughts are unfavorable, then happiness (as opposed to sadness) will facilitate reliance on those thoughts, leading to less persuasion.

Research on happiness versus sadness confirms these self-validation predictions. Specifically, Briñol, and colleagues (2007) found that when placed in a happy state following message processing, attitudes and behavioral intentions were more reliant on valenced thoughts to the presented arguments than when placed in a sad state following the message. In one study, when participants received a strong message advocating that students should be required to carry personal identification cards on campus (and thoughts were thus mostly favorable), those who were asked to recall prior situations in which they were happy following message processing were more persuaded than those asked to recall prior situations in which they were sad, indicative of greater reliance on the positive thoughts generated. However, when participants received a weak message on the same topic (and thoughts were mostly unfavorable), the effects of the emotion induction were reversed. Furthermore, the effect of emotion on attitudes was

mediated by the confidence people placed in their thoughts with happy individuals expressing more thought confidence than those who were sad. This research demonstrated for the first time in the domain of attitude change that emotional states can operate by validation processes.

Subsequent research has replicated these effects by inducing happiness through facial expressions, which validated thoughts about other people rather than thoughts in response to a persuasive message. For example, in one study, Paredes, Stavraki, Briñol and Petty (2013) first exposed participants to a story that elicited mostly positive thoughts (about an employee's good day at work) or negative thoughts (about an employee's bad day at work). After writing their thoughts, participants were asked to hold a pen with their teeth (smile) or with their lips (control). Finally, all participants reported the extent to which they liked the story. In line with the self-validation hypothesis, it was found that the effect of the initial thought direction induction on story evaluations was greater for smiling than control participants. These results conceptually replicate those obtained in previous research on embodiment (i.e., more favorable evaluations of stories when smiling, Strack, Martin, & Stepper, 1988) when participants had positive thoughts, but the Paredes et al. study was able to show the opposite pattern of results -- less favorable evaluations for smiling -- for negative thoughts.

Taken together, these studies suggest that happiness (regardless of whether it is induced by cognitive or by embodied procedures) can validate what people think relative to sadness and neutral states. As noted earlier, happiness could lead people to rely on their mental contents more than sadness and neutral states because people's thoughts seem more accurate or valid when happy (*cognitive validation*), or because people feel good about their thoughts (*affective validation*). Our work on happiness and sadness does not allow these possibilities to be disentangled because both emotions work in the same direction on the pleasantness-

unpleasantness and confidence-doubt dimensions.

Anger (vs. Surprise) Can Affect Reliance on Thoughts

Some emotions, such as anger and surprise, do not have the appraisals of pleasantness and confidence naturally confounded. Anger and surprise are multi-faceted emotional states. As explained, anger is an unpleasant emotion that is associated with confidence whereas surprise is a relatively pleasant emotion associated with doubt (Tiedens & Linton, 2001; Ellsworth & Smith, 1988).

Consistent with our reasoning presented earlier, we propose that if an individual is focused on the cognitive appraisal of confidence/doubt, then feeling angry should lead to more thought use than surprise because anger would enhance confidence in the accuracy of one's thoughts -- cognitive validation. In contrast, if an individual is focused on the affective appraisal of pleasantness/unpleasantness, then feeling angry should lead to less thought use than surprise because anger would enhance perceptions of feeling bad about or disliking one's thoughts -- affective (in)validation.

In a series of recent studies, we examined these predictions, and thus whether a given emotion can have opposite effects on the use of one's own thoughts depending on whether the emotion is appraised in a cognitive or affective manner. To test this notion, we compared the emotion of anger to surprise because of their opposite appraisals on the pleasantness and confidence dimensions. For example, in one of the studies, Briñol, Petty, Stavradi, Wagner and Diaz (2014) participants first were asked to think about their best or worst qualities as job candidates. This manipulation was designed to produce positive or negative self-related thoughts. Following this thought direction manipulation, participants were assigned to write about personal episodes in which they felt anger or surprise. After participants completed both

inductions, we introduced the critical mindset manipulation in order to focus participants' attention on the affective (pleasantness/ unpleasantness) appraisal of emotion or the cognitive (confidence/doubt) appraisal. As in a study described earlier (Briñol et al., 2014), the mindset manipulation required participants to fill in the blanks of words related to cognition (e.g., thought) or emotion (e.g., feel).

As predicted, when in the cognitive mindset, angry individuals used their thoughts more than surprised participants (presumably reflecting confidence from anger and doubt from surprise) but when in the affective mindset, angry individuals used their thoughts less than surprised participants (presumably reflecting an unpleasantness appraisal from anger and a relatively pleasant appraisal from surprise). The results of this study were replicated in subsequent experiments revealing that anger and surprise can lead to opposite patterns of results (i.e., larger or smaller impact of the direction of the thoughts) depending on the appraisals of the emotions that predominated at the time of judgment, which in turn were determined by the mindset that was salient. Importantly, this effect appeared using a variety of inductions for each of the variables.

To the best of our knowledge, this research provides the first demonstration that the emotions of anger and surprise can influence evaluations by influencing reliance on thoughts. As noted, our previous work on self-validation showed that positive emotions such as happiness can enhance thought use relative to a negative emotion such as sadness (Briñol et al., 2007). However, this line of research suggests that negative emotions associated with confidence can enhance thought use relative to positive emotions, but only if people are in a cognitive mindset, interpreting their emotions along a confidence versus doubt continuum. Also, these studies are

important in revealing that the same emotion can sometimes increase thought use and sometimes decrease thought use.

Disgust (vs. Sadness) Can Affect Reliance on Thoughts

As illustrated so far in this review, understanding the multiple appraisals associated with emotions might help to explain some of the seemingly opposite effects that have been observed in the literature regarding the impact of emotions on information processing and judgment and can also lead to the prediction of new effects. In the previous section, we focused on the emotions of anger and surprise because they make for a good comparison in that they have opposite meanings on the key appraisal dimensions of pleasantness and confidence. In this section, we focus on another complex emotion for which the confidence and pleasantness appraisal is mismatched: disgust. That is, disgust is an unpleasant emotional state that is associated with confidence. Because disgust has been shown in past research guided by appraisal theories of emotion (e.g., Smith & Ellsworth, 1985) to increase confidence relative to negative but uncertain emotions such as sadness (Tiedens & Linton, 2001), we reasoned that disgust would enhance the impact of accessible thoughts on social judgments, compared to another negative but doubt-inducing emotion, sadness. But, this prediction should primarily hold when a cognitive appraisal of the emotion is made.

In order to examine the validation role for disgust we designed a study to explore the effects of disgust on judgments about oneself as a potential job candidate (Wagner, Briñol, & Petty, 2014). Specifically, participants were asked to list either three positive or three negative characteristics that they possessed as potential job candidates as part of a study designed for the Business School. Then, participants were required to write a short essay describing a recent occasion on which they felt either disgusted or sad. This induction was presented as part of

separate study for the Cognitive Science Department in order to highlight the salience of the cognitive mindset. Following prior research (e.g., Schnall, Haidt, Clore, & Jordan 2008), sadness was selected as the comparison condition because although sadness and disgust are both unpleasant emotions, disgust and sadness differ in the extent to which they are associated with feelings of certainty vs. doubt. After writing about their traits and emotional experiences, participants answered a series of questions about their attitudes toward themselves as job candidates. In accord with the self-validation logic, the results showed that disgust amplified the influence of participants' self-relevant thoughts on their self-judgments. That is, when participants generate positive thoughts about themselves, disgust led to more positive self-judgments. Conversely, when participants generated negative self-relevant thoughts, disgust led to more negative (or less positive) self-judgments.

In a subsequent experiment, the polarizing effects of disgust were observed in the domain of moral judgment. In this study (Wagner, et al., 2014), participants first thought about a close friend or acquaintance (i.e., target person) and then generated three morally-positive or three morally-negative traits or behaviors that this person had exhibited in the past (Zhong & Liljenquist, 2006). Next, participants completed an essay-writing manipulation of emotion (disgust vs. sadness), similar to the one used in the previous study. This induction also made specifically salient the cognitive mindset. Finally, participants were required to report their attitudes toward the target person. As predicted, disgust led to judgment polarization relative to sadness, and those effects were mediated by changes in thought confidence.

Demonstrating that disgust can polarize moral judgments is important because it suggests for the first time that disgust can impact moral judgments via a relatively complex, meta-cognitive process involving validation of whatever one is thinking, as opposed to a process that

relies on linking feelings of disgust uniquely with moral disapproval. Except in the particular domain of physical and spiritual purity (Horberg, Oveis, & Keltner, 2011), most of the previous research has shown that disgust (vs. other negative emotions) fosters more negative judgments in terms of moral condemnation (e.g., Wheatley & Haidt, 2006; Schnall, et al., 2008). A common explanation for this effect is that disgust and moral reasoning are intimately related, such that disgust serves as a negative signal when judging the moral status of an action or person (Pizarro, Inbar, & Helion, 2011). Our research suggested that because disgust is associated with feelings of certainty, disgust (relative to low-certainty emotions such as sadness) can polarize judgments regardless of topic and the direction of one's thoughts. As a consequent, our self-validation paradigm revealed that disgust can make negative moral judgments more negative, but also positive moral judgments more positive. Future research should examine disgust under an affective mindset. The affective validation prediction is that the feeling of unpleasantness from disgust should undermine thought use compared to more pleasant states.⁴

Emotion Can Validate Any Thoughts, Including Emotional Thoughts

So far we have described how different emotions (from happiness to anger to disgust) can validate thoughts about persuasive messages, about the self, and about others. In this section we examine how manipulations related to confidence can also validate (or invalidate) thoughts about current emotional states. Specifically, we postulate that emotions not only can validate cognitive judgments but that emotions also can be validated. Indeed, from the point of view of studying emotion, it is important to understand how cognitions, such as recall of one's past emotional experiences, translate into perceptions of a current emotion. According to associative network

⁴ If the unpleasant feeling from disgust is analyzed as an argument, however, it would likely support more negative moral judgments but not more positive ones (see earlier section on emotions as arguments).

models, the activation of thoughts and past emotional memories influence how we feel (see also Bower, 1981; Forgas, 1995; Schwarz & Clore, 1983). In line with the self-validation hypothesis, we argue that the same emotion-related thoughts could differentially impact one's emotions depending on whether those emotion-relevant thoughts were validated or not.

In an initial test of the idea that emotion-relevant cognitions can be validated thereby affecting perceptions of emotion, Rucker, Briñol and Petty (2014) used an ease of retrieval manipulation to induce a sense of confidence or doubt in one's thoughts. Past research on self-validation has shown that when people generate few thoughts (easy generation) they feel more confident in the validity of those thoughts than when they generate many thoughts (difficult generation; Tormala, Petty, & Briñol, 2002). In one study, Rucker and colleagues asked participants to write either relatively few or many happy personal experiences (cf., Schwarz et al., 1991). As anticipated, when generating happy experiences was easy, people had more confidence in these experiences and this led to greater reports of happiness than when generating these experiences was difficult, though ironically, people listed more happy experiences in the many than the few condition.

Among other things, these studies revealed that whether people use activated information appears to depend upon whether they validate or doubt their own thoughts. The more people rely upon their initial emotion-related thoughts, the more likely the direction of those thoughts (e.g., happy or sad) is to affect emotion. Notably, the pattern of data obtained in this research suggested that validating one's thoughts increased reliance on both positive (happy) and negative (sad) related thoughts alike. Although based on current conceptualizations of mood congruency effects in memory (e.g., Blaney, 1986; Bower, 1981), it might have been possible to predict that validating one's thoughts (and ease in particular) would especially increase the perceived validity

of one's happy thoughts (and doubt would increase the perceived validity of one's sad related thoughts), this did not occur. Nevertheless, future work might explore whether there are sometimes more specific valence matching effects on the validation process such as ease increasing reliance on happy thoughts that are easy to generate relative to happy thoughts that are difficult to generate (see Huntsinger, 2012; Huntsinger & Clore, 2012).

The research described in this section has focused on how the validity associated with one's thoughts could affect the experience of emotions. Other research has examined how, after people have already experienced an emotion, perceived validity can affect whether the emotion is used in subsequent judgments (e.g., Gasper & Bramesfeld, 2006). For example, Pham (2004) found that manipulating people's trust in their feelings affected whether people used their emotions in subsequent judgments. In this work, Pham examined validity affecting the use of emotions that were equal in extremity. Specifically, despite no differences in the degree of emotion reported, Pham found that people were more likely to rely upon the same emotion to a greater extent when they were confident in trusting their feelings as opposed to doubtful. In sum, it appears that manipulations of validity or confidence can have multiple and independent effects both on assessing one's degree of emotion (as in the self-validation research described in this section) and in determining whether to use one's emotion (as in the research by Pham). Consequently, there appears to be an ample role for validity and confidence processes in understanding the formation and application of one's emotions.

Emotion Can Affect Reliance on Thought Processes

In the preceding sections, we have seen how emotions can affect reliance on thoughts and thereby influence judgments. In a series of studies under their *affect as information* umbrella, Clore and Huntsinger (2007) have argued and shown that emotions can affect reliance not only

on particular thoughts but also on particular thought processes. In an illustrative study (Huntsinger, Clore, & Bar-Anan, 2010), participants completed several tasks designed to prime a broad, global focus in information processing or a narrow, local focus. After this task, participants were asked to write about either a happy or a sad event. The impact of the initial prime (global vs. local) was assessed by the performance on a standard Navon (1977) letter task in which participants have to indicate what letter they see in a figure with a big letter composed of many small letters (e.g., the capital letter H made up of lower case l's). To prime a global focus, participants have a number of trials in which they are to identify the global letter (i.e., the H) whereas to prime a local focus, the trials focus on identifying the lowercase letter (l) that makes up the larger letter. Consistent with the idea that emotion can validate thought styles, the results indicated that the primed cognitive style was more influential in affecting subsequent performance for happy than sad participants. Described differently, when a global focus was primed (and therefore dominant), happy participants showed a more broadened focus than sad participants. In contrast, when a local focus was dominant, happy participants displayed a more narrowed focus than sad participants. These results were interpreted as evidence that emotions can provide a green light or red light (cf., Martin et al., 1993) to follow one's inclinations (Clore & Huntsinger, 2009; Huntsinger, 2013a).

In another relevant study (Koo, Clore, Kim, & Choi, 2012) the impact of emotion on analytic versus holistic styles of reasoning was investigated. Prior research had shown that individuals in the Western part of the world tend to use an analytical style of reasoning whereas Easterners tend to think in a more holistic way (Nisbett et al., 2001). European American and South Korean students were placed in either a happy or a sad mood by having them write about situations in which they experienced these emotions. Following the emotion manipulation, they

responded to a task in which they read about a murder case and were given a list of many possible causal factors that could have been involved. Participants were to indicate which of the factors they believed were relevant to the case. Including many causal factors is viewed as a sign of holistic thinking (Choi et al., 2003). For the Koreans, a happy mood led to the inclusion of more causal factors as relevant to the case than a sad mood. For the European-Americans, however, the trend was opposite. Viewed differently, in a happy mood, the normal pattern emerged such that Easterners included more causal factors than Westerners. In the sad mood, however, this normal effect was eliminated. Put in self-validation terms, the results of the Huntsinger et al. and Koo et al. studies show that emotions can validate or invalidate dominant cognitive styles just as they can validate or invalidate dominant (accessible) cognitive (or emotional) mental contents.

Matching Emotions to Contexts Can Validate Thoughts

So far we have focused on the role of individual emotions in affecting judgment since most research uses this paradigm, but some research has examined how emotions when combined with various contexts can work to validate thinking. In the broader literature on persuasion, there is abundant evidence that *matching* variables in the persuasion setting (e.g., using a Black source with a Black audience) can influence persuasion through the same psychological processes described in this review (Petty, Wheeler, & Bizer, 2000). That is, matching source to audience, or message to audience, or source to message so that they are congruent in some way (versus incongruent) can lead to persuasion by affecting the same processes described so far. Specifically, matching can affect attitudes by serving as a simple cue when elaboration is low, biasing thoughts or validating them when elaboration is high, and by

enhancing the amount of information processing when elaboration is moderate (see Briñol, & Petty, 2006).

In one matching study exploring self-validation processes, Evans and Clark (2012) matched the source of the message (credibility versus attractiveness) to the recipient of the communication (low versus high self-monitors; Snyder, 1974). Prior research had shown that low self-monitors are more partial to a credible (expert) than a socially attractive (likable) source but high self-monitors show the reverse preference (DeBono & Harnish, 1988). After students had read a message containing strong or weak arguments, they learned that the source was either attractive or credible. Results showed that reliance on thoughts increased when the characteristics of the source (credibility vs. attractiveness) were compatible with (i.e., matched) the characteristic of the recipient (low vs. high self-monitoring). This reliance on thoughts led to more persuasion when the arguments were strong and thoughts were largely favorable but to less persuasion when the arguments were weak and thoughts were mostly unfavorable. In addition, matching source to self-monitoring led participants to have more confidence in their thoughts and this thought confidence mediated the impact of source matching on attitudes.

Applying this same logic to emotions, Huntsinger (2013b) has shown that a match (vs. mismatch) between emotions and activated evaluative concepts can influence the confidence with which people hold their thoughts. In this research, participants first read a message containing strong or weak arguments for senior comprehensive exams and listed their thoughts. Then, they received the emotional congruence (matching) manipulation. Specifically, participants listened to either a happy or sad musical selection and then completed a lexical decision task on the computer in which they were subliminally primed with either happy (e.g., smile) or sad (e.g., glum) words. *Affective coherence* (matching) occurred when happy or sad

music was paired with similarly valenced prime words and incoherence (mismatching) occurred when happy or sad music was paired with oppositely valenced prime words. Consistent with the notion that affective coherence (matching) could validate thoughts, participants in the affective coherence conditions showed a larger effect of argument quality on attitudes than those in the incoherence condition. Furthermore, affective coherence led people to have more confidence in their thoughts and this thought confidence mediated the impact of emotional coherence on attitudes.

DISTINGUISHING BETWEEN PRIMARY AND SECONDARY COGNITION

In addition to proposing thought confidence as a general mediator of the impact of emotion on judgment, prior work on self-validation processes has also pointed to unique moderators of this metacognitive process. In this section we specify two of the variables most likely to influence the operation of self-validation processes: extent of elaboration and timing of the induction.

Extent of Elaboration

In the ELM, elaboration is a key determinant of the route to persuasion and the particular process by which variables have their impact. For example, we have seen that when the likelihood of elaboration is low, emotions can affect attitudes by serving as simple affective cues producing judgments in accord with their valence but that when elaboration is high, emotions work by more thoughtful means such as biasing thoughts or validating them. In one early demonstration of multiple roles for emotion under high and low elaboration conditions (Petty, et al., 1993), students were exposed to an advertisement for a new pen in the context of a television comedy (designed to induce a state of happiness) or a bland documentary (designed to induce a neutral state). Prior to the program, some students were induced to think about the pen ad

because they were told that at the end of the study, they would be making a choice from among three pens as a gift, and that one of these pens would be advertised during the show (high motivation to elaborate about the pen). Other students were told that their free gift was instant coffee – also advertised during the show. These students would not be expected to engage in much thinking about the pen ad. The key result was that although placing the pen ad in a happy show led to more positive attitudes toward the pen regardless of whether or not the participants were expecting a pen as a gift, the mechanism of change was different depending on the manipulated extent of thinking. In particular, in the high thinking condition, the happy program led to more positive thoughts about the pen which in turn influenced attitudes (a biased thinking mechanism). In the low thinking condition, the good mood from the program led directly to positive attitudes without affecting thoughts (a simple cue mechanism). This moderated mediation pattern is indicative of a different mechanism of attitude change under high and low thinking conditions. The low thinking results are what would be expected from relatively low effort theories of attitude change such as classical conditioning (Staats & Staats, 1958) or the use of an “affect heuristic” (Chaiken, 1987). Under high thinking conditions, however, the indirect influence observed is what would be expected from relatively high effort theories of the use of affect such as the “affect infusion” hypothesis (Forgas, 1995) in which emotions can make retrieval and generation of affectively congruent cognitive material more likely.

According to the ELM, however, these are just two of the roles that variables can play in persuasion settings. Self-validation provides another means by which emotions can influence attitudes when thinking is high. Petty and colleagues (2002) demonstrated that self-validation is more likely to take place when people have the motivation and ability to attend to and interpret their own cognitive experiences (e.g., if participants are high in need for cognition, Cacioppo &

Petty, 1982; when there is high personal relevance of the persuasion topic, Petty & Cacioppo, 1979). There are at least two reasons for this. First, for validation processes to matter, people need to have some thoughts to validate. Second, people need substantial motivation and ability not only to think at the primary level of cognition but also to think and care about their own thoughts. In line with this reasoning, a growing body of research suggests that the metacognitive process of validation requires a fair amount of cognitive effort, as individuals need both the motivation and ability to generate thoughts and to subsequently assess them (Petty, et al., 2007).

In one study on emotion and validation, Briñol et al. (2007) had participants read a persuasive message about a new foster care program composed of either strong or weak arguments. The message was presented prior to receiving an emotion manipulation in which people were required to behave according to a happy or sad script. The emotion induction followed thought generation so it would not bias thought production as was the case in the study by Petty et al. (1993) just described. Rather, at the time of the emotion, thinking had already taken place. To assess the likely extent of elaboration the message received, need for cognition (NC) was measured (Cacioppo & Petty, 1982). The key result on the attitude measure was a three way interaction of Need for cognition, Argument Quality, and Emotion. As predicted by the self-validation perspective, for individuals who were high in need for cognition, when a strong message was received (and thoughts were thus mostly favorable), those who were happy following message processing were more persuaded than those who were sad. However, when participants received a weak message on the same topic (and thoughts were mostly unfavorable), the effects of the emotion induction were reversed. Put differently, for individuals high in need for cognition, emotion interacted with argument quality to determine attitudes. In contrast, for individuals low in NC, there was only a main effect for emotions with those who were happy

expressing more positive attitudes than those who were sad. That is, for low NC individuals, feeling good following the message acted as a simple cue leading to more positive attitudes when happy than sad regardless of argument quality. This is consistent with prior research suggesting that low elaboration individuals are more likely to use their emotions as input to a low thought affect heuristic (e.g., Petty et al., 1993).

Timing

In addition to extent of elaboration, there is another limiting condition on the influence of emotions on attitudes via thought validation. That is, the validating appraisal that emerges from emotion (regardless of whether it relates to confidence or pleasantness) should be salient at the time people are thinking about their thoughts rather than prior to thought generation. A number of studies have shown the different roles that variables can play depending on whether they are induced before or after message processing. In one series of studies, for example, individuals received a self-affirmation induction just before or just after they received a persuasive message (Briñol, Petty, Gallardo, & DeMarree, 2007). When the self-affirmation induction came prior to the message it affected the extent of processing such that affirmed participants processed the message less than non-affirmed individuals. If people are feeling affirmed and confident prior to a message, there is less need to process than if experiencing doubt. However, when the affirmation followed the message, it impacted the use of participants' thoughts to the message such that affirmed participants used their thoughts more than non-affirmed individuals. As a result, affirmation decreased argument quality effects when it preceded the message (a result of reduced message processing), but increased argument quality effects when it followed the message (a result of enhanced use of thoughts to the message). The same results were observed when feelings of power were introduced prior to or after message processing (Briñol, Petty,

Valle, & Rucker, 2007). That is, when preceding the message high power led to less message processing than low power (as evidenced in reduced argument quality effects on attitudes), but when power followed the message it led to enhanced thought use (as evidenced in increased argument quality effects).

In conceptually similar work in which the timing of an emotional induction was manipulated, Huntsinger (2013b) had participants read a persuasive message containing either strong or weak arguments for the proposal. Just prior to or following the message, participants were exposed to the emotional coherence (matching) manipulation described earlier (i.e., positive or negative emotions were paired with positive or negative primes). In accord with the self-affirmation and power studies described above, Huntsinger found that when the emotional coherence manipulation came prior to the message, it affected the extent of processing such that the coherent condition participants processed the message less than the incoherence condition participants. The incoherence of the emotion and the primed words presumably led to doubts that were resolved with greater processing. However when the coherence manipulation followed the message, it impacted the use of participants' thoughts to the message with coherent individuals relying on their thoughts more than those in the incoherence condition. As a result, emotional coherence decreased argument quality effects when it preceded the message (a result of reduced message processing), but increased argument quality effects when it followed the message (a result of enhanced use of thoughts to the message).

In another relevant study, Stavraki, Briñol, and Petty (2014) varied the order in which an emotion induction (anger or surprise) and the persuasive message were presented. Specifically, as in the studies just reviewed, the timing of the emotion induction was varied to demonstrate the consequences of two different psychological processes: impact on information-processing when

emotion preceded the message and impact on validation processes and use of thoughts when emotion followed the message. This study we also varied the nature of mindset. That is, some participants were placed in a cognitive mindset to highlight the confidence/doubt appraisal dimension or an affective mindset to highlight the pleasantness/unpleasantness appraisal of the emotions induced. All participants received a strong or a weak message in favor of the same campus issue. The message was presented either before or after participants engaged in the emotion manipulation and the mindset manipulation always immediately followed the emotion induction. The emotion manipulation consisted of recalling past episodes of either anger or surprise.

The results Stavraki and colleagues observed were quite different depending on the mindset that was induced and the timing of the emotions. In the cognitive mindset conditions, participants who experienced anger (confidence) versus surprise (doubt) showed reduced argument quality effects when the emotion induction came prior to the presentation of the message. This is because angry individuals processed the arguments less than did surprised individuals, preventing them from discriminating between the merits of the strong and weak messages. However, when the emotion followed the persuasive message, then anger (confidence) compared to surprise (doubt) enhanced argument quality effects. As noted previously, this is because angry (vs. surprised) individuals were more reliant on both their positive thoughts about the strong arguments and their negative thoughts in response to the weak arguments (cognitive validation).

In the affective mindset conditions in which the pleasantness/unpleasant appraisal was made salient, we found the predicted opposite interaction pattern between argument quality and emotions. That is, anger (unpleasant) vs. surprise (pleasant) increased information processing

when introduced before the message as revealed by an increased argument quality effect on attitudes but anger decreased the reliance on thoughts compared to surprise when introduced after the message as revealed by a reduced argument quality effect on attitudes (affective invalidation). These findings suggest that the same emotions can have different (and opposite) effects on the processes of primary cognition (information processing) and secondary cognition (thought validation) not only as a function of mindsets but also depending on when the emotions are introduced (before or after message processing).

SUMMARY AND CONCLUSIONS

This review has described the various ways in which emotions can influence attitudes according to the elaboration likelihood model (Petty & Cacioppo, 1986; Petty & Briñol, 2012). In agreement with the ELM, we have seen that emotions work in different ways depending on the extent of elaboration and the timing of the emotion. Emotions serve as simple cues when thinking is constrained to be low but serve as arguments, bias the cognitive processing or validate thoughts when thinking is high. When thinking is unconstrained, emotions tend to influence how much thinking takes place. Emotions are most likely to serve in a validation role when they come after careful message processing but they are most likely to bias thinking when they come before, assuming the extent of thinking is high. If thinking is low, emotions can serve as simple affective cues whether they come before or after the message.

We have also seen that all of the general processes of influence for emotion incorporated into the ELM have been separately articulated in various different specific theoretical frameworks such as (1) classical conditioning (Staats & Staats, 1987) for cue effects, (2) mood as input (Martin, et al., 1993) for treating emotions as arguments, (3) feelings as information (Schwarz & Clore, 1983) for emotions affecting the extent of processing, (4) affect infusion

(Forgas, 1995) for biased processing effects, and (5) self-validation (Briñol et al., 2007; Petty et al., 2002) and affect as information (Clore & Huntsinger, 2007) approaches emphasizing thought validation or confidence implications of emotions. Some theories of emotions have even considered more than one role (e.g., see Forgas, 2005), but none have incorporated all of them or focus on the differential consequences of high versus low thought changes in judgment. That is, although we have not focused on it here, the ELM holds that when emotions influence attitudes by mechanisms requiring little cognitive effort, the attitudes are weaker (less stable, resistant, and predictive of behavior) than when emotions influence attitudes by higher thought mechanisms (Petty et al., 1995). The ELM integrates all of these processes into one framework, and perhaps most importantly, unlike the specific theories of emotion, the ELM holds that the very same fundamental mechanisms and processes we have used to understand emotions can be applied to a host of other variables (power, self-affirmation) that have nothing to do with emotion. For instance, source credibility has been shown to serve in the identical roles as emotion under the same circumstances and moderating conditions (see Briñol & Petty 2009, for a review of multiple roles for source effects; see Petty & Wegener, 1998, for a review of multiple roles for other variables).

Our review also reinforced the notion that understanding the dimensions along which emotions are appraised can be very helpful in making predictions about what outcomes to expect. In particular, the appraisals along a pleasantness/unpleasantness versus a confidence/doubt dimension are especially important when they differ as is the case for the relatively complex emotions of anger, surprise, and disgust. We have seen that if the confidence that emerges from an emotion such as anger (cognitive appraisal) comes prior to message exposure, and elaboration is not constrained to be high or low, its role in the persuasion process

is likely to be a reduction of elaboration. This is consistent with previous research showing that the certainty value of emotions impact the extent of processing when emotion is varied *prior* to message exposure (Tiedens & Linton, 2001). If the confidence associated with anger is made salient after extensive message processing, however, it affects reliance in the thoughts that have been generated. As noted throughout, these findings are also consistent with current theories of emotion that suggest that affect can influence one's confidence in the validity of mental contents and provides individuals with information about the appropriateness of relying on activated information (Clore & Huntsinger, 2007). Of course, for emotions such as anger and surprise to operate through confidence and doubt (respectively) people have to appraise their emotions in a cognitive mindset. As described, if the pleasantness dimensions of these complex emotions are made salient, then their effects on information processing and thought validation would reverse.

In closing, we further note that although we have applied the differential appraisals notion only to the roles of affecting information processing and validating thoughts, these appraisals are also relevant to the other roles for variables specified by the ELM. For example, when anger serves as a simple cue under low thinking conditions, we argued that it would produce effects consistent with its valence. On the pleasantness dimension, the valence of anger is negative leading to a prediction that anger would lead people to make more negative judgments such as providing harsher punishments to others (Lerner, et al., 1998). On the other hand, however, if the confidence interpretation of anger was salient, this is positive in valence and could lead people to be more optimistic about the future (Lerner, Gonzalez, Fischhoff, & Small, 2003; see also, Veling, Ruys, & Aarts, 2011).

Were these emotional appraisals to be induced prior to a message while elaboration was constrained to be high, they might lead to attitudinally biased information processing. For

example, consistent with this logic, research by Adaval (2001) showed that the confidence given to a product attribute is greater when the current emotion matches the valence of the attribute. That is, when happy, positively viewed attributes were given more weight in determining attitudes, and when sad, negatively viewed attributes were given more weight (see Desteno et al., 2000, for a similar account based on specific emotions). Future research should examine these additional roles for the confidence and the pleasantness appraisals of emotions.

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