

INVITED REVIEW

Emotion and persuasion: Cognitive and meta-cognitive processes impact attitudes

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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 favour 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.

Keywords: Attitudes; Persuasion; Elaboration likelihood model.

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 a wide variety of judgements including social, political, personal and economic decisions (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). To be clear about the meaning of our key terms, *attitudes* refer to general evaluations people have regarding people (including oneself), places,

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objects and issues. Attitudes are critical to decision-making and behaviour in that people tend to engage in relationships with people they like, purchase the items they value and avoid behaviours that are viewed negatively. Importantly, attitudes are not only based on thoughts and beliefs but also feelings and emotions (Crites, Fabrigar, & Petty, 1994). We use the term *emotion* rather broadly to refer to both specific feeling states such as anger and happiness (e.g., Ekman, 1972) and to more diffuse affective states that are sometimes referred to as moods (e.g., Forgas, 1995; cf., Clore, 1992). Finally, *persuasion* typically involves an attempt to bring about a change in attitudes as a result of providing information on a topic (e.g., delivering a message).

The available research reveals that a person's emotions, whether stemming from the persuasive message (e.g., fear appeals), attitude object (e.g., a funny comedian) or incidental contextual factors (e.g., a sad television programme that surrounds an advertisement) can influence evaluative judgements through multiple cognitive and meta-cognitive processes. Much of the work on emotion and attitudes 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 organise the mechanisms by which emotions produce their effects on attitudes and other judgements, we rely on the elaboration likelihood model (ELM; Petty & Cacioppo, 1986; Petty & Briñol, 2012).

Described briefly, the ELM holds that changes in attitudes and other judgements result from different psychological processes depending upon the extent of elaboration the individual is engaging in at the time of influence. The extent of elaboration in any given persuasion context is set by a host of individual and situational factors which determine how *motivated* and how *able* the person is to think about the influence attempt.

The ELM proposes that judgements can be modified by processes that involve relatively high or low amounts of issue-relevant thinking and emotions can work to influence judgements in different ways depending on the overall degree of elaboration. Put simply, the amount of thinking at the time of influence moderates the process by which emotions have their effect on judgement (i.e., moderated mediation). Another core ELM postulate is that the extent of thinking involved in creating a judgement determines how consequential that judgement will be (i.e., the extent to which the judgement is enduring and impactful; see Petty, Haugtvedt, & Smith, 1995).

In accord with the ELM, we argue that the psychological processes relevant to the impact of emotions on attitudes can be organised into a finite set that operate at different points along the elaboration continuum. Specifically, the ELM holds that under relatively low thinking conditions, emotions, like other variables, tend to influence attitudes by a variety of low effort processes such as classical conditioning or reliance on simple inferences. When the likelihood of thinking is relatively high, these same emotions can impact persuasion by other mechanisms such as by affecting the direction of the thoughts that come to mind (i.e., biasing thinking), evaluating one's feelings as arguments, or emotion can determine whether people use their thoughts or not.¹ Furthermore, emotions can influence attitudes by determining the amount of thinking that takes place when elaboration is not already constrained by other variables to be very low or high. We describe each of these processes in more detail in the next sections of this review.

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 involve people's initial associations of some object with some attribute (e.g., the car is green; my laptop makes me happy). Following a primary thought, people can also generate other

¹Thought usage refers to people relying on their thoughts in forming judgements. When thoughts are used, the extent of positive and negative thoughts generated should be more predictive of the attitudes formed than when thoughts are not used (Petty et al., 2002).

thoughts, which occur at a second level and involve meta-cognitive reflections on the first-level thoughts and the processes leading to them (e.g., I am certain that the car is green; Jost, Kruglanski, & Nelson, 1998; Petty, Briñol, Tormala, & Wegener, 2007). In the second part of our review, we focus on meta-cognitive processes, describing recent work that reveals that emotions can influence attitudes by affecting how people think and feel about their own thoughts and thought processes. Finally, we distinguish among the processes by which emotions operate, and specify the conditions under which the various mechanisms are particularly likely to occur. Identifying the specific processes by which emotions affect attitudes is informative about the immediate and long-term consequences of persuasion.

THE IMPACT OF EMOTIONS ON PRIMARY COGNITION

The ELM describes four ways in which emotions, like any other variable present in the persuasion setting (e.g., a credible source), can influence attitudes by impacting primary cognition. These processes are described next along with the conditions under which they operate. A fifth mechanism is described in the subsequent section on secondary cognition.

Emotions can serve as simple cues when elaboration is low

According to the ELM, when people are not very motivated (e.g., low personal relevance message; Petty & Cacioppo, 1979) or able (e.g., high distraction context; Petty, Wells, & Brock, 1976) 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 & Cacioppo, 1986; Petty, Cacioppo, Sedikides, & Strathman, 1988). In these situations, emotions impact attitudes in accord with their valence. That is, if the attitude object is associated with a

positive emotional state or feeling (e.g., happiness), that object will be liked more than if associated with a negative emotional state or feeling (e.g., fear).

There are many instances in the literature whereby emotions have been shown to influence evaluation of stimuli in accord with their valence when thinking was likely not very extensive. For example, the voluminous literature on evaluative conditioning provides many instances whereby attitudes towards objects or issues were made more negative by pairing them with unpleasant stimuli and more positive by pairing them with pleasant stimuli in situations where thinking was likely to be low (see De Houwer, Thomas, & Baeyens, 2001; Walther, Weil, & Dusing, 2011). In series of studies (Jones, Fazio, & Olson, 2009), for instance, cartoon characters were momentarily paired with emotionally evocative pictures. Attitudes towards the cartoon characters consistently became more positive when the paired pictures elicited positive rather than negative emotional reactions.

In a recent review, Greifeneder, Bless, and Pham (2011) identified a dozen studies that explicitly varied the extent of thinking and found that emotions were more likely to have a relatively simple and “direct” effect on judgements when thinking was low rather than high (e.g., Bosmans & Baumgartner, 2005; Pham, Cohen, Pracejus, & Hughes, 2001). In the first report demonstrating this (Petty, Schumann, Richman, & Strathman, 1993), an advertisement for a pen was placed in the context of a humorous or neutral television programme. To vary the extent of thinking about the pen ad, prior to the programme participants were either told that at the end of the study they would have a chance to select a brand of pen as a free gift (high relevance of pen ad leading to high thinking about it) or that they would select from among brands of coffee (low relevance of pen ad leading to less thinking about it). Attitudes and thoughts about the pen were measured after the programme. The results showed that attitudes towards the pen were influenced by the emotional content of the programme under both high and low thinking

conditions (i.e., more favourable attitudes towards the pen when the television programme was positive rather than neutral), but in the high thinking condition, the impact of the emotion induced was mediated by valenced thoughts (i.e., the humorous programme led to more favourable thoughts about the pen which led to more favourable attitudes). In the low thinking condition, however, emotion had a direct impact on attitudes unmediated by thought content.

A number of specific low effort psychological processes have been proposed to explain how emotions can influence attitudes when thinking is low, including classical conditioning (Staats & Staats, 1958), use of emotion-based heuristics (Chaiken, 1987; Schwarz & Clore, 1983), misattribution of one's emotional state to the attitude object (Greifeneder et al., 2011; Jones et al., 2009; Zillmann, 1978) 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 object, the persuasive message, and the attitude, when thinking is low, the emotion nonetheless impacts attitudes towards the associated target of influence in accord with its valence. This is because these accounts basically hold that incidental emotion is automatically or deliberately misattributed to one's attitude (my positive feeling reflects my positive attitude), the message (my good feeling means I agree with the message) or the attitude object (the object is making me feel good, so I must like it). Although the various individual accounts of low effort emotional impact differ in certain ways, they all agree that the impact of emotion does not require much in the way of cognitive motivation or capacity, and the effect of the emotion is consistent with its valence.

Emotions can serve as arguments when elaboration is high

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

motivation and ability to think are high. Indeed, in these situations the impact of emotion on judgement can equal or even exceed the impact under low thinking situations. However, when thinking is high, the mechanisms by which emotions exert their impact on judgement are different.

First, in thoughtful situations, one's emotions can be scrutinised as a piece of evidence relevant to the merits of the attitude object. According to 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. If emotional reactions are judged to be relevant to the judgement at hand, one's feelings will be scrutinised for their merits as evidence to favour or disfavour the attitude object. Put simply, does the emotion provide a good or a bad reason (argument) to like or dislike something?

For example, in one study conducted under the umbrella of the *mood as input* approach (Martin, Ward, Achee, & Wyer, 1993), 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 these circumstances, the emotion people felt when reading the story was likely to be perceived as a relevant to the merits 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 emotion induced before the story 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 more positive 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).

Perhaps the most studied persuasion context in which emotions are scrutinised for their evidentiary value concerns fear appeals such as when a message emphasises the dire consequences (e.g.,

death, disease) of not agreeing with the communicator. According to the ELM, fear appeals would not tend to work well under low thinking conditions because fear is negative in valence. Instead, fear would work better when people can figure out the implications of the fear. Thus, as postulated by Rogers' (1983) *protection motivation theory*, fear appeals tend to be successful only indirectly, when fear influences beliefs about the severity of the threat (Rogers, 1983) and people also come to believe the fearful consequences postulated can be avoided if the recommended action is followed; see Maloney, Lapinski, & Witte, 2011; Witte, 1992). Thus, the fearful consequences can be seen as an argument for following the recommendation.²

The impact of emotions as evidence is comparable to how other non-emotional variables are treated in the ELM such as when an attractive spokesperson is evaluated positively as evidence for the effectiveness of a relevant consumer product (e.g., a skin cream) under high thinking conditions but serves as a simple positive cue for an irrelevant product (e.g., a new car) when thinking is low. Thus, according to the ELM, the relevance of the emotion to the judgement and its perceived merits should be more important under high than under low thinking conditions (Petty & Cacioppo, 1984b; see also, Pierro, Mannetti, Kruglanski, & Sleeth-Kepler, 2004).

To summarise so far, under low thinking conditions, the key aspect of the emotion is its valence. For example, standing in a disorienting bank lobby might cause a person to feel queasy. If a survey taker asked for an opinion of the bank at the moment, without thinking much the person could report a negative attitude—misattributing the queasy feeling to one's attitude about the bank. The merits of the emotion and its relevance are not much of a consideration under low thinking conditions—all that matters is the valence of the experienced affect. With a greater opportunity to reflect, however, the appearance of the bank lobby

and the queasiness it induces could be dismissed as an irrelevant (or weak) argument to avoid the bank. Indeed, the person might recall that the bank has the highest interest rate in town and most banking is done online.

Emotions can bias cognition when elaboration is high

Even if emotion is not impactful when it is assessed as a relevant argument, a second way that emotions can influence attitudes under high thinking conditions is by biasing the thoughts that come to mind about the message or attitude object. This process is much more subtle than using emotion as an argument which requires that the emotion be salient and analysed. For emotion to bias thinking, it is likely better that the emotion and its source not be very salient. The idea that emotion can bias cognition stems in part 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 colour 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 favourable 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) or desirable (Petty & Wegener, 1991). The opposite can occur for negative emotions.

² It is also possible that fear could bias perception of the severity of the consequences proposed in the message such as making the threats seem more likely or undesirable (Petty & Wegener, 1991). This biasing impact of emotions is discussed in the next section.

Interestingly, if under high thinking conditions there is a positivity bias in thinking as a result of feeling happy, attitudes could become more favourable 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 mentioned earlier, Petty et al. (1993) demonstrated how individuals who varied in their likelihood of thinking showed similar outcomes for emotions on attitudes, but these outcomes were mediated differently. Whereas people engaged in a high amount of thinking showed an impact of emotions on attitudes that was mediated by their thoughts, for those not engaged in much thinking, emotions influenced attitudes without influencing thoughts.

In the Petty et al. (1993) research, the happiness induced by a television programme led to the generation of more positive thoughts about a product advertised during the programme, but only in the high thinking conditions. Other research has shown that happiness can not only increase the number of positive thoughts generated but also can increase perceptions of the likelihood of positive consequences and decrease the likelihood of negative consequences, at least when thinking is high. In one study demonstrating this (Wegener, Petty, & Klein, 1994), among those high in need for cognition (a measure of the propensity to engage in careful thought; Cacioppo & Petty, 1982), 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 (e.g., stopping smoking increases one's lifespan), but reduced the persuasiveness of a message that focused on the negative things that would happen if the same policy was not adopted (e.g., not stopping smoking will lead to premature death). Importantly, the impact of emotion on attitudes was mediated by the perceived likelihoods of the consequences mentioned in the message. That is, positive emotions

made positive consequences seem more likely and negative consequences seem less likely, thereby increasing the persuasiveness of the message containing the positive consequences.

The congruence of emotion (e.g., happy/sad) and message framing (positive/negative) is not only important for matches in valence. In a conceptually similar study (DeSteno, Petty, Rucker, Wegener, & Braverman, 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 angering or sad events mentioned in the message. 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 to emotions 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 (e.g., anger) are more arousing and active than others which are more passive (e.g., sadness). 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

Before closing our discussion of high elaboration attitude change, it is important to note that sometimes people may become aware or be

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 emphasised the dimensions most relevant for understanding persuasion.

concerned that emotions are biasing their thoughts (e.g., if the emotion is especially salient). If people come to believe that their judgements are somehow being biased or influenced in an inappropriate way by their emotions, they may try to adjust or correct their judgements in a direction opposite to the expected bias (Wegener & Petty, 1997). For example, if people believed that a happy television programme was making them feel inappropriately positively towards the products advertised, they could attempt to debias their judgements by reporting a less favourable attitude than they would have in the absence of the perceived bias (e.g., Berkowitz, Jaffee, Jo, & Troccoli, 2000; DeSteno, Petty, Wegener, & Rucker, 2000; Ottati & Isbell, 1996). Of course, not only do people 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 judgements (e.g., Schwarz & Bless, 1992; Wegner, Erber, & Zanakos, 1993).

Emotions can influence the amount of thinking when elaboration is unconstrained

As we have described, emotions can influence attitudes when conditions are pre-set to foster relatively high or low amounts of thinking. For example, when a message is accompanied by various distracting stimuli, people know that they cannot exert much effort in processing (i.e., ability to process is constrained to be low) and when a message is very high in personal relevance, they know that it is important to think carefully (i.e., motivation to process is high). 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). 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 conditions, 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 emotions of happiness and sadness and there are a number of theoretical accounts of how these emotions influence thinking. 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, Bless, & Bohner 1991; 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 (Gleicher & Weary, 1991). Because of the confidence associated with happiness, people think there is less need to process the message than when they are feeling more doubtful (e.g., when sad) and in need of more information.

In accord with all of these notions, the accumulated research suggests that happy individuals often engage in less scrutiny of persuasive messages than sad individuals. Although there are a number of ways to assess message processing (e.g., recording the number of thoughts listed about the message, number of arguments recalled), a popular way to assess message scrutiny is by varying the quality of arguments in the communication (Petty et al., 1976). When people are processing arguments carefully, their quality should have a larger impact on attitudes than when people are not processing them carefully. When arguments are not scrutinised diligently, attitudes are more influenced by the mere number of arguments (Petty & Cacioppo, 1984a) or by other simple cues in the persuasion situation such as source credibility (Petty, Cacioppo, & Goldman, 1981). Thus, when elaboration is unconstrained, individuals who are happy

rather than sad have been shown to be less influenced by argument quality and more influenced by simple cues than sad individuals (e.g., Mackie & Worth, 1989; Worth & Mackie, 1987; Tiedens & Linton, 2001).⁴

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 and other stimuli that they encounter. Because of this, they may be motivated to avoid processing information that might threaten their happiness (such as the counterattitudinal 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 greater 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 conceptualisation, 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. However, 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 theorising was 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

⁴Consistent with the idea that sadness is associated with more effortful processing than happiness when receiving persuasive messages, Bohnet and Schwarz (1993) showed that sadness (versus happiness) is also associated with more effort in the generation of persuasive arguments to convince others.

and heuristic cues to make judgements 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 effects can occur and the circumstances under which they are most likely (Briñol, Petty, Stavraki, Wagner, & Díaz, 2014). Specifically, we argue that whether anger leads to more or less thinking about the persuasive message depends on the kind of appraisal that is highlighted (see Moors, Ellsworth, Scherer, & Frijda, 2013; Smith & Ellsworth, 1985). That is, if angry individuals focus on the relatively cognitive appraisal of *certainty* that can accompany anger (Humrichouse & Watson, 2010), they may feel confident in their existing views and therefore avoid processing new information. In these circumstances, anger would be associated with reduced argument quality effects on attitudes. On the other hand, if angry individuals focused on the more affective appraisal of *valence* (i.e., unpleasantness) that also can accompany the emotion, they are more likely to come to view their current opinions negatively and perhaps in need of change. If so, angry people would elaborate information more extensively leading to enhanced argument quality effects.

In order to test the differential appraisals prediction for anger, we conducted a series of studies (see Briñol et al., 2014) comparing anger (unpleasant but confident appraisal) to surprise which is a relatively pleasant state (Watson & Tellegen, 1985; Wilson, Centerbar, Kermer, & Gilbert, 2005) that is associated with doubt or uncertainty (Tiedens & Linton, 2001; Valenzuela, Mellers, & Strebel, 2010). Although surprise can sometimes be negative in valence, it is typically more positive in appraisal than anger. 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 but before reading the persuasive message, a mindset manipulation was introduced which was intended to vary the extent to which the affective (valence) or cognitive (certainty) appraisal associated with their emotional state would dominate.

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) 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) as well as the letters of the same neutral words. In the affective mindset condition, participants were expected to focus primarily on the valence (pleasantness or unpleasantness) of 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 then reported their attitudes towards the advocacy. The results were consistent with the differential appraisal prediction outlined above. In the cognitive appraisal conditions, anger produced less thinking than surprise (as revealed by a reduced argument quality effect on attitudes when angry than surprised). 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 when angry than surprised).

The Briñol et al. (2014) research is unique in varying the type of appraisal that was 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; Moors et al., 2013; Smith & Ellsworth, 1985). Most notably, these results open the door to other appraisal variations for other complex emotions such as disgust and fear.

Although our research has focused on manipulating whether cognitive or affective appraisals dominate, it is also possible that there are individual differences in whether cognitive or affective appraisals would naturally come to mind. For example, when focused on “ideal” versus “ought” goals (Higgins, 1987), people are more reliant on their affective experiences (Pham & Tamar, 2004), and some people in general are more likely to favour reliance on affective influences over cognitive influences (e.g., See, Fabrigar, & Petty, 2013; See, Petty, & Fabrigar, 2008). These factors might influence the appraisals that come to mind spontaneously and future research should address this possibility.

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 number of factors such as 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 pre-set by other variables in the persuasion situation to be very high or low.

THE IMPACT OF EMOTIONS ON SECONDARY COGNITION

The previous sections of this article focused on how emotions change what or how much people think about a persuasive message thereby influencing attitudes and the degree of persuasion. As noted earlier, 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 in part from the finding just described that emotional states can relate to appraisals of certainty or doubt.⁵ For example, the emotions of happiness and anger can lead people to feel more certain in their appraisal of the situation than other emotions such as sadness or surprise (Ellsworth & Smith, 1988; Tiedens & Linton, 2001). If this sense of certainty is applied or misattributed to one’s thoughts (e.g., I feel certain that my thoughts are correct), it would lead to greater use of those thoughts—a process we refer to as *cognitive validation* (Petty et al., 2007).

As also noted earlier, people can make valence appraisals of their emotions. Thus, relatively positive emotions such as happiness and surprise can lead people to feel more pleasant than sad or angry states and if this feeling of pleasantness is applied or misattributed to one’s thoughts (e.g., I like my thoughts; my thoughts make me feel good) it would lead to greater use of those thoughts than negatively appraised emotions—a process we refer to as *affective validation* (Petty et al., 2007). In this section, we first review work on the emotions of happiness and sadness for which these two appraisals (i.e., valence and certainty) operate in the same direction, and then we move to more complex emotions—anger and surprise—for which these are opposite.

Happiness (versus sadness) can affect reliance on thoughts

Previous research on emotion has shown that feeling happy can increase the reliance on a wide variety of information that happens to be accessible at the time, including behavioural scripts (Bless et al., 1996), expectations (Bodenhausen, Kramer, & Süsser, 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

⁵In accord with prior use in the literature on attitudes and persuasion (Petty et al., 2007; Rucker, Tormala, Petty, & Briñol, 2014), we consider the terms certainty and confidence as similar in meaning and will therefore use them interchangeably in this review.

thoughts (Clore & Huntsinger, 2007; Huntsinger & Clore, 2012). Applied to persuasion, this leads to the prediction that if thoughts are favourable to the advocated position, then happiness (as opposed to sadness) will facilitate the use of those positive thoughts, leading to more persuasion. On the other hand, if thoughts are unfavourable, then happiness (as opposed to sadness) will facilitate reliance on those negative thoughts, leading to less persuasion.

Research on happiness versus sadness confirms these predictions. In one study, Briñol et al. (2007) had college students read a strong or weak message advocating that they should be required to carry personal identification cards on campus. The strong message elicited mostly positive thoughts and the weak message elicited mostly negative thoughts. Then, following message processing, the students were asked to recall prior situations in which they were happy or sad. Note that the emotion was induced following message processing to enhance the likelihood of validation effects. As demonstrated in the research reviewed earlier, if emotions are induced prior to message receipt, then they can influence the extent of message processing or produce a bias to the on-going processing. In any case, the results of this study showed that for people receiving the strong arguments and generating mostly favourable thoughts, persuasion was greater when happy than sad consistent with greater reliance on the positive thoughts already generated. However, for those receiving weak arguments and generating mostly unfavourable thoughts, persuasion was reduced when happy than sad consistent with greater reliance on the negative thoughts already generated.

In this study, after the emotion induction task but before measuring attitudes towards the proposal, participants were asked to think back to the thoughts they listed about the proposal and to rate their overall confidence in those thoughts. As predicted, there was a significant effect of emotion on reported thought confidence with happy individuals expressing more thought confidence than those who were sad. Furthermore, this thought confidence mediated the effect of emotion on attitudes. In short, this research demonstrated for

the first time in the domain of attitude change that emotional states can operate by validation processes. In additional studies, the same interaction between argument quality (strong, weak) and emotion (happy, sad) was replicated with different emotion inductions (e.g., using the Velten, 1968 procedure; using facial expressions, Paredes, Stavradi, Briñol, & Petty, 2013), other procedures to measure thought confidence (e.g., assessing confidence in each individual thought rather than collectively), and regardless of whether thought confidence was measured before or after attitudes (see Briñol et al., 2007).

Taken together, these studies suggest that happiness can validate what people think relative to sadness. As noted earlier, happiness could lead people to rely on their mental contents more than sadness because people are more confident in their thoughts 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 affective (pleasantness–unpleasantness) and cognitive (confidence–doubt) dimensions.

Anger (versus surprise) can affect reliance on thoughts

Some emotions, such as anger and surprise, do not have the appraisals of pleasantness and confidence naturally confounded. As explained earlier, anger is an unpleasant emotion that is associated with confidence, whereas surprise is a relatively pleasant emotion associated with doubt (Ellsworth & Smith, 1988; Tiedens & Linton, 2001; see also, Blankenship, Nesbit, & Murray, 2013). Consistent with the differential appraisals of these emotions, we hypothesised that if an individual was 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 one's thoughts—cognitive validation. In contrast, if an individual was 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*. Furthermore, these validation effects for emotion should occur mostly when people have already generated their thoughts and are considering their validity—not when the emotions are induced prior to message processing.

We examined whether the emotions of anger and surprise 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. In one study (Briñol et al., 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 either anger or surprise. After participants completed both inductions, the critical mindset manipulation was introduced 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, the mindset manipulation required participants to fill in the blanks of words related to cognition (e.g., thought) or emotion (e.g., feel). Finally, participants rated themselves as job candidates on various attitude scales.

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). Greater use of thoughts was demonstrated by a larger impact of thought direction on self-ratings for those who were angry rather than surprised. However, 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). Less use of thoughts was demonstrated by a smaller impact of thought direction on self-ratings among those who were angry rather than surprised. As was the case for our research on happiness versus sadness, the same interaction of emotion (anger, surprise) and

thought direction (positive, negative) was found when other inductions, materials and measures were used (see Briñol et al., 2014).

To 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 earlier, our initial 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 more recent 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.

The potential for emotions to validate mental content goes beyond the domain of attitudes and persuasion. Consider, for example, work on numerical anchoring in which people adjust their numerical estimates to questions (e.g., how old was George Washington when he died?) based on a salient and irrelevant anchor value (e.g., a number revealed on a spun wheel of fortune; Tversky & Kahneman, 1974). Recent research by Inbar and Gilovich (2011) examined the effects of high-certainty emotions such as anger on the anchoring effect. In particular, they found that compared to emotions associated with appraisals of uncertainty such as fear and sadness, emotions associated with certainty led people to rely on self-generated anchors to a greater extent producing a larger anchoring effect. Similar results have been found for other potential inductions of thought-confidence beyond the domain of emotions (e.g., see Epley and Gilovich, 2001).

Disgust (versus sadness) can affect reliance on thoughts

As illustrated so far, understanding the different appraisals that can be associated with emotions explains how emotions can have seemingly opposite

effects depending on the circumstances and also leads to the prediction of new effects. In the previous section, we focused on the emotions of anger and surprise which can have opposite effects depending on the appraisal that dominates. 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. Thus, we reasoned that disgust would enhance the impact of accessible thoughts on social judgements, compared to another negative but doubt-inducing emotion, but only when a cognitive appraisal of the emotion is made.

To examine a validation role for disgust, in one study college students were asked to list either three positive or three negative characteristics that they possessed as potential job candidates (Wagner, Briñol, & Petty, 2014). Then, the 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 place participants in a cognitive mindset. Following prior research (e.g., Schnall, Haidt, Clore, & Jordan 2008), sadness was selected as the comparison emotion because although sadness and disgust are both unpleasant, disgust and sadness differ in the extent to which they are associated with feelings of certainty.

After writing about their traits and emotional experiences, participants answered a series of attitude questions about themselves as job candidates. In accord with the self-validation logic, the results showed that when participants generated positive thoughts about themselves, disgust led to more positive self-judgements. Conversely, when participants generated negative self-relevant thoughts, disgust led to more negative (or less positive) self-judgements. In a subsequent study, the interaction between emotion (disgust, sadness) and thoughts (positive, negative) on attitudes was replicated when people wrote about three morally

positive or three morally negative behaviours engaged in by a friend (see Zhong & Liljenquist, 2006) and the polarising impact of disgust on judgements of the friend was mediated by thought confidence (Wagner et al., 2014).

Demonstrating that disgust can polarise moral judgements is important because it suggests for the first time that disgust can impact moral judgements 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 (versus other negative emotions) fosters more negative judgements in terms of moral condemnation (e.g., Schnall et al., 2008; Wheatley & Haidt, 2006). 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). However, our research suggested another possibility—that because disgust is associated with feelings of certainty, disgust (relative to low-certainty emotions such as sadness) can polarise judgements regardless of topic and the direction of one's thoughts. Thus, our self-validation paradigm revealed that disgust can make negative moral judgements more negative, but also positive moral judgements 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.⁶

Arousal can polarise thoughts

So far, we have described how different emotions can cognitively or affectively validate thoughts depending on the appraisal of the emotion that is highlighted. In addition to these appraisals, there

⁶ If the unpleasant feeling from disgust is analysed as an argument, however, it would likely support more negative moral judgements but not more positive ones, or disgust could make moral infractions seem worse or more likely (see earlier section on emotions as arguments and as biasing cognition).

is another aspect of emotions that might also influence thought reliance—arousal. A number of studies have shown that arousal can magnify the effect of any thought previously activated in people's mind, polarising subsequent judgements (e.g., Stangor, 1990; Storbeck & Clore, 2008). To date, however, it is not yet clear if this is due to arousal validating thoughts or some other mechanism such as arousal affecting the extent of thinking.

Indeed, arousal has been postulated to increase processing of persuasive messages and produce enhanced argument quality effects when it gives people the burst of energy they need to think (Martin, Laing, Martin, & Mitchell, 2005). However, arousal has also been argued to decrease processing of persuasive messages (reducing argument quality effects) when it is experienced as stressful and difficult to handle (DeMiguel et al., 2009). In addition to the level of arousal, other factors can moderate the impact of arousal on information processing and persuasion, such as the extent to which people want to maintain their current level of arousal (Di Muro & Murray, 2014), the meaning associated with arousal (Jamieson, Mendes, & Nock, 2013) and the extent to which it is perceived to be a biasing factor (Sinclair, Hoffman, Mark, Martin, & Pickering, 1994).

Future research should focus on the specific mechanisms by which arousal influences attitudes. As articulated further below, we would expect that arousal would influence the extent of information processing when it precedes the message but could affect validation processes when it follows processing. Of course, in accord with the ELM, other roles for arousal are also possible such as serving as a simple cue when thinking is low or being assessed as an argument when thinking is high.

Emotion can affect reliance on thought processes

In the preceding sections, we have seen how emotions can affect reliance on thoughts and thereby influence attitudes and other judgements. 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 as highlighted by the self-validation approach described earlier (Briñol et al., 2007) 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 versus 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 responded to a number of trials in which they were to identify the global letter (i.e., the H), whereas to prime a local focus, the trials focused on identifying the lowercase letter (l) that made 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 (see also, Huntsinger, 2014, for a conceptually similar result). 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 mental 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, Peng, Choi, & Norenzayan, 2001). European American and

South Korean students were placed in either a happy or a sad state 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, Dalal, Kim-Prieto, & Park, 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) mental contents.

Matching emotions to contexts can validate thoughts

So far, we have focused on the role of individual emotions in affecting judgement 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 Hispanic source with an Hispanic 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, serving as an

argument or biasing thoughts or validating them when elaboration is high, and by influencing 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) showed that people demonstrated increased reliance on their thoughts when the characteristics of the message source were compatible with (i.e., matched) the characteristics of the message recipient. Applying a similar logic to emotions, Huntsinger (2013b) has shown that a match (versus 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, in this study, participants were asked to report the confidence they had in the thoughts they listed about the persuasive message, using the same measure introduced by Briñol et al. (2007). Consistent with the self-validation predictions, affective coherence led people to have more confidence in their thoughts and this thought confidence mediated the impact of emotional coherence on attitudes.

In closing this section, it is worth noting that affective coherence (or any other form of matching) might influence attitude change by the other

mechanisms specified by the ELM under other circumstances (Petty et al., 2000). For example, one possibility is that when the emotional tone of a message is matched to the emotion of the person and thinking is constrained to be relatively low, people might come to accept the message position simply because the message “feels right” or “fits” (Cesario, Grant, & Higgins, 2004) or is easier to process (e.g., Lee & Aaker, 2004)—a simple cue effect. In accord with the ELM, these fluency or fit experiences might influence attitudes through other processes under other circumstances (see Briñol, Tormala, & Petty, 2013; and Cesario, Higgins, & Scholer, 2008, for reviews of the multiple processes by which fluency and fit can operate).

DISTINGUISHING BETWEEN PRIMARY AND SECONDARY COGNITION

In addition to identifying thought confidence as a mediator of the impact of emotion on judgement under certain circumstances, prior work on self-validation processes has also pointed to specific moderators of this meta-cognitive process. In this section, we specify the two most studied variables that influence the operation of self-validation processes: timing of the induction and extent of elaboration.

Timing

As may be apparent from our description of prior studies, the timing of an emotion induction (i.e., when it is salient) is one important moderator of the process by which it has its effect. Specifically, for emotion to serve as a thought validator (regardless of whether it relates to confidence or pleasantness), the emotion should be salient at the time people are thinking about their thoughts rather than prior to thought generation. A number of studies have documented the different roles that variables can play depending on whether they are induced before or after message processing. For example, in one series of studies, individuals received a self-affirmation induction (i.e., thinking

about their core values) 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 message processing such that affirmed participants processed the message less than non-affirmed individuals. This is because when already affirmed, people can be confident in their existing views and have little need to think about new information. But, when the affirmation induction followed the message, it impacted the use of participants’ thoughts. Specifically, affirmed participants relied on their thoughts to the message more than non-affirmed individuals. As a result, affirmation decreased argument quality effects when it preceded the message relative to non-affirmation (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 have been observed when feelings of power were introduced prior to or after message processing (Briñol, Petty, Valle, Rucker, & Becerra, 2007).

In conceptually similar work in which the timing of an emotion induction was manipulated, Huntsinger (2013b) had participants read a persuasive message containing either strong or weak arguments for a 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 just mentioned, Huntsinger found that when the emotional coherence manipulation came prior to the message, it affected the extent of message 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 in the coherence condition), but increased argument quality effects when it followed the message (a result of enhanced use of thoughts to the message in the coherence condition).

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 on judgements. For example, we have seen that when the likelihood of elaboration is low, emotions can affect attitudes by serving as simple affective cues producing judgements in accord with their valence but that when elaboration is high, emotions work by more thoughtful means such as serving as arguments, biasing thoughts or validating them. Recall that in one early demonstration of multiple roles for emotion under high and low elaboration conditions (Petty et al., 1993), emotion had an indirect impact on attitudes by biasing thoughts when elaboration was high but had a direct effect on attitudes when elaboration was low.

The moderated mediation pattern found in ELM research is indicative of the 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 emotion such as the “affect infusion” (Forgas, 1995) or emotion “priming” (Greifeneder et al., 2011) accounts in which emotions are said to 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. As described earlier, self-validation provides another means by which emotions can influence attitudes when thinking is high. Petty, Briñol, and Tormala (2002) demonstrated

that self-validation is more likely to take place when people have the requisite motivation and ability to attend to and interpret their own cognitive experiences. 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 meta-cognitive 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 programme composed of either strong or weak arguments. An emotion induction in which people were required to behave according to a happy or sad script followed the message. To assess the likely extent of thinking 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 NC, Argument Quality and Emotion. As predicted by the self-validation perspective, for individuals who were high in NC, when a strong message was received (and thoughts were thus mostly favourable), 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 unfavourable), the effects of the emotion induction were reversed. Put differently, for individuals high in NC, emotion interacted with argument quality to determine attitudes. This is the effect we mentioned earlier when first discussing the role of happiness in validating thoughts.

However, the results were very different for those who were low in NC. For these individuals, 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).

In short, in research examining the moderating role of extent of elaboration, when emotions were induced prior to a message, low elaboration individuals showed a simple cue effect for emotion but for high elaboration individuals, emotions biased processing (Petty et al., 1993). However, when emotions were induced after the message was processed, low elaboration individuals still showed a simple cue effect for emotion, but for high elaboration individuals, emotion influenced validation of the thoughts generated. Thus, to have a full picture of the process by which emotions influence judgements, it is important to consider both the timing of the emotion and the overall extent of thinking in the situation.

SUMMARY AND CONCLUSIONS

This review has described the various ways in which emotions can influence attitudes according to the ELM (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 when relevant, bias the cognitive processing of the message 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 motivation and ability to think are high and

the arguments are not so clearly strong or weak that differential argument construal is difficult. 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, 1958) 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,⁷ (4) affect infusion (Forgas, 1995) for biased processing effects, and (5) self-validation (Briñol et al., 2007; Petty et al., 2002) and the affect as information (Clore & Huntsinger, 2007) approaches emphasising how emotions can affect use of thoughts. Some theories of emotions have even considered more than one role (e.g., see Forgas, 1995), but none have incorporated all of them.

Furthermore, although we have not focused on it here, the ELM holds that when emotions (or other variables) influence attitudes by mechanisms requiring little cognitive effort, the attitudes are weaker (less stable, resistant and predictive of behaviour) than when emotions influence attitudes by higher thought mechanisms (Petty, Haugtvedt, & Smith, 1995). For example, if happiness were to produce the same favourable attitude by serving as a cue and by biasing thoughts, the latter attitude would have more strength. This is not to say that simple cue processes cannot lead to some strength consequences such as the stability that might come from repeatedly pairing an attitude object with an emotional state. And, if this repeated pairing leads to an attitude that is highly accessible (Fazio, 1995), it could guide behaviour in spontaneous situations where thinking is relatively low (Dovidio Kawakami, Johnson, Johnson, & Howard, 1997; Strick, Holland, van Baaren, van Knippenbert, & Dijksterhuis, 2013).

⁷Some researchers treat the “feelings as information” view as focused solely on the “direct” impact of emotions on judgements (i.e., as a simple misattributional inference) and exclude the enhanced processing role (see Greifeneder et al., 2011).

However, since cue-based attitudes have little substantive foundation, they would be more likely to succumb to an attacking message and fail to guide behaviour when people think before acting. Unfortunately, there is very little work investigating the strength properties of attitudes induced with different emotion mechanisms. Thus, this topic is ripe for future research.

Nonetheless, the ELM integrates five core 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 that have nothing to do with emotion. For instance, source credibility has been shown to serve in the identical roles as emotion under the very 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 an affective/valence (pleasantness/unpleasantness) versus a cognitive/certainty (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 (cognitive appraisal) that emerges from an emotion such as anger 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 impacts 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 on the thoughts that have been generated. As noted throughout this review, 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 provide 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 or doubt, 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 could 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, 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, Small, & Fischhoff, 2003; see also, Veling, Ruys, & Aarts, 2012).

Were these emotional appraisals to be induced prior to a message when 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, Petty, Wegener, & Rucker, 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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