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Emotional awareness, gender, and suspiciousness

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Abstract

We investigated the causal relation between emotional awareness (EA) and suspiciousness, and whether this relation is moderated by gender. After inducing an unpleasant mood, we manipulated EA by having participants read one of two versions of a story (the high EA condition provided cues to what the participant was feeling and why, whereas the low EA condition did not). Following the manipulation, one sample of participants completed a measure of suspiciousness, and a second, independent sample of participants described their emotional state. Emotional Awareness Condition $\times$ Gender effects were obtained for suspiciousness and EA. Men in the low EA condition reported significantly higher levels of suspiciousness and lower levels of EA than men in the high EA condition. Women in both conditions reported equally high levels of EA, which were greater than those of men in both conditions, and the manipulation did not affect their levels of suspiciousness.

There is broad consensus that emotions directly affect judgment, decision making, and information processing (Clore, Gasper, & Garvin, 2001; Gasper & Clore, 2000; Kahneman & Ritov, 1994; Lowenstein, Weber, Hsee, & Welch, 2001). Thus, it should come as no surprise that theorists have long posited a relation between emotions and delusional and peculiar beliefs (e.g., Kraepelin, 1899/1989). In fact, unpleasant emotions are primary components of several contemporary models of delusions, including persecutory delusions (e.g., Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002; Zigler & Glick, 1988). In support of these theories and models, empirical research examining clinical populations has found a relation between persecutory delusions and unpleasant emotions such as depression, fear, worry, and anger (e.g., Freeman & Garety, 1999; Kennedy, Kemp, & Dyer, 1992). Similarly, several studies conducted with non-clinical populations have also found a relation between suspiciousness (which we distinguish from paranoia as being of less than delusional severity), and unpleasant emotions, such as general unhappiness, depression, anger, and social anxiety (e.g., Martin & Penn, 2001; Rawlings & Freeman, 1996).

That there is an association between suspiciousness/paranoia and increased levels of unpleasant affect is not in doubt. However, the experience of unpleasant affect may be only one of several facets of emotional experience that contribute to the development and maintenance of suspiciousness/paranoia. Models of paranoia have typically focused on excesses of unpleasant affect as a causal factor. We posit that emotional awareness (EA) is a second facet of emotional

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experience that contributes to the development and maintenance of suspiciousness/paranoia. EA is an individual differences construct that consists of two dimensions (Coffey, Berenbaum, & Kerns, 2003; Gohm & Clore, 2000, 2002): (1) attention to emotions is the extent to which a person attends to his/her emotional experience and uses this information; and (2) clarity of emotions is the extent to which a person can identify, discriminate between (e.g., anger versus anxiety), and understand what they are feeling and why. Past research (Coffey et al., 2003) has found that these two dimensions underlie related constructs such as emotional intelligence and alexithymia (which is characterised by problems in understanding and using emotions; Berenbaum, 1996).

Being aware of and clear about one's emotions is generally presumed to be adaptive (e.g., Berenbaum, Raghavan, Le, Vernon, & Gomez, 2003; Gohm & Clore, 2002). One adaptive function of emotions is that they help the individual to accurately make sense of the world and provide meaning. We hypothesise that individuals with problematic patterns of EA may develop peculiar beliefs (i.e., beliefs that deviate from the ordinary and have less evidence to support their existence; Berenbaum, Kerns, & Raghavan, 2000), including suspicious and paranoid beliefs, because they serve as explanations, albeit inaccurate or invalid, of emotional arousal for which the source and the specific type of emotion (e.g., anxiety, anger) are unclear. In doing so, these beliefs make sense of the world and provide meaning.

The results of two recent empirical studies are consistent with our hypothesis concerning a link between EA and suspiciousness/paranoia. Cedro, Kokoszka, Popiel and Narkiewicz-Jodko (2001) found that compared to healthy controls, patients diagnosed with paranoid schizophrenia had significantly higher levels of alexithymia. In both a community sample and a college student sample, Berenbaum and colleagues (Berenbaum, Boden, Baker, Dizen, Thompson, & Abramowitz, in press) found that individuals who were unclear about their emotions tended to report higher levels of suspiciousness. These findings suggest that emotions, and EA, may contribute to the development of suspiciousness/paranoia.

The results of past research suggest that compared to women, men may have lower levels of EA and may also have higher levels of suspiciousness/paranoia. A large literature has documented gender differences in several facets of emotion (e.g., Kring & Gordon, 1998; Lang, Greenwald, Bradley, & Hamm, 1993). Of particular relevance to the present research is that researchers have generally found gender differences in EA (Ciarrochi, Hynes, & Crittenden, 2005; Lindholm, Lehtinen, Hyypä, & Puukka, 1990; Parker, Taylor, & Bagby, 1989, 2003; Salminen, Saarijärvi, Aarela, Toikka, & Kauhanen, 1999). These studies have found that men tend to have lower EA than women. Using a motivation manipulation, Ciarrochi and colleagues (2005) found that men who were motivated to become more emotionally aware could achieve a level of EA similar to unmotivated women. However, overall mean levels of EA for both motivated and unmotivated women were still higher than mean levels of EA for either motivated or unmotivated men. Although the results of past research have not been consistent, there is some evidence of men having higher levels of suspiciousness and paranoia (e.g., American Psychiatric Association, 1994; Millon & Davis, 1996; Sperry, 1996; von Gemmingen, Sullivan, & Pomerantz, 2003). That women tend to have higher levels of EA and possibly also lower levels of suspiciousness/paranoia, suggests the possibility that low levels of EA may play a role in the development of suspiciousness and paranoia. It also led us to hypothesise that the impact of an EA manipulation (on levels of both EA and suspiciousness) would be moderated by gender.

In the present research, we attempted to further explore the relation between EA and suspiciousness using a true experiment. One of the values of true experiments in analogue populations is the relative strength of the inferences that can be made in regard to the cause of the experimental results, which are typically thought to model psychopathological processes

(e.g., Barch & Berenbaum, 1994; Sher & Trull, 1996). We hypothesised that a manipulation of EA would lead to variations in levels of suspiciousness among college students, and that this effect would be moderated by gender. We further hypothesised that using the same experimental manipulation in an independent sample would lead to variations in levels of EA, and that this effect would also be moderated by gender. In other words, an independent sample was used to test the validity of our experimental manipulation.

Consistent with previous findings that show that women are more emotionally aware than men, but that men can be made more emotionally aware through intervention, along with our hypothesis that EA plays a causal role in the development of suspiciousness, we hypothesised that after being emotionally aroused: (1) men in a high EA condition (i.e., who were provided with information concerning what specific emotion they may be feeling and why) would be more aware of their emotions than would men in a low EA condition; (2) men in a high EA condition would report lower levels of suspiciousness than would men in a low EA condition; and (3) the EA manipulation would not affect women's levels of EA or suspiciousness (since they would have moderate levels of EA even in the low awareness condition).

METHOD

Overview

To investigate the validity of our experimental manipulation, we examined the effects of gender and the EA manipulation on EA. In an independent sample, using the same experimental manipulation, we examined the effects of an EA manipulation, as well as gender, on suspiciousness. The reason we examined the effects of the manipulation on EA and suspiciousness in independent samples, rather than assessing the effects of the manipulation on both EA and suspiciousness in the same sample, is that it seemed quite plausible that measuring EA could influence the later measurement of suspiciousness, and that measuring suspiciousness could influence the later measurement of EA.

Participants

Sample 1—We examined in Sample 1, the effects of the EA manipulation on EA. Ninety participants (50% female) from a large Midwestern university participated in this study for course credit. Participants ranged in age from 17 to 22 years ($M = 18.8$, $SD = 1.1$). Most (64.4%) of the participants were Caucasian/White, followed by Asian/Asian Americans (14.4%), African American (5.5%), and Latina/Latino (2.2%).

Sample 2—We examined in Sample 2, the effects of the EA manipulation on suspiciousness. One hundred and twenty participants from a large Midwestern university participated in this study for course credit. Due to incomplete data, two participants were excluded from all further analyses leaving a total N of 118 (57% female). Participants ranged in age from 17 to 23 years ($M = 18.9$, $SD = 1.0$). Most (78.5%) of the participants were White, followed by Asian/Asian Americans (11.7%), Hispanic/Latina/Latino (5.9%), and African American (0.8%).

Procedure

The procedures were almost identical for both samples. We induced an unpleasant mood and then we manipulated EA (see below for details). Following the manipulation of EA we assessed EA in sample 1 and suspiciousness in sample 2; the two groups were treated almost identically in all other respects. As a cover story, participants were told that they would be participating in a study measuring the relations between spatial skills, personality, and attitudes toward hypothetical characters in stories they would read. A single undergraduate research assistant conducted each experimental session. Eleven different research assistants worked on this study; female research assistants tested 83% of participants.

Mood induction

We used a unpleasant mood induction similar to one used by Berenbaum and Irvin (1996) in which the experimenter (who had extensive training) arrived late, and in which participants repeated a boring and effortful letter cancellation task due to the experimenter's incompetence (see Berenbaum & Irvin, 1996, for additional details regarding the mood induction). To further induce an unpleasant mood, the experimenter interacted with participants in a rude and hostile manner. The experimenter was instructed to avoid eye contact at all times, to answer all questions with the least amount of information possible or with the phrase, "Don't worry about it", and to present all materials to the participants by tossing them in their general direction.

Manipulation of emotional awareness

Following the mood induction we manipulated EA. The reason that we were able to manipulate EA is because even though the source of the unpleasant affect induced by the mood manipulation was not secretive or mysterious, the literature on EA (e.g., alexithymia and emotional intelligence) has revealed that not nearly all individuals pay a lot of attention to their emotions and not nearly all individuals are very clear about their emotions (Coffey et al., 2003; Gohm & Clore, 2000, 2002).

Participants were randomly assigned to one of two experimental conditions, high and low EA. In the high awareness condition participants were provided with information that we expected would make them more aware of their emotions and the antecedents of these emotions. In the low EA condition participants were not provided with any information regarding their emotions or their antecedents. We manipulated EA as a whole, rather than manipulating individual facets, because clarity of emotions cannot be manipulated independently of attention to emotions since providing information that would clarify emotions would automatically draw attention to them.

We manipulated EA in the context of stories that the participants read. There were two versions of the story, each written from the second-person point-of-view (e.g., "You are responsible and hard working ... You always help your friends and family whenever they need it") in an attempt to have the participants project themselves into the story as the central character. The two versions of the story were each 12 sentences long and were identical except for 2 sentences that varied between them. As shown in Table 1, the sentences differ in regard to the experience of the central character: in the high EA condition the central character is mistreated by a person in power, which results in anger (in order to parallel and thereby clarify the anticipated emotional experience of participants in this study), whereas in the low EA condition the person in power does not mistreat the central character and there is no mention of emotions.

After reading the story, participants made ratings of several characters in the story including the central character. This was done as part of the cover story for the experiment and to facilitate participants' attention to the stories. To reinforce the cover story, after reading the story that served as the manipulation of EA, participants read one (for sample 1) or three (for sample 2) additional stories that were identical for each group, and that were written from the second-person point-of-view, as was the first story. These stories did not contain any references to emotions. Participants read these stories and completed their ratings of the characters in less than 10 minutes, on average.

Emotional awareness

In sample 1, the dependent variable was EA. Participants were asked to answer the following open-ended question: "What are you feeling right now?" Two judges, who were blind to participant gender and condition, independently rated whether the participant reported feeling angry (as indicated by the use of the word "angry" or other words or phrases, such as "annoyed", that were indicative of anger). Interrater reliability was excellent ($\kappa = 0.92$). Discrepant

ratings ($N = 3$, out of 90) were resolved through discussion, and a single dichotomous anger variable was formed. In addition, to rule out the possibility that the EA manipulation influenced the intensity of emotional experience (in addition to, or instead of, EA), the same two judges who provided anger ratings also rated the overall intensity of the emotional state that the participants reported, using a 5-point scale (0 = *not at all*; 4 = *extremely*). This was done by examining all words, including but not limited to anger words and phrases, and rating intensity based on a combination of the number of emotional terms reported and the intensity of the individual terms. Interrater reliability, measured using an intraclass correlation (Shrout & Fleiss, 1979) treating raters as random effects and the mean of the raters as the unit of reliability, was .90.

Suspiciousness

In sample 2, the dependent variable was suspiciousness. To measure suspiciousness, participants completed the Paranoia Scale (Fenigstein & Vanable, 1992). This scale is composed of 20 items (e.g., “Someone has it in for me” and “It is safer to trust no one”). Items are answered using a 5-point scale (1 = *not at all applicable*, 5 = *extremely applicable*). The Paranoia Scale showed adequate inter-item reliability ($\alpha = .86$), and in previous research has been found to have good psychometric properties and reasonable evidence of convergent and discriminant validity (Fenigstein & Vanable, 1992).

RESULTS

To investigate the validity of our experimental manipulation, we examined the effects of gender and the EA manipulation on EA. To do this we conducted an Emotional Awareness (high vs. low) $\times$ Gender (male vs. female) binary logistic regression. The logistic regression analysis revealed a trend for reported anger to be influenced by manipulation condition ($\beta = -2.11$, $p < .07$) along with a trend for an interaction between sex and condition ($\beta = 2.23$, $p < .09$). To explore the interaction, we conducted separate analyses on men and women. Among men, there was a statistically significant effect of condition, $\chi^2(1, N = 45) = 4.50$, $p < .05$; $\Phi = .32$), whereas among women there was not, $\chi^2(1, N = 45) = .04$, ns . As depicted in Figure 1, as hypothesised, males in the low EA condition were significantly less likely to report anger than males in the high EA condition. In contrast, women in the low EA condition and women in the high EA condition reported similar levels of anger. Finally, as hypothesised, men in both low and high EA conditions reported less anger than women in either the low or high EA conditions.

To examine whether the EA manipulation influenced the intensity of emotional experience, we conducted an Emotional Awareness (high vs. low) $\times$ Gender (male vs. female) analysis of variance (ANOVA). We found no differences in overall intensity of emotions reported by males versus females, $F(1, 86) = 0.02$, ns , or by participants in the high EA condition versus the low EA condition, $F(1, 86) = 0.18$, ns . Furthermore, there was no evidence of an Awareness Condition $\times$ Gender interaction, $F(1, 86) = 0.50$, ns .

The primary goal of the study was to test the effects of gender and the EA manipulation on suspiciousness. To do this we conducted an Emotional Awareness (high vs. low) $\times$ Gender (male vs. female) ANOVA. Table 2 includes descriptive statistics for suspiciousness for each condition. We found a main effect for EA condition, $F(1, 114) = 6.58$, $p < .05$, but no main effect for gender. In addition, we found a significant interaction between gender and EA, $F(1, 114) = 8.90$, $p < .005$. To explore the interaction, we conducted a series of t -tests. It was found that among males there was a significant condition effect, $t(48) = 3.55$, $p < .001$; Cohen's $d = 0.99$. As depicted in Figure 2, as hypothesised, males in the low EA condition reported significantly more suspiciousness than did males in the high EA condition. In contrast, females in the low EA condition did not report more suspiciousness than did females in the high EA condition, $t(66) = 0.33$, ns . It was also found that within the low EA condition there was a

significant gender effect, $t(57) = 3.07, p < .005$; Cohen's $d = 0.79$. Again, as hypothesised and depicted in Figure 2, men in the low EA condition reported significantly more suspiciousness than females in the low EA condition. In the high EA condition there was not a significant gender effect, $t(57) = 1.17, ns$.

DISCUSSION

Using a true experiment, we found that higher levels of suspiciousness were associated with lower levels of EA, which is consistent with the results of previous correlational research (Berenbaum et al., in press; Cedro et al., 2001). As stated by Sher and Trull (1996), experimental manipulations are valuable primarily in regard to the internal validity concerning etiological processes that are related to the dependent variables. Unlike past research, which was correlational in nature, the present study demonstrates that EA can play a *causal* role in the development of suspicious beliefs.

We are confident, though by no means certain, that we succeeded in manipulating EA, and it is the manipulation of EA (rather than something else that was not intended) that influenced levels of suspiciousness. One reason we are confident is that the results matched our theoretical expectations. A second reason is that we found that the manipulation led to group differences in one dimension of EA, or emotional clarity—men in the high awareness condition were significantly more likely to report feeling angry than were men in the low awareness condition (and it was among men that the manipulation led to group differences in suspiciousness). We must acknowledge, however, that these anticipated group differences in reports of anger are not sufficient to prove that the manipulation influenced EA. The final reason we are confident that the critical element of the manipulation concerned EA is that we found that the manipulation did not affect global intensity of emotional experience, thus ruling out the most likely alternative explanation. Another potential explanation for our findings is that men in the high EA condition may have experienced lowered feelings of self-worth, competence, and self-esteem after reading the story in which the main character is criticised. Therefore, they may have reacted to these threats to their self-worth with more anger than women, who either were not as sensitive to these threats or who were just as sensitive but did not react to them with anger. While we are confident that we succeeded in manipulating EA, future research will be needed to rule out this and other potential confounds.

Consistent with past research (e.g., Lindholm et al., 1990; Parker et al., 1989, 2003; Salminen et al., 1999), we found that women have higher levels of EA than men. In fact, consistent with the results of Ciarrochi and colleagues (2005), we found that even with help, men still did not reach the same level of EA reached by women. These results are also consistent with past research that has found that lower levels of EA (specifically, emotional clarity) are associated with paranoia (Berenbaum et al., in press). That the Manipulation $\times$ Gender effects for emotional clarity mirrored the Manipulation $\times$ Gender effects for suspiciousness provides clues to understanding the roles of both gender and EA in suspiciousness. Specifically, we found that men in the low EA condition reported less EA and greater suspiciousness than men in the high EA condition, whereas women in high and low EA conditions did not vary in terms of EA or suspiciousness. These results suggest that suspiciousness may result from low EA, and especially a lack of clarity about emotions. Among men, the EA manipulation was successful and was associated with increased suspiciousness, thereby implying a causal role for EA. Among women, the EA manipulation was not successful and was not associated with increased suspiciousness. This raises two possibilities concerning gender differences in the etiology of suspiciousness. One possibility is that EA is equally important for men and women in the development of suspiciousness, but that men become suspicious as a result of being unclear about anger (which was induced in the present research), whereas women become suspicious as a result of being unclear about other emotions, such as fear, which were not induced in this

study. Another possibility is that factors other than EA play a larger role in the development of suspiciousness for women than for men. For example, perceptions of diminished power and control (which may reflect objective gender differences in power and control) may play a larger role for women than for men.

Additional research will be necessary to determine which specific facets of EA (e.g., attention to, and clarity of, emotion) contribute to which specific kinds of peculiar beliefs and delusions. It will also be important to explore potential moderators and mediators of the link between EA and peculiar beliefs. One such candidate is the attributions people make. For example, increased levels of suspiciousness in males in the low EA condition may have been caused by their misattributing the source of their unpleasant emotions to other people (i.e., people other than the experimenter) being “out to get them”. In other words, suspiciousness, albeit an inaccurate reflection of their current context, may have served as an explanation that made sense of emotional arousal for men in the low EA condition. In contrast, males in the high EA condition may have correctly attributed their unpleasant emotions to the experimenter and hence did not exhibit elevated levels of suspiciousness. We are optimistic that future research delineating how, when, and why EA influences a variety of cognitive phenomena, such as attributions and judgments, will help us understand the development of suspiciousness as well as other peculiar beliefs and delusions. Additional research also will be necessary to verify whether EA plays a causal role in the development of a variety of beliefs, including paranoid delusions and peculiar beliefs. We hypothesize that EA does indeed play a causal role in the development of a variety of beliefs that are similar to suspiciousness. This hypothesis would complement contemporary models of paranoid delusion formation and maintenance, which have typically posited that unpleasant emotions contribute to the development and maintenance of persecutory delusions (e.g., Freeman et al., 2002; Zigler & Glick, 1988). Ethical constraints will prevent researchers from conducting true experiments intended to elicit or increase levels of delusions and peculiar beliefs in clinical samples. Two strategies that may be useful in addition to cross-sectional correlational designs will be the use of prospective longitudinal designs and treatment studies that test whether improving EA decreases paranoid delusions or peculiar beliefs.

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Figure 1.
Percentage of males and females in high and low EA conditions reporting anger.

Figure 2.
Mean levels of suspiciousness ($\pm SEM$) for males and females in high and low EA conditions.

TABLE 1

The two sentences that vary between the two versions of the story

Emotional awareness condition		
	High	Low
Sentence 1	The professor proceeds to criticise you both, and especially you, for the inferior job you did on the project and then tells you that you are a poor assistant.	You both have to meet with him to discuss the results of the project, and this meeting lasts for one hour.
Sentence 2	You are extremely upset and angry because you have been taken advantage of.	You walk at a quick pace, almost losing your friend in small crowds that are lingering in the quad.

TABLE 2Descriptive statistics for each Gender $\times$ Emotional Awareness (EA) condition in sample 2

	N	Range	M	SD
Male	Low EA 27	1.45–3.35	2.29	0.47
	High EA 23	1.20–3.15	1.83	0.44
Female	Low EA 32	1.30–3.15	1.93	0.42
	High EA 36	1.00–3.00	1.97	0.44