On The Role of Affect in Gullibility:

Can Positive Mood Increase, and Negative Mood Reduce Credulity?

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ABSTRACT

The uncritical acceptance of false or misleading beliefs is often influenced by sub-conscious affective reactions. This chapter will describe some of the psychological mechanisms responsible for the biasing effects of affect and mood on gullibility and skepticism. A series of experimental studies will be presented showing that mild affective states can influence perceptions of truth, the likelihood to believe misleading information, the tendency to trust interpersonal messages, the detection of deception, and the tendency to see meaning in random or meaningless information. In addition to the influence of mild, temporary moods on gullibility, more enduring and stable affective reactions can also produce gullibility. The theoretical significance of these studies will be discussed, and the practical implications of affectively induced gullibility will be considered.

Introduction

What is the role of affect in gullibility? Does mood influence the way we examine and evaluate more or less suspicious or doubtful information? For example, could a happy mood predispose people to be more trusting and credulous, and conversely, could negative mood function as a subconscious alarm signal, resulting in the more cautious and critical evaluation of information we receive from others? This chapter will review experiments indicating that mild, everyday moods in particular can have a marked influence on credulity and gullibility. There is of course much suggestive evidence indicating that *Homo Sapiens* is a very moody species (Forgas & Eich, 2013). Numerous studies, including several of the chapters included in this book, also confirm that we are also a very credulous species. Most of us are intuitively aware that our feelings might have some influence on our beliefs, thoughts, judgments, and behaviors, but the nature of this influence remains incompletely understood.

Gullibility versus Scepticism.

Social knowledge is often untested and potentially misleading. Indeed, some historians have argued that the ability of humans to create, share and act upon fictional information as if it was real is perhaps the most remarkable and revolutionary cognitive ability of our species (Harari, 2014). It is this unique human capacity to treat fiction as 'real' that is the basis of all larger forms of social organisation and coordination. Shared commitment to fictitious systems of thought, such as most religions, or beliefs in the god-like status or god-given power of kings or rulers, or shared beliefs about the superordinate importance of nation-states are all examples of how collectively shared fictitious beliefs can serve as the basis of large-scale social integration. But there is also a reverse side off this remarkable cognitive ability to treat fiction as reality. Accepting fiction as real is also the basis of human gullibility and superstition. Belief in witches, in gods that demand human

sacrifice, or more recently, belief in pyramid schemes or fake news are all examples of gullibility powered by the human ability to treat fiction as reality (Harari, 2014).

Thus, consuming fiction is double-edged sword, allowing shared beliefs to function as powerful mental schemas that underline effective social organisation, but also making individuals vulnerable to gullibility and credulity. In everyday life, knowing what to accept and believe and what to reject as false from the ceaseless stream of second-hand social information we are continuously bombarded with is one of the most important cognitive tasks. Rejecting valid information as false (excessive scepticism) is just as dangerous as accepting invalid information as true (excessive gullibility).

Affect and Credulity: An Historical Perspective

Suspicions about the deleterious influence of affect on clear and rational thinking are as old as Western civilization. Ever since antiquity, many great philosophers considered affect to be a primitive and invasive human faculty that can subvert human reason (Hilgard, 1980). Plato was among the first to clearly articulate this principle, but the idea of affect as potentially dangerous and irrational can be discovered in the works of Aristotle, St. Augustine, Descartes, Pascal and Kant and many others. Some early social theorists such as Machiavelli identified affect as a powerful subversive influence on effective thinking, and proposed elaborate schemes to exploit this human weakness for political gain (Machiavelli, 1961). What Machiavelli described comes very close to what passes for everyday political practice in many autocratic countries, most recently in Eastern Europe, in Hungary, where the Western virtues of democracy and its psychological foundation in rationality, scepticism and individual autonomy have not yet taken root (Forgas, Kelemen, László. 2015).

Within psychology, it has also been frequently assumed that affect has an invasive, dangerous influence on thinking and behavior, leading some theorists to suggest that whenever

emotions are “directly involved in action, they tend to overwhelm or subvert rational mental processes” (Elster, 1985, p. 379). Psychoanalytic theories were especially influential in suggesting that affective states have an irrational, and mostly subconscious influence on thinking, invading thoughts and beliefs, unless sufficient countervailing ‘pressure’ and psychological resources are extended to control them. Thus, feelings were seen as having an invasive, “disturbing role”, as “noisome, irrational agents in the decision-making process” (Toda, 1980, p. 133). Using a psychoanalytic framework, Feshbach and Singer (1957) claim for example to have found empirical support for the dynamic affective subversion of judgments. Their results showed that attempts to suppress fear paradoxically, increased the tendency to see "another person as fearful and anxious" suggesting that "suppression of fear facilitates the tendency to project fear onto another social object" (p. 286).

Some writers even speculated that our historical inability to fully understand and manage our own affective states indicates a fatal flaw in the evolution of our species (Koestler, 1978). The poor structural integration between the archaic emotional structures in the brain and the more recent telencephalon may be linked to the humans’ notorious inability to control their emotional impulses (Koestler, 1978).

A contrary view, however, suggests that openness to feelings can also be a useful, and even necessary adjunct to rationality and to effective social thinking (Damasio, 1994; de Sousa, 1987; Oatley & Jenkins, 1996). These ideas are consistent with the long-held belief that “the heart has its reasons which reason does not understand” (Pascal, 1643/1966, p. 113). This chapter will argue that in some situations, mild affective states and moods can indeed provide a useful, adaptive, and functional input that helps to regulate the way information is interpreted and processed, and thus, influence gullibility. What are the psychological mechanisms that might link affect to gullibility? We shall turn to this question next.

Can mood influence gullibility?

Affective experiences penetrate every aspect of our lives, and play an important role in influencing many of our cognitive and behavioral strategies (Fiedler, 2001; Forgas, 2013; Zajonc, 1980; 2000). Extensive research in recent years showed that at the simplest level, affective states can exert a strong affect-congruent influence on the valence of thinking (Forgas & Eich, 2013). Affective states can also influence the kinds of information processing strategies people adopt in social situations (Bless, 2001; Bless & Fiedler, 2006; Fiedler, 2001; Forgas, 2002). Surprisingly, the influence of affective states on gullibility, interpersonal trust and the detection of deception have received little prior attention. This is particularly interesting, given strong recent evidence that mood states play an important role in how people process social information and how they make sense of observed social behaviors in particular (Fiedler, 2001; Forgas, 1994, 2002, 2013; Sedikides, 1995).

Our interest here is in mild mood states rather than emotions, as subconscious moods have been found to have more uniform, enduring and reliable cognitive and behavioral consequences than is the case with intense and highly context-specific emotions (Forgas, 2006, 2013). For our purposes, we may define moods as low-intensity, diffuse and relatively enduring affective states without a salient antecedent cause and therefore little cognitive content. In contrast, emotions are more intense, short-lived and usually have a definite cause and clear cognitive content (Forgas, 1995, 2002). Recent affect-cognition theories suggest that there are two complementary cognitive mechanisms that are responsible for the infusion of mood states into thinking and judgments: (1) informational effects (influencing the content and valence of cognition), and (2) processing effects (influencing the process of cognition).

Informational effects

Moods may influence gullibility vs. scepticism by selectively priming the accessibility of valenced information that is associatively linked to the current mood state within a network of memory representations (Bower, 1981; Forgas, 1995). Thus positive mood should prime a more positive, trusting evaluation of a message, and negative mood should prime more negative evaluations and greater skepticism. Consistent with this affect-priming model, numerous studies found a mood-congruent bias in the way people form a variety of social judgments (Bless & Fiedler, 2006; Fiedler, 2001; Forgas, 1994, 1995; Forgas, Bower, & Krantz, 1984; Niedenthal, Halberstadt, Margolin, & Innes-Ker, 2000). In some cases, the prevailing mood state may also function as a heuristic cue, informing evaluative reactions to a stimulus or a situation (Clore, Schwarz, & Conway, 1994; Schwarz & Clore, 1983).

Subsequent integrative theories of affect and cognition such as the Affect Infusion Model (AIM; Forgas, 1995, 2002) specifically predict that such affect congruence in thinking and judgments should be greatest whenever a more open, elaborate, and constructive processing strategy is required to perform a task. In the absence of prior knowledge, most veracity and truthfulness judgments involve uncertainty and should require such open and constructive processing (Fiedler, 2001; Forgas, 1995; 2002). Because credulity judgments require judges to go beyond the information given (Bond & DePaulo, 2006; Kraut, 1980; O'Sullivan, 2003), there should be a mood-congruent influence on the degree of credulity when judging ambiguous or potentially deceptive communications. In contrast, negative mood, by selectively priming negative evaluations, should make judges more sceptical and suspicious, resulting in a stricter criterion for credulity.

Processing effects of mood

In addition to the mood-congruent informational effects discussed above, moods may also impact the way information is processed (*processing effects*). Several studies found that people in a negative mood tend to process external information in a more accommodative, detailed and

systematic manner while those in a positive mood tend to adopt a more assimilative, heuristic, top down processing style (Bless, 2001; Bless & Fiedler, 2006; Fiedler, 2001). Interestingly, it is just this kind of externally focused processing style that should promote greater scepticism and also facilitate the detection of false or deceptive communications (Bless & Fiedler, 2006).

Consistent with such a mood-induced processing dichotomy, people in a negative mood tend to use more detailed schemas, process persuasive messages more systematically (Bless, 2001; Forgas, 2007), rely more on new, external information (Fiedler, Fladung, & Hemmeter, 1987), and have better memory for such details (Fiedler, Lachnit, Fay, & Krug, 1992). Negative mood, by promoting a more accommodative processing style also reduces the incidence of some judgmental errors such as the correspondence bias (Forgas, 1998), primacy and salience effects (Forgas, 2011, 2013) and improves the accuracy of eyewitness recollections (Forgas, Laham, & Vargas, 2005). Extrapolating from this evidence, we expect here that negative mood should also reduce gullibility by promoting a more careful, accommodative processing style. Accommodative processing in negative mood should also reduce such common judgmental errors as the 'truth bias' and the correspondence bias, thus reducing credulity.

Based on the available evidence, the following experiments predicted that negative moods should reduce gullibility by promoting a more attentive, focused and concrete information processing style. In contrast, positive mood may enhance gullibility by priming more positive thoughts and associations, and also promoting a more assimilative, heuristic and top-down information processing style. We investigated these predictions in a series of studies, exploring mood effects on the truth bias, the detection of deception, belief in 'urban myths', and trust in interpersonal communications. The overall effect should be greater skepticism and the better detection of deception in negative mood, and increased gullibility in positive mood.

Mood Effects on the Truth Bias

Much of the information we come across in everyday life is ambiguous, confusing, and potentially unreliable. How can we decide whether a particular claim or statement is true or false? As a thorough investigation of every claim is inherently impossible (Fiedler & Wänke, 2009), people often rely on simple heuristics to decide whether to believe or disbelieve new information. This experiment investigated the effects of two variables on truth judgments: *ease of processing* (*fluency*), and the *affective state* of the judge. Based on prior affect-cognition theories, we predicted that negative affect should reduce, and positive affect should promote reliance on processing fluency as a relevant heuristic cue in truth judgments.

Truth judgments. Subjective ease of processing, or *fluency*, seems an influential cue in determining whether a claim is accepted as true or false (Unkelbach, 2006). Easy to process or *fluent* information is more likely to be accepted as true, and *disfluent* information is more often rejected as false (Begg, Anas, & Farinacci, 1992; Reber & Schwarz, 1999). This *truth effect* (Dechêne, Stahl, Hansen, & Wänke, 2009) occurs regardless of a statement's content. The experience of fluency itself is determined by a variety of factors, such as familiarity, the frequency of prior exposure, previous primes, and the verbal simplicity and visual clarity of the information (see Alter & Oppenheimer, 2009; Unkelbach, Bayer, Alves, Koch, & Stahl, 2011). However, fluency as a truth cue can also be readily discounted when people "explicitly or implicitly recognize that it stems from an irrelevant source" (Alter & Oppenheimer, 2009, p. 231), or when a more elaborate and attentive processing style is adopted (Hawkins, Hoch, & Meyers-Levy, 2001). As negative moods can also recruit a more vigilant, externally focused cognitive style (Bless & Fiedler, 2006; Forgas, 1998; 2010; 2011), mood may also be a significant moderator of the truth effect.

The study. In this experiment, participants were told that they will participate in two 'unrelated' experiments: 'helping to select film clips for a future study' (in reality, the mood induction), and a subsequent 'truth judgment task'. After an audiovisual mood induction (positive

vs. neutral vs. negative films), 84 students judged the truth of 30 ambiguous 'urban myth' type statements presented with either high or low perceptual fluency (high or low contrastive background; see Reber, Winkielman, & Schwarz, 1998), in a 3 × 2 mixed design. These 'urban myths' were presented one at a time on a screen, and participants provided a truth judgment (true/false) and (2) a subjective confidence rating on a 0–100% scale.

The 30 target statements comprised ten *neutral* claims (e.g., "Instead of iron, horseshoe crabs have copper in their blood"), ten *positively valenced* claims (e.g., "Gelotology is the study of laughter and its beneficial effects on the body"), and ten *negatively valenced* claims (e.g., "The suicide rate in Nunavut is four times higher than in the rest of Canada"). Within each valence category, five statements, although highly obscure, were actually true, and five statements were factually false. Visual fluency was manipulated using an alternating graphical display style, with half the statements shown with high visual fluency (high contrast), and half of the statements shown were presented in a *disfluent* manner (low contrast).

Results. The mood induction was highly effective, as self-rated mood was significantly better after a positive, and worse after a negative film than in the neutral condition. The fluency manipulations was also highly effective, with faster responses to fluent rather than disfluent statements. There was also the predicted significant interaction between mood, and fluency on the tendency to judge claims as "true". Fluent claims were judged as more true than disfluent claims, but negative mood eliminated this truth effect (Figure 1).

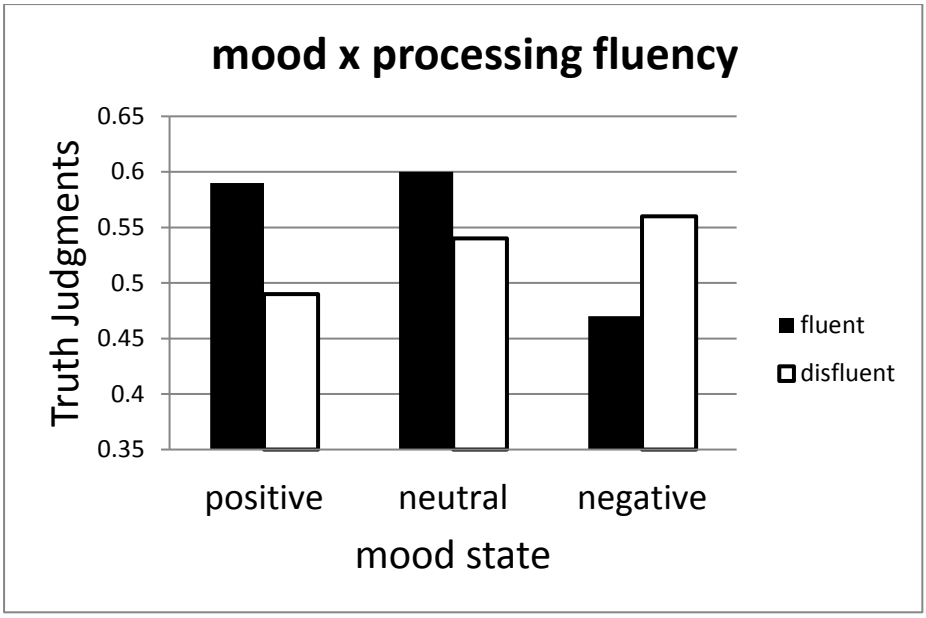

Fig. 1. The interactive effects of mood and fluency on truth judgments: positive mood maintains, and negative mood reduces reliance on fluency as an indicator of truth.

Evidence for Processing Differences. If negative mood indeed promotes more accommodative processing (Bless & Fiedler, 2006; Forgas, 2011; 2013), then negative mood participants should be more influenced by important and relevant features of the target statements, such as their level of concreteness and abstraction. The 30 ambiguous target statements were classified into 16 concrete, tangible claims (e.g., 'The river Kongo carries the most water in all of Africa', and 14 more abstract, intangible claims (e.g., 'The philosopher Kierkegaard argued that humans are inherently good'). We found that the concreteness / abstractness of a claim only made a difference to truth judgments in negative but not in a positive mood, as concrete statements were less likely to be judged as true than abstract statements.

This experiment was thus successful in showing for the first time that mood may moderate the extent to which processing fluency can influence gullibility and judgments of truth. Consistent with other evidence from the recent affect – cognition literature, positive mood maintained, but negative mood eliminated reliance on fluency as a subliminal truth cue, making judges in a negative mood less gullible. Such affective influences on truth judgments may be particularly important as

many truth judgments (such as believing or disbelieving one's partner) occur in affect-rich contexts. Understanding the psychological mechanisms underlying truth judgments can be an important aspect of improving people's affective intelligence through training and education (Ciarrochi, Forgas, & Mayer, 2006).

Mood Effects on Detecting Deception

Believing or disbelieving interpersonal messages is an important aspect of gullibility, and can be particularly difficult when we face intentional deception. Detecting deception is also of particular importance in forensic, judicial and investigative domains. Despite much prior interest (cf. Lane & DePaulo, 1999), the influence of mild, transient moods has not been studied previously, even though interpersonal credulity vis-a-vis a romantic partner, a friend, a child or an employee is often loaded with affective significance.

Past research suggests that people are often overly trusting when assessing truthfulness, and are not very good at detecting deception (Bond & DePaulo, 2006; Ekman & O'Sullivan, 1991; Levine, Park, & McCornack, 1999). Many people hold incorrect naïve theories about cues to deception, and focus on the wrong behaviors to detect lies (Fiedler, 1989; Fiedler & Walka, 1993). The confirmation bias, the correspondence bias, the ''truth bias", and the implicit tendency to trust others further compromise our detection efficacy (McCornack & Parks, 1986; O'Sullivan, 2003).

However, several experiments now suggest that positive moods increase and negative moods decrease judgmental biases such as the correspondence bias (Forgas, 1998). In several experiments (Forgas & East, 2008a,b) we predicted that negative mood should reduce gullibility and increase scepticism, as dysphoric individuals should form less positive and optimistic inferences (Forgas, 1995, 2002; Forgas et al., 1984), and should be less influenced by the truth bias and the correspondence bias (Forgas,1998).

The study. Participants (N=117) first viewed mood-inducing films, and then watched video clips of males and females who were either truthful or deceptive in denying an alleged theft, judging the target's guilt or innocence, and their truthfulness, in a 3 × 2 mixed design, with mood (happy, neutral, sad) and deception (deceptive, honest) as the independent variables.

The targets were questioned about stealing some movie tickets from an unsupervised room. Half the targets were truthful in denying the theft, and half were deceitful. They were motivated to be convincing by being told that if their denials were accepted they could keep the tickets (whether they have in fact taken it or not).

Results. The mood manipulation was successful, as participants in the happy mood condition felt more positive, and those in the negative condition felt more negative than in the neutral mood condition. As expected, mood did have a significant effect on judgments of guilt, as negative mood participants made more guilty judgments than happy or neutral judges (see Figure 2). Actually truthful targets (denials by innocents) were also judged less guilty.

However, there was also a significant interaction between mood and deceptiveness. Mood effects on guilt judgments were greater when targets were deceptive rather than truthful (Figure 2). Those in a negative mood correctly formed more guilty judgments of deceptive (guilty) rather than honest (innocent) targets, while those in a happy and neutral mood were more credulous and failed to significantly discriminate between innocent and guilty targets. Thus, negative affect reduced gullibility and improved the detection of deception. Overall, detection of deception rates were significantly better than chance only by those in negative mood, whereas neutral and happy mood participants did not detect guilt above chance level.

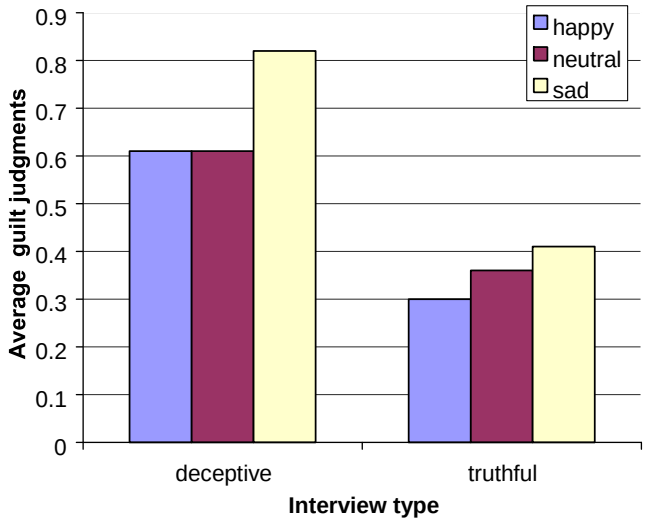

Fig. 2. The effects of mood and the target's veracity (truthful, deceptive) on judgments of guilt of targets accused of committing a theft (average proportion of targets judged guilty in each condition).

A follow-up signal detection analysis confirmed that negative mood improved detection accuracy compared to neutral or happy judges ($d' = 1.15$, vs. .64, vs. .81, respectively), and also produced a higher overall conservative bias (C = .53, .35, .22, respectively). In other words, negative mood has a dual effect on credulity, increasing discrimination and detection sensitivity, and also producing a stricter and more conservative criterion for acceptance, reducing overall gullibility. Honesty ratings showed a similar pattern (Figure 3). Truthful targets were rated as more honest than deceptive targets, and those in a positive mood were also more credulous than persons in a negative mood.

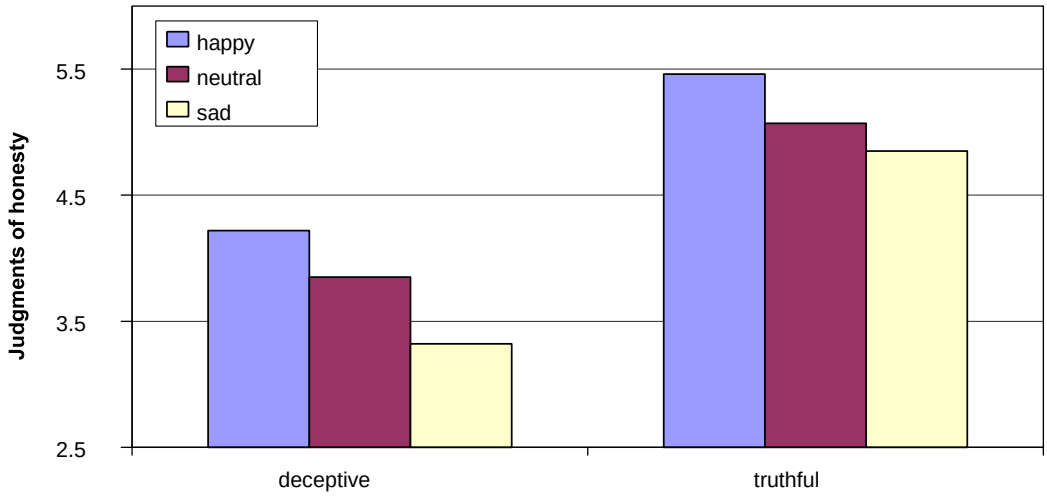

Fig. 3. The effects of mood and the target's veracity (truthful, deceptive) on judgments of the honesty of targets accused of committing a theft (mean ratings on 8-point scales).

Mood Effects on Nonverbal Credulity

Gullibility and credulity are also important when evaluating nonverbal displays. Deciding whether a facial display (by a partner, a child or a manager) is genuine or deceptive is a common yet difficult task in everyday social life (Jones, 1964). Facial expressions serve important interpersonal functions, as reliable cross-cultural signals indicating emotions, attitudes, and motivational states (Darwin 1872; Ekman, Friesen & Ellsworth, 1972). As facial expressions may also be faked, differentiating between honest and deceptive displays is important, a task we perform at a level only slightly above chance (Bond & DePaulo 2006; Kraut 1980; Levine et al., 1999).

Nonverbal credulity is likely to be susceptible to a variety of internal and situational influences (McCornack & Parks 1986), such as the correspondence bias (DePaulo 1992), and the possibility of mood effects (Schiffenbauer, 1974; Terwogt et al., 1991). Clinical research also found that a poor ability to decode facial signals seems to be associated with enduring depression and reduced relationship well-being (Bouhuys, Geerts, Mersch, & Jenner, 1996; Carton, Kessler, & Pape,

1999). In this experiment we predicted that happy mood should promote, and negative mood inhibit the gullible acceptance of nonverbal displays at face value.

The study. Participants first received a false-feedback mood induction (being told that they have done well or badly on an anagram task), and then rated the genuineness of positive, neutral and negative facial expressions, in a 2 (mood: positive, negative) x 3 (emotional expression: positive, neutral, negative) design. The stimulus pictures showed professional actors displaying positive, neutral, or negative moods. Participants were told that some of the displays may be faked, before rating the genuineness of the expressions, their positive – negative valence, and their confidence in their judgments.

Results. The mood induction was highly effective, as participants in the positive condition felt more positive than those in the negative condition. Mood also influenced nonverbal credulity, as happy judges were more likely to judge facial expressions as genuine and were more confident than those in the negative condition (see Figure 4).

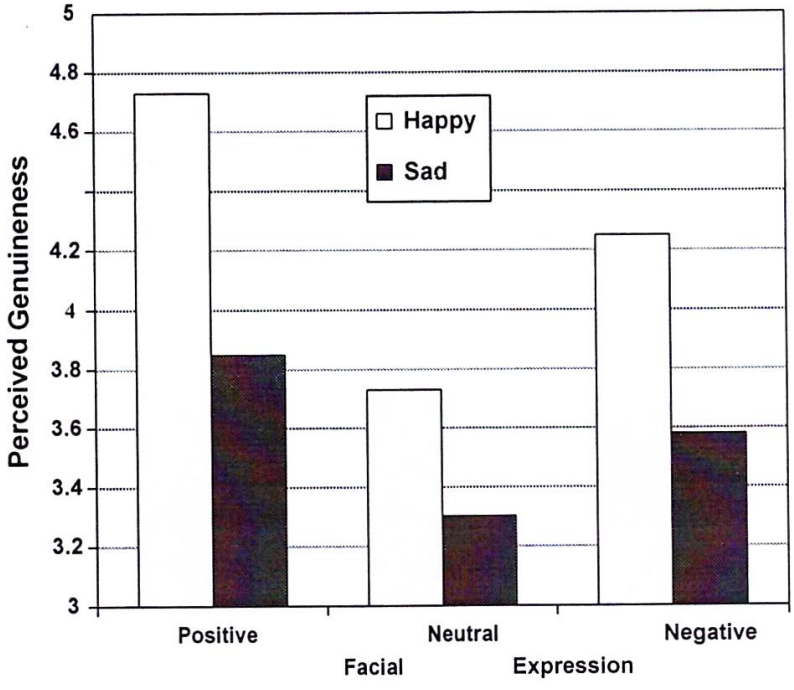

Fig. 4. The effects of mood and the valence of facial expressions on the degree of skepticism about the genuineness of the facial expressions.

Specific Emotional Expressions. Subsequently, using a similar procedure, we also looked at mood effects on believing highly specific emotional displays (e.g., anger, fear, disgust, happiness, surprise, and sadness; Ekman & Friesen, 1974; Darwin, 1872). Happy and sad participants viewed six photographs showing actors displaying the basic emotions of happiness, anger, sadness, disgust, surprise, and fear. Judges were asked to name the emotion being displayed, and then assess the genuineness (veracity) of each expression on a 10-point *fake-genuine* scale. Mood again had a significant main effect on gullibility as negative mood increased skepticism and reduced credulity across all emotional expressions.

These results show that negative mood can significantly reduce judges' nonverbal gullibility. This pattern occurred across all expressions studied suggesting that this is robust effect. These findings may have considerable relevance in real-life situations where the ability to correctly identify deceptive expressions is of considerable importance (Ciarrochi et al., 2006).

Mood and the Bullshit Effect: Perceiving Meaning Where There is None

Perhaps the purest form of gullibility occurs when people infer meaning in meaningless, randomly generated, pseudo-wise and pseudo-intellectual verbal statements. Such a tendency may be more common than at first appears. In a now famous hoax demonstrating the meaninglessness of much post-modern theorizing and literature, the physicist Alan Sokal submitted an intentionally meaningless text to a post-modernist theoretical journal to investigate whether "a leading North American journal of cultural studies… would publish an article liberally salted with nonsense if (a) it sounded good and (b) it flattered the editors' ideological preconceptions" (Sokal, 2006). The article was duly accepted and published (Sokal, 1994). When he subsequently revealed the hoax, it became obvious that even in many academic departments in the humanities and social sciences

infested by post-modernism, meaningless verbiage can be easily passed off as a valuable intellectual product. Can mood influence this tendency to see meaning where there is none?

In a recent study we examined how mood states might influence gullibility when assessing vacuous, impressive-sounding but meaningless phrases (Forgas, Matovic, & Slater, 2018), following an earlier study 'On the reception and detection of pseudo-profound bullshit', by Pennycook, Cheyne, Barr, Koehler, & Fugelsang (2015, p. 559), that showed that people can perceive vacuous, pseudo-profound "bullshit" statements as "at least somewhat profound". "Bullshit" is the term for meaningless sentences that convey a false impression of meaningfulness. Thus, "bullshit receptivity" refers to gullibility towards bullshit (Pennycook et al., 2015, p. 550), and the favorable evaluations of bullshit terms is a measure of bullshit receptivity.

One source of meaningless jargon was a New Age spoof website designed to generate random bullshit sentences by randomly combining words from the banal pronouncements of Deepak Chopra: http://wisdomofchopra.com (e.g., "Imagination is inside exponential space time events" and "Good health imparts reality to subtle creativity"). Another convenient and all-too-available source of bullshit is psychological jargon. Forgas (1985) published a psychological 'bullshit generator', where any random combination of important-sounding psychological jargon terms from three columns of words always results in an expression that is vague and impenetrable, but appears to have some hidden meaning to gullible observers.

Bullshit receptivity should be strongly influenced by how recipients cognitively process the available information (Pennycook et al., 2015). As moods can influence information processing strategies (Forgas, 2013), we expect positive mood to increase, and negative mood to reduce bullshit receptivity.

The study. First, participants watched video clips intended to induce either a positive, neutral or negative mood. Next, participants rated 12 meaningless phrases for their perceived

meaningfulness, profundity, usefulness and clarity. Half of the phrases were New Age pseudo-wisdom and half of the phrases were pseudo-intellectual psychological jargon. We expected that the more heuristic, assimilative processing recruited by positive mood should increase, and the more accommodative and concrete processing style promoted by negative mood should decrease gullibility and bullshit receptivity.

Results. The four judgments (meaningfulness, profundity, usefulness and clarity) were highly correlated and were combined into a single measure of gullibility. Mood had a significant influence on gullibility, as those in a positive mood were more gullible than those in the neutral and negative mood groups (see Figure 5). Gullibility was also significantly greater for new age sentences than for scientific jargon terms. However, the mood × sentence type interaction was not significant, indicating a relatively robust and content-independent mood effect on gullibility.

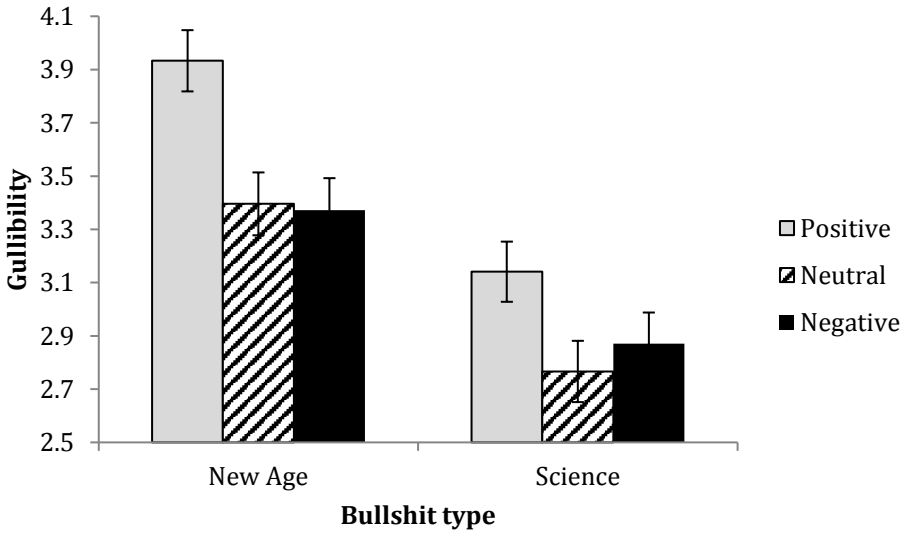

Figure 5. Means and standard errors for mood effects on interpreting new age and scientific nonsense sentences: participants in the positive mood condition were more gullible than those in the neutral and negative mood conditions in assessing the meaningfulness of nonsense sentences across both new age and scientific content.

Information Processing Measures. Response times and memory data (recall and recognition) were also collected to establish the predicted processing strategies used by judges. Mood had a significant overall influence on *processing latencies*, as positive mood judges took less time than those in the neutral and negative mood conditions to produce a judgment, consistent with a less detailed and systematic processing style (Figure 6). Consistent with this prediction, there was an inverse correlation between response latency and gullibility, $r(79) = -.15$, $p = .169$. We found no interaction between mood and bullshit type, indicating consistent and robust mood effects on processing regardless of sentence content.

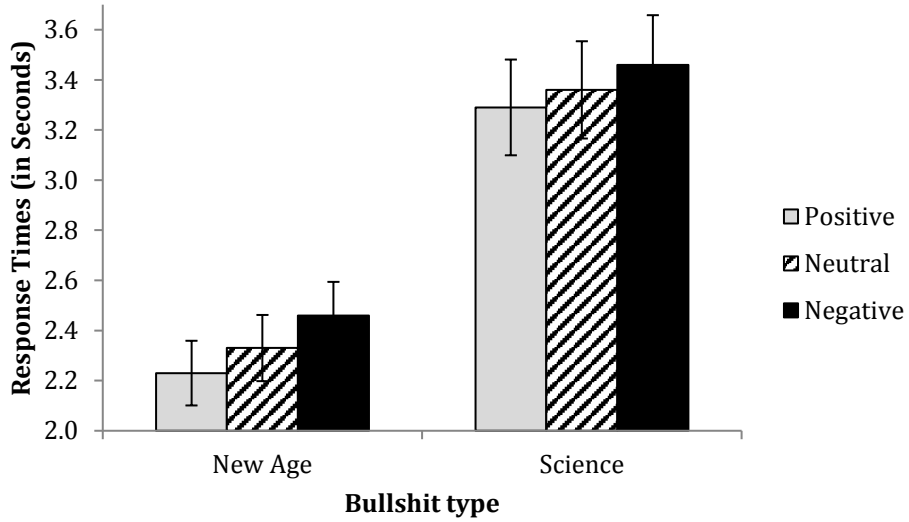

Figure 6. Means and standard errors for mood effects on latencies in evaluating meaningless sentences: participants in the negative mood condition took longer to evaluate the meaningfulness of nonsense sentences than the neutral mood condition and the neutral group spent longer processing their sentence meaningfulness judgments compared to the positive mood condition.

Mood also had a significant main effect on *recall memory*, as participants in a negative mood had better recall memory for sentence details than did those in the neutral and positive mood conditions. Recall was also better for the new age sentences rather than for psychological jargon (see Figure 7). Recognition memory was also assessed using a d' analysis, showing

participants in the negative mood condition were significantly better able to discriminate between correct items and distractors than those in the neutral mood condition (Bless & Fiedler, 2006).

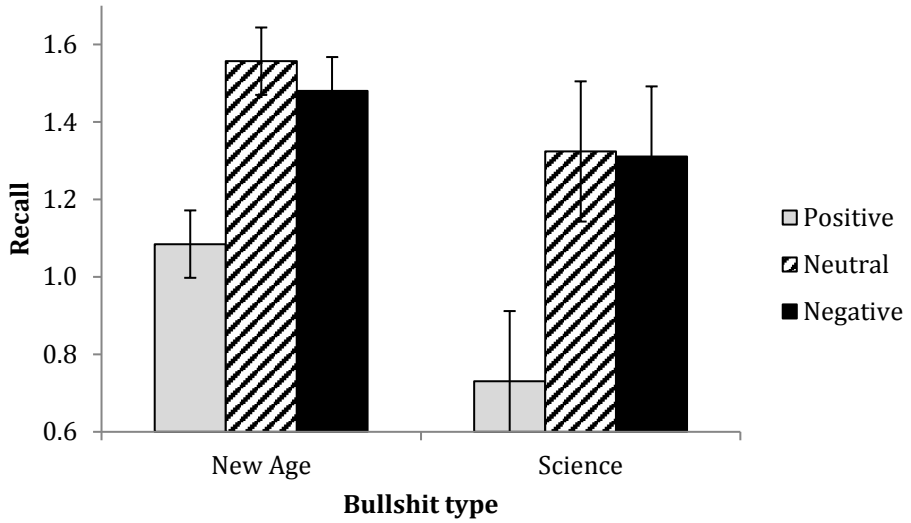

Figure 7. Means and standard errors for mood effects on recall of nonsense sentences: participants in the positive mood condition remembered fewer sentence details than those in the neutral and negative mood conditions across both new age and scientific content.

Self-confidence. Can mood effects on self-confidence also influence gullibility? It was found that more gullible participants were also more confident in their responses, $r(79) = .23$, $p = .036$, and positive mood participants were both more self-confident and more gullible (Forgas & Cromer, 2004; Forgas et al., 2005). A mediational analysis further explored this pattern. A bootstrapping approach tested the indirect effect (Preacher & Hayes, 2004) of mood and self-confidence on gullibility, showing near-significant ($p = .081$) but partial pattern of mediation (Figure 8). These results suggest that positive mood led to greater self-confidence and ultimately, greater gullibility (Bower, 1981; Forgas, 1995; Schwarz & Clore, 1983). However, caution is needed when interpreting meditational analyses as self-confidence may also be influenced by additional, extraneous variables (Fiedler, Schott, & Meiser, 2011).

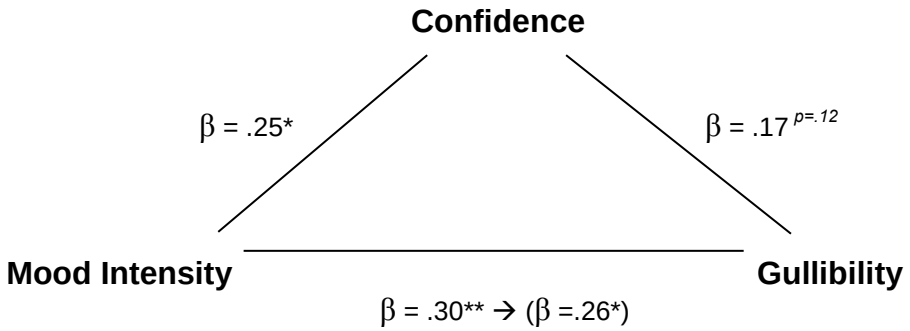

Figure 8. Model of mood influences on endorsing bullshit sentences as mediated by confidence in judgments: Positive mood was associated with more self-confidence in sentence evaluation ratings and this greater self-confidence was associated with more favourable ratings of nonsense sentences. The standardised regression coefficient between mood and sentence evaluation, controlling for confidence ratings, is in parentheses. *$p < .05$, ** $p < .01$

Considering the response latency, memory and self-confidence findings together, the data suggest that *both mood congruence* through bolstering self-confidence (Bower, 1981; Forgas, 1995; Schwarz & Clore, 1983) and *mood effects on information processing* styles (Bless & Fiedler, 2006) jointly influenced gullibility. Shorter processing latencies, impaired recall, and greater self-confidence in positive mood all correlated with increased gullibility. **Discussion**

These results provide clear evidence that transient mood can influence the level of gullibility or scepticism people display when evaluating ambiguous social messages, the way they assess communications from others, and infer meaning from ambiguous information. Deciding what to believe and whom to trust is one of the most difficult and cognitively demanding tasks we all face in everyday life. The data presented here broadly support our hypothesis that positive mood increases, and negative mood decreases gullibility and credulity. Most interestingly, mood also had a significant influence on people's accuracy at detecting deception. We found that sad people were better able than happy and neutral mood people to accurately identify lies. These results have some interesting theoretical and practical implications for understanding the influence of mood on

gullibility.

Theoretical implications. The evidence reviewed here extends previous work on mood effects on social cognitin phenomena in general, and impression formation in particular (Forgas &

Bower, 1987; Forgas et al., 1984) to the new domain of gullibility vs. scepticism, judgments about trust and veracity and the detection of deception. Veracity judgments in particular represent a demanding cognitive task that requires highly constructive processing (Forgas, 1995, 2002). Interestingly, it is just these kinds of indeterminate judgments that have been found to be particularly subject to mood-induced biases in the past (Fiedler, 2001; Forgas, 1994, 1995; Sedikides, 1995). Recent affect-cognition research suggests that negative affect generally contributes to a more accommodative, cautious, and attentive processing style, and also promotes the selective priming and greater accessibility of negative information in memory. Positive moods on the other hand tend to produce a more benign, confident and optimistic interpretation of complex social information, and reduced levels of suspiciousness as was found here (Forgas, 1999, 2002).

These results are also theoretically and empirically consistent with a growing body of literature highlighting the apparently beneficial and functional processing effects of negative mood for a variety of social cognitive tasks (Bless, 2001; Bless & Fiedler, 2006; Fiedler, 2001). In addition to priming negative information and increasing overall scepticism, negative affect also produced a specific advantage in sensitivity to detect deception. These cognitive benefits of negative affect can be understood in terms of the more accommodative, externally oriented processing style it induces (Bless & Fiedler, 2006) that reduces some judgmental errors, improves eyewitness accuracy, and

improves the efficacy of strategic communications such as persuasive messages (Forgas, 1998, 2007; Forgas et al., 2005).

Practical implications. Reducing gullibility in everyday social judgments is obviously highly desirable. Many professionals in the persuasion business, such as advertisers, salesmen and politicians are implicitly aware that putting recipients into a positive mood is likely to promote credulity and the subsequent acceptance of misleading or manipulative claims. The series of experiments described here provide some empirical support for this intuitive belief. However, the empirical evidence also holds out some hope that more critical thinking, a greater focus on concrete details and general scepticism can also be increased as a result of mild negative mood states. The ability to correctly detect truths and lies and avoid gullibility is of crucial importance in both our personal and professional lives. The present demonstration of a mood effect on gullibility vs. scepticism has some interesting practical implications. For example, realizing that positive mood increases, and negative mood decreases gullibility could be an important aspect of improving affective intelligence in everyday life, and could be incorporated in the training applied professionals (Ciarrochi et al., 2006).

Our findings may also help to highlight the potentially beneficial but counterintuitive effects of negative mood and the possible undesirable consequences of good mood in some real-life circumstances. There has been much emphasis on the various benefits of positive mood in the recent applied literature in clinical, organizational, counselling and health psychology (Ciarrochi et al., 2006). Happy people are often thought to be more creative, flexible, motivated and effective on a number of tasks (Forgas & George, 2001). Our findings, together with a growing number of recent experimental studies, suggest that positive affect is not always desirable. Several studies now show that people in a good mood are more likely to commit judgmental errors (Forgas, 1998; 2011; 2013), are more prone to eyewitness errors (Forgas et al., 2005), and are less effective persuaders

(Forgas, 2007). To this list we may now add another caveat: people in a positive mood may also be more gullible and less able to detect deception than are people in negative mood. These findings thus extend the recent literature on mood effects on cognition and judgments (Bless & Fiedler, 2006; Fiedler, 2001; Forgas, 2002) to the new domain of gullibility and veracity judgments, by showing that negative affect can produce desirable cognitive consequences in the performance of tasks such as the detection of deception.

We also need to be somewhat cautious in interpreting these results. Past evidence suggests that mood effects on cognition often depend on subtle contextual cues and the kind of processing strategy adopted by people in a given situation (Fiedler, 2001; Forgas, 1995, 2002; Forgas & Eich, 2013; Sedikides, 1995). For example, mood effects may be different or even absent when the deceptive communication is of direct personal relevance and people adopt more motivated processing strategies. Mood effects on gullibility vs. scepticism may also be highly sensitive to a variety of other pragmatic and situational variables such as the motivations, personality and affective intelligence of the individual. For example, Lane and DePaulo (1999) found that dispositionally dysphoric individuals were only better at detecting specific types of lies, namely false reassurances, perhaps because these are the type of deceptive communications they are likely to be exposed to themselves.

Future research may well explore mood effects on scepticism and veracity judgments in more complex and realistic interactive situations. Even though considerable effort was made here to make the situations realistic, real-life instances of gullibility and deception may vary in a number of respects. Fortunately, to the extent that our results were consistent across a number of dependent measures, and are consistent with existing affect-cognition theories (Forgas, 2006, 2007), we can be reasonably confident that the findings are reliable.

In addition to exploring non-specific mood effects, future studies may also look at the consequences of specific emotions, such as fear, disgust and anger on gullibility and scepticism (e.g., Lerner & Keltner, 2001). We know for example that fear and disgust are typically associated with avoidant behaviors, whereas anger tends to elicit aggression. It may well be that the specific behavioral tendencies associated with specific emotions also have a distinct influence on the tendency to trust or distrust communications from others, a promising topic for future investigations.

In summary, judging the veracity of interpersonal communications in everyday situations can be a demanding cognitive task that requires highly constructive processing strategies (Bond & DePaulo, 2006). Despite recent advances in affect research, we still know relatively little about how feelings impact on the degree of scepticism or gullibility people bring to the task, and their accuracy in detecting deception. These experiments extend recent research on affect and social cognition (Bower, 1981; Fiedler, 2001; Forgas, 1995, 2002) to the new domain of gullibility and distrust, and show that negative mood can increase, and positive mood decrease people's scepticism, and actual accuracy in detecting deceptive communications. Encouragingly, our findings seem highly consistent with recent affect-cognition theories (Bless, 2001; Fiedler, 2001; Forgas, 1995, 2002), and suggest that further research on affective influences on veracity judgments and the detection of deception should be of considerable theoretical as well as applied interest.

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