

## Emotional Correlates of the Different Dimensions of Schizotypal Personality Disorder

Howard Berenbaum, M. Tyler Boden, John P. Baker, Muge Dizen,  
Renee J. Thompson, and Adrienne Abramowitz  
University of Illinois at Urbana–Champaign

Two studies explored which different dimensions of schizotypal personality disorder (SPD) were associated with negative affect, attention to emotions, clarity of emotions, and emotional intensity/instability. Study 1 included 247 college students, and questionnaires were used to measure SPD. Study 2 included 225 community residents, oversampling for individuals with elevated levels of SPD, and semistructured diagnostic interviews were used to measure SPD. In both studies (a) higher levels of negative affect were associated with higher levels of both cognitive–perceptual and interpersonal symptoms, (b) cognitive–perceptual disturbances were associated with greater attention to emotion, whereas interpersonal disturbances were associated with less attention to emotion, and (c) lower levels of emotional clarity were associated with higher levels of suspiciousness.

*Keywords:* schizotypal personality disorder, suspiciousness, emotional awareness, emotion

There is a long history of psychopathologists hypothesizing that schizophrenia symptoms, particularly delusions, are a consequence of disturbed emotional processes. Such theorizing has been particularly prominent in European psychiatry, dating back to Bleuler (see Winters & Neale, 1983, for a review) and continuing to the present (e.g., Ciompi, 1997). We believe there are several reasons to expect emotions to play a significant role in influencing schizotypal personality disorder (SPD), which belongs to the schizophrenia spectrum, and the peculiar perceptions and beliefs that are central to SPD. Emotions directly affect cognitive processes such as attention (see Matthews & Wells, 2002, for a review) and memory (see Ellis & Moore, 1999, for a review). In addition, several researchers have proposed that emotions play a significant role in influencing judgments, decision making, and behaviors (e.g., Clore, Gasper, & Garvin, 2001; Kahneman, 2003; Kahneman, Ritov, & Schkade, 1999; Lowenstein, Weber, Hsee, & Welch, 2001). Recently, for example, Blanchette and Richards (2004) found that participants were more likely to draw invalid inferences in a conditional reasoning task when the stimuli used in the task were emotionally salient than when the words were not emotionally salient.

In terms of emotional processes, most of the theorizing and research on peculiar perceptions and beliefs (including delusions), as well as SPD, has focused on elevated levels of unpleasant emotions, such as sadness, anger, and anxiety (e.g., Bentall, Cor-

coran, Howard, Blackwood, & Kinderman, 2001; Bentall, Kinderman, & Kaney, 1994; Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002). However, as described by Berenbaum, Raghavan, Le, Vernon, and Gomez (2003), excesses in unpleasant emotions are just one of a variety of different emotional disturbances. In addition to examining negative affect (NA), the present study also examined (a) two facets of emotional awareness, attention to emotions and clarity of emotions, which are prominent aspects of several related constructs such as emotional intelligence and alexithymia (Coffey, Berenbaum, & Kerns, 2003; Gohm & Clore, 2000), and (b) emotional intensity/instability, as indexed by measures of affect intensity and affective instability (found in past research to be associated with each other; Emmons & King, 1989; Koenigsberg et al., 2002; Larsen, 1987; Larsen & Diener, 1987). Several theorists have pointed out the importance of having access to one's own feelings, the ability to discriminate among these feelings, and being able to label one's feelings (e.g., Bagby, Taylor, & Parker, 1994; Gardner, 1983; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) as facets of emotional processing that are important in order to use adaptively the information conveyed by one's emotions. Attention to emotions refers to the extent to which one notices, thinks about, and monitors one's moods. Clarity of emotions refers to how clearly one understands one's emotions, discriminates among one's feelings, and knows what one feels. Past research (e.g., Gohm & Clore, 2000, 2002) that has explored the dimensions of emotional experience has found that attention to and clarity of emotion are distinct from other facets of emotional experience such as absorption, intensity, and emotional expression.

The results of past research have suggested that individual differences in attention to emotion may be particularly important for understanding the cognitive–perceptual dimension of SPD. Gasper and Clore (2000) found that emotions influence judgments more strongly for individuals high in attention to emotions than for individuals low in attention to emotions. In addition, three separate

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Howard Berenbaum, M. Tyler Boden, John P. Baker, Muge Dizen, Renee J. Thompson, and Adrienne Abramowitz, Department of Psychology, University of Illinois at Urbana–Champaign.

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Correspondence concerning this article should be addressed to Howard Berenbaum, Department of Psychology, University of Illinois at Urbana–Champaign, 603 East Daniel Street, Champaign, IL 61820. E-mail: hberenba@uiuc.edu

studies have found evidence of peculiar perceptions and beliefs being associated with the processing of emotional information. Kerns and Berenbaum (2000), in the context of a word pronunciation task, found that individuals who had deviantly high levels of peculiar beliefs and perceptions were more strongly influenced than were control participants by the emotional valence of prime words. More recently, Mohanty et al. (2003) found that individuals with higher levels of peculiar beliefs and perceptions were more strongly influenced by the emotional content of Stroop stimuli. Our interpretation of these findings is influenced by Coffey et al. (2003), who found that individuals who were more strongly influenced by the emotional content of Stroop stimuli tended to report higher levels of attention to emotions. Thus, we posit that what accounts for the findings of both Kerns and Berenbaum (2000) and Mohanty et al. (2003) is that individuals who pay more attention to their emotions are prone to develop higher levels of peculiar beliefs and magical thinking (which would explain why individuals with high levels of peculiar beliefs were more strongly influenced by the emotional valence of prime words and by the emotional content in the emotional Stroop task). Recently, Kerns (2005) found that individuals with deviantly high levels of positive schizotypy reported paying more attention to their emotions than did control participants.

In addition to examining the degree to which individuals attend to their emotions, we also examined how clear individuals are about their own emotions. Past research has found that lower levels of emotional clarity are associated with higher levels of neuroticism and NA (e.g., Coffey et al., 2003; Gohm & Clore, 2002; Le, Berenbaum, & Raghavan, 2002), both of which have been found to be associated with the schizophrenia spectrum, including SPD, and with the cognitive-perceptual symptoms that are a part of the schizophrenia spectrum (e.g., Berenbaum & Fujita, 1994; Berenbaum, Valera, & Kerns, 2003; Muntaner, Garcia-Sevilla, Fernandez, & Torrubia, 1988; Norman, Malla, Cortese, & Diaz, 1998). Kerns (2005) found that individuals who had deviantly high levels of positive schizotypy had lower levels of emotional clarity than did control participants. Thus, there are several reasons to suspect that peculiar beliefs may be associated with lower levels of emotional clarity.

There were several reasons why we felt it was important to also examine emotional intensity/instability in the present research. First, past research has typically found that emotional intensity/instability is associated with elevated levels of NA (e.g., Eid & Diener, 1999; Larsen & Diener, 1987), and we wished to explore the degree to which NA was associated with SPD above and beyond other potentially relevant facets of emotion. Second, emotional intensity/instability is a central feature of borderline personality disorder, and borderline personality disorder tends to overlap with SPD (e.g., George & Soloff, 1986; Kavoussi & Siever, 1992; Stuart et al., 1998). Two recent studies have examined the relation between affect intensity and schizotypal traits in samples of college students. Williams and Barry (2003) found that affect intensity was significantly associated with cognitive-perceptual and disorganization symptoms, but not with SPD interpersonal symptoms. In contrast, Kerns (2005) found that individuals with deviantly high levels of positive schizotypy did not differ significantly from control participants in their levels of affect intensity. Although the results of Williams and Barry (2003) and Kerns (2005) differed in terms of whether there was a statistically significant

association between schizotypal traits and affect intensity, the magnitude of the associations were similar (the effect size in the Kerns study was  $r = .20$ , whereas the correlations with cognitive-perceptual and disorganization symptoms in the Williams and Barry study were .30 and .22, respectively).

Although our primary interest was in the peculiar perceptions and beliefs associated with SPD (e.g., odd beliefs and magical thinking, unusual perceptual experiences, suspiciousness), we also examined the other features of SPD, such as interpersonal disturbances (e.g., absence of close friends) and disorganized behavior (e.g., odd speech). Given the role played by emotion in so many aspects of human functioning, including its important role in social functioning (e.g., Keltner & Kring, 1998), it seemed rather likely that different facets of emotion would be associated with the interpersonal symptoms of SPD. It also seemed plausible that different facets of emotion would be associated with SPD disorganized behavior. In addition to examining interpersonal and disorganized symptoms for their own sake, doing so also enabled us to explore whether different facets of emotion, such as attention to emotion, are associated in similar ways with all undesirable outcomes or whether there is some degree of specificity in how different facets of emotion are associated with different dimensions of psychopathology.

The goal of the present research was to examine the emotional correlates of the different dimensions of SPD. To our knowledge, the studies we report in this article are the first to examine in the same sample the relation between all of the different dimensions of SPD and all of the following: NA, attention to emotions, clarity of emotions, and emotional intensity/instability. In addition to examining the degree to which these different facets of emotion are associated with SPD, we also examined the degree to which each of these different facets of emotion are associated with SPD when taking the other facets into account. This is important because the different facets of emotional disturbance (e.g., NA and emotional intensity/instability) tend to be associated, and it is possible that some associations found in past research might be largely the result of shared variance among different facets of emotional disturbance (e.g., the association between affect intensity and SPD could be driven largely by the association between affect intensity and NA).

## Study 1: College Student Sample

### *Method*

#### *Participants*

Participants were 247 undergraduates (51.2% female) who ranged in age from 17 to 28 ( $M = 18.9$ ,  $SD = 1.4$ ). Of those participants who specified their race/ethnicity, the majority (79.8%) were European American. In addition, 7.9% were African American, 6.9% were Asian American or Asian, 3.0% were Latina/o, and 2.5% were from various other ethnicities. Participants received course credit for their participation in the study.

#### *Procedure*

Participants completed a series of questionnaires, described below, during a single session.

*SPD.* The Schizotypal Personality Questionnaire (SPQ; Raine, 1991) was used to measure SPD. The SPQ is composed of nine subscales representing the nine diagnostic criteria for SPD: (a) Ideas of Reference (9

items; e.g., "Do you sometimes feel that things you see on the TV or read in the newspaper have a special meaning for you?"), (b) Odd Beliefs or Magical Thinking (7 items; e.g., "Are you sometimes sure that other people can tell what you are thinking?"), (c) Unusual Perceptual Experiences (9 items; e.g., "Have you often mistaken objects or shadows for people, or noises for voices?"), (d) Suspiciousness (8 items; e.g., "I feel I have to be on my guard even with friends"), (e) Excessive Social Anxiety (8 items; e.g., "I get very nervous when I have to make polite conversation"), (f) No Close Friends (9 items; e.g., "I have little interest in getting to know other people"), (g) Constricted Affect (8 items; e.g., "I do not have an expressive and lively way of speaking"), (h) Odd or Eccentric Behavior (7 items; e.g., "People sometimes comment on my unusual mannerisms and habits"), and (i) Odd Speech (9 items; e.g., "I sometimes jump quickly from one topic to another when speaking"). Individuals respond to each item on the SPQ using a True/False format. Higher scores reflect greater SPD severity.

Descriptive statistics, internal consistencies, and correlations among the nine SPQ scales are presented in Table 1. As expected, many of the SPQ scales were significantly correlated. Past factor analytic research has typically found that SPD is composed of three dimensions: cognitive-perceptual disturbances, interpersonal disturbances, and disorganization (e.g., Raine et al., 1994; Reynolds, Raine, Mellinger, Venables, & Mednick, 2000). When different factor structures emerge, it is typically the case that there is a separate suspiciousness/paranoia factor (e.g., Stefanis et al., 2004; Suhr & Spitznagel, 2001). This is not entirely surprising given that in the typical three-factor solution, suspiciousness appears as an indicator of both cognitive perceptual and interpersonal disturbances. Therefore, we computed four separate SPD dimension scores: cognitive-perceptual disturbances (composed of Ideas of Reference, Odd Beliefs or Magical Thinking, and Unusual Perceptual Experiences), interpersonal disturbances (composed of Excessive Social Anxiety, No Close Friends, and Constricted Affect), disorganization (composed of Odd or Eccentric Behavior and Odd Speech), and suspiciousness (composed only of the Suspiciousness scale). In other words, we did not include suspiciousness in the cognitive-perceptual or interpersonal scores, but instead examined it separately.

*Emotional clarity and attention.* Emotional clarity and attention were assessed using the relevant subscales of the Trait Meta-Mood Scale (TMMS; Salovey et al., 1995). The 14-item Attention scale assesses the amount of awareness and thought that individuals allocate to their emotions (e.g., "I often think about my feelings," "I pay a lot of attention to how I feel"). The 10-item Clarity scale assesses the degree to which individuals

are able to understand and identify their feelings (e.g., "I am rarely confused about how I feel," "I almost always know exactly how I am feeling"). Individuals rated each item on the TMMS on a 5-point scale ranging from *strongly agree* to *strongly disagree*. The internal consistencies of the TMMS Attention and Clarity scales were .86 and .79, respectively. Self-report measures of attention to emotion and clarity of emotion, including the TMMS, have been found to be associated in theoretically predicted ways with scores on other self-report questionnaires (see Gohm & Clore, 2002, for a review), as well as with behavioral/performance-based measures (e.g., Coffey et al., 2003; Dizen, Berenbaum, & Kerns, 2005; Gasper & Clore, 2000).

*Affect intensity.* The Affect Intensity Measure (AIM; Larsen, Diener & Emmons, 1986) is a 40-item questionnaire that measures trait levels of affect intensity. Sample items from the AIM are "When I feel guilt, this emotion is quite strong," and "My emotions tend to be more intense than those of most people." Individuals respond to each item on the AIM using a 6-point scale ranging from *never* (1) to *always* (6). The AIM has been shown to have good internal consistency, test-retest reliability, and good discriminant validity (Larsen et al., 1986). Internal consistency of the AIM in this sample was .91.

*Trait negative affect.* The Negative Affect scale from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), was supplemented with five other emotion words (i.e., downhearted, sad, discouraged, fearful, and angry) to measure trait NA. The Unpleasant Affect scale of the PANAS consists of 10 items assessing unpleasant affect (e.g., jittery, guilty, ashamed). Individuals indicate the extent to which each emotion was felt using a 5-point scale ranging from *very slightly or not at all* (1) to *extremely* (5). Trait levels of unpleasant affect were assessed by asking the participants to describe how they felt "in general." Internal consistency of this NA measure in the present sample was .88.

## Results

Correlations among the four SPD dimension scores, as well as the four emotion scores (i.e., NA, affect intensity, attention to emotion, and clarity of emotion), are presented in Table 2. It is not surprising that all of the SPD dimension scores were significantly correlated with each other. Also, several of the emotion scores were significantly correlated. Specifically, higher levels of NA

Table 1  
Descriptive Statistics, Internal Consistencies, and Correlations Among the 9 SPQ Scales Used in Study 1

Scale	1	2	3	4	5	6	7	8	9
1. Ideas of reference	—								
2. Odd beliefs	.39**	—							
3. Unusual perceptions	.50**	.57**	—						
4. Suspiciousness	.63**	.13*	.33**	—					
5. Odd/eccentric behavior	.26**	.25**	.36**	.33**	—				
6. Odd speech	.36**	.20**	.43**	.44**	.49**	—			
7. No close friends	.13*	-.08	.10	.33**	.26**	.21**	—		
8. Constricted affect	.14*	.04	.04	.34**	.34**	.39**	.63**	—	
9. Social anxiety	.26**	.16*	.25**	.29**	.19**	.29**	.44**	.43**	—
Statistic									
<i>N</i>	244	243	246	245	247	244	243	246	245
<i>M</i>	3.5	1.3	2.2	2.1	1.7	2.9	1.8	1.5	3.0
<i>SD</i>	2.4	1.6	1.9	2.0	2.0	2.2	1.9	1.6	2.3
Range	0–9	0–6	0–9	0–8	0–7	0–9	0–8	0–7	0–8
Alpha	.75	.73	.68	.75	.83	.75	.71	.67	.79

Note. SPQ = Schizotypal Personality Questionnaire.  
\*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed.

Table 2  
Correlations Among the SPD Dimension and Emotion Scores in Study 1

Variable	1	2	3	4	5	6	7	8
1. Cognitive-perceptual	—							
2. Interpersonal	.23**	—						
3. Disorganized	.46**	.38**	—					
4. Suspiciousness	.48**	.39**	.45**	—				
5. Clarity of emotions	-.24**	-.30**	-.30**	-.29**	—			
6. Attention to emotions	.17**	-.29**	-.03	-.06	.05	—		
7. Negative affect	.31**	.41**	.31**	.42**	-.40**	-.06	—	
8. Affect intensity	.23**	-.06	.21**	.12	-.12	.54**	.21**	—

Note. SPD = schizotypal personality disorder.

\*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed.

were associated with less emotional clarity and greater affect intensity. Higher levels of affect intensity were also associated with greater attention to emotion. Consistent with past research (e.g., Coffey et al., 2003; Gohm & Clore, 2000), attention to emotion and clarity of emotion were independent.

As can be seen in Table 2, all four emotion scores were significantly correlated with at least one of the SPD scores. Higher levels of NA, and lower levels of emotional clarity, were associated with higher scores on all four SPD dimensions. Higher levels of affect intensity were associated with higher levels of cognitive-perceptual disturbances and disorganization. Attention to emotion was associated with both cognitive-perceptual and interpersonal dimensions, but in opposite directions; cognitive-perceptual disturbances were associated with greater attention to emotion, whereas interpersonal disturbances were associated with less attention to emotion.

Because the different facets of emotion tended to be correlated with one another, we proceeded to conduct path analyses (using AMOS) to examine the degree to which each facet of emotion continued to be associated with the SPD dimension scores when taking the other facets of emotion into account. We began with a full model in which there were paths leading from all four emotion scores to all four SPD scores. In addition, we allowed the four emotion scores to be correlated with each other, and we also allowed the four SPD residuals to be correlated.<sup>1</sup> We then tested whether the fit of the model would be significantly reduced when removing individual paths from the emotion variables to the SPD scores. Those paths in which elimination did not result in a significant decrement in fit were dropped from the model. Comparison of the fit of the final reduced model (which is illustrated in Figure 1) was not significantly worse than the fit of the full model. The fit of the reduced model was excellent ( $\chi^2/df = 0.72$ ; adjusted goodness-of-fit index (AGFI) = .97; normal fit index (NFI) = .99; root-mean-square error of approximation (RMSEA) = .00).

Figure 1 presents the path coefficients for the final reduced model. Even though higher levels of NA were correlated with lower levels of emotional clarity, both NA and clarity continued to be associated with all four SPD dimensions even when taking each other (as well as attention to emotion and affect intensity) into account, although the magnitudes of the associations were reduced somewhat. As was the case with the bivariate analysis, the results of the multivariate analysis revealed that cognitive-perceptual disturbances were associated with greater attention to emotion,

whereas interpersonal disturbances were associated with less attention to emotion. Not only did the association between attention to emotion and cognitive-perceptual disturbances not become weaker in the multivariate analysis, it actually became slightly stronger. In the multivariate analysis, affect intensity was no longer significantly associated with cognitive-perceptual disturbances; it continued to be associated, albeit weakly, with disorganization.

## Study 2: Community Sample

Participants in Study 1 were college students, and all assessments were conducted using paper and pencil questionnaires. In Study 2, the participants were adults recruited from the community, among whom a large portion were expected to have elevated levels of SPD (due to our recruitment strategies, described below), and SPD was assessed using a semistructured diagnostic interview.

## Method

### Participants

Participants were 225 adults recruited from the community (52.4% female) who ranged in age from 18 to 89 ( $M = 43.9$ ,  $SD = 17.1$ ). Of those participants who specified their race/ethnicity, the majority (82.9%) were European American. In addition, 7.8% were African American, 3.7% were Asian American or Asian, 1.8% were Latina/o, 1.4% were Native American, and 2.3% were from various other ethnicities. In terms of marital status, 24.9% reported being single, 42.4% reported being married, 11.5% reported living together but not being married, 18.4% reported being separated or divorced, and 2.8% reported being widowed. The educational attainment of participants was as follows: 1.8% reported not completing high school, 13.6% reported completing high school or technical school, 30.5% reported some college, 27.7% reported completing college, and 26.4% reported receiving postbaccalaureate education. These individuals

<sup>1</sup> To avoid visual clutter, these correlations are not included in Figure 1. The correlations among the emotion variables were as follows: NA  $\times$  Attention:  $-.07$ ; NA  $\times$  Clarity:  $-.38$ ; NA  $\times$  Affect Intensity:  $.20$ ; Attention  $\times$  Clarity:  $.06$ ; Attention  $\times$  Affect Intensity:  $.55$ ; Clarity  $\times$  Affect Intensity:  $-.14$ . The correlations among the SPD residuals were as follows: Cognitive-Perceptual  $\times$  Interpersonal:  $.15$ ; Cognitive-Perceptual  $\times$  Disorganized:  $.40$ ; Cognitive-Perceptual  $\times$  Suspiciousness:  $.42$ ; Interpersonal  $\times$  Disorganized:  $.28$ ; Interpersonal  $\times$  Suspiciousness:  $.24$ ; Disorganized  $\times$  Suspiciousness:  $.36$ .

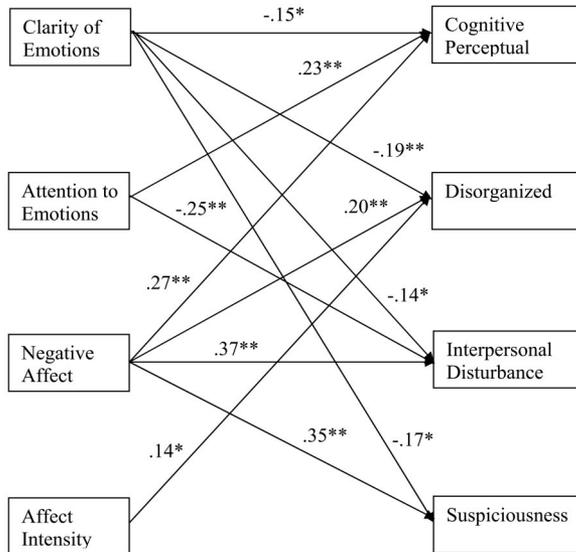


Figure 1. Path coefficients for the final reduced model for Study 1. \*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed.

were participating in a large, ongoing project examining pathways to disturbed emotions, perceptions, and beliefs. We intentionally oversampled individuals with high levels of peculiar perceptions and beliefs by first conducting telephone screenings of a randomly selected set of households<sup>2</sup>—a subset of these individuals, oversampling those who reported signs of SPD, were invited to participate in the laboratory portion of the study—and second, placing advertisements in newspapers and public locations seeking individuals who reported signs of SPD. For example, we placed advertisements in the local newspaper seeking research participants who do things that others would find odd or eccentric, who believe in things that others would find peculiar or odd, and who rarely need friends to confide in.

### Procedure

As part of their participation in this project, participants were interviewed using portions of the Personality Disorder Interview IV (PDI-IV; Widiger, Mangine, Corbitt, Ellis, & Thomas, 1995) and completed questionnaire measures of emotional awareness and mood.

**SPD.** We assessed the nine SPD criteria using the PDI-IV. Each criterion was rated using a 4-point scale (0 = *absent*; 1 = *subthreshold*;<sup>3</sup> 2 = *present*; 3 = *severe*). The interviews were audiotaped and rated by a second rater. The raters were unaware of the participants' questionnaire scores, as well as their affective instability scores, when they made their clinical ratings. The psychotic disorders module of the Structured Clinical Interview for *DSM-IV* (SCID; First, Spitzer, Gibbon, & Williams, 2001) was administered when it appeared that a participant might have a psychotic disorder. Four individuals with schizophrenia did not complete the research protocol and are not included in the present sample of 225 participants.

The interviewers/raters were graduate students who were provided with on-site training in the use of the PDI-IV by the person who developed it, Thomas Widiger. Interrater reliability, measured using the intraclass correlation coefficient (ICC), treating raters as random effects and the mean of the raters as the unit of reliability, presented on the bottom line of Table 3, tended to be good. When raters disagreed about whether a criterion was above or below threshold, or disagreed by more than one point, the research team (including the principal investigator, HB, who has extensive

experience with the diagnosis of personality disorders) discussed what the participant had said and resolved the disagreement by consensus. Other disagreements (e.g., one rater assigned a score of 2, and the second rater assigned a score of 3) were resolved by using the mean of the two raters.

Descriptive statistics, interrater reliabilities, and correlations among the nine SPD criterion scores are presented in Table 3. Approximately one half (52.0%) of the participants were at or above threshold on at least one SPD criterion, although only 3 participants met diagnostic criteria for a diagnosis of schizotypal personality disorder. We combined the nine SPD criterion scores, as had been done in Study 1, to create four separate SPD dimension scores: cognitive-perceptual disturbances, interpersonal disturbances, disorganization, and suspiciousness.

**Emotional clarity and attention.** Clarity of and attention to emotion were assessed using the TMMS, described above. The internal consistencies of the TMMS Attention and Clarity scales were both .85.

**Affective instability.** We measured affective instability using PDI-IV borderline personality disorder affective instability criterion ratings. This criterion is defined as having marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety) usually lasting a few hours and only rarely more than a few days. The rating scale used and the method used to deal with discrepant ratings was the same as that described above for rating the SPD criteria. Interrater reliability of the affective instability ratings, measured using the ICC, was .75. The research assistants who assessed affective instability were unaware of the SPD ratings.

**Trait negative affect.** The 10-item Unpleasant Affect scale from the PANAS (Watson, Clark, & Tellegen, 1988), described above, supplemented with seven additional emotion words (i.e., frustrated, bored, anxious, grouchy, sad, down, dull), was used to measure NA in the past month. Internal consistency of this NA measure in the present sample was .94.

### Results

Correlations among the four SPD dimension scores, as well as the four emotion scores (i.e., NA, affective instability, attention to emotion, and clarity of emotion), are presented in Table 4. As in Study 1, the SPD dimension scores tended to be significantly correlated with each other, although the magnitude of the correlations was weaker in Study 2 than in Study 1; unlike Study 1, the cognitive-perceptual and interpersonal disturbance scores were not significantly correlated in Study 2. The emotion scores also tended to be correlated. Specifically, higher levels of NA were associated with less emotional clarity, greater attention to emotion, and greater affective instability. Higher levels of affective instability were also associated with greater attention to emotion and less clarity of emotion. Consistent with past research and Study 1, attention to emotion and clarity of emotion were independent.

As in Study 1, higher levels of NA were associated with more cognitive-perceptual, interpersonal, and suspicious symptoms, although unlike Study 1, NA was not significantly associated with disorganization. Emotional clarity was negatively correlated with suspiciousness, but unlike Study 1 was not significantly associated with any of the other SPD dimensions. As in Study 1, cognitive-

<sup>2</sup> A random-digit dialing approach, using a list-assisted sampling procedure (that included both listed and unlisted phone numbers), was used. There was no prescreening of prospective telephone respondents, all of whom were told that the purpose of the study was to learn more about individuals' personal beliefs and life experiences.

<sup>3</sup> In consultation with Thomas Widiger, we changed the original PDI-IV 3-point rating scale (absent, present, severe) to a 4-point scale by adding a subthreshold point to the continuum.

Table 3  
*Descriptive Statistics, Interrater Reliabilities, and Correlations Among the 9 SPD Criterion Scores in Study 2*

PDI item	1	2	3	4	5	6	7	8	9
1. Ideas of reference	—								
2. Odd beliefs	.39**	—							
3. Unusual perceptions	.33**	.67**	—						
4. Suspiciousness	.25**	.15*	.09	—					
5. Odd/eccentric behavior	.12	.29**	.27**	.16*	—				
6. Odd speech	.11	.23**	.17*	.26**	.47**	—			
7. No close friends	.06	.08	.11	.17*	.13	.08	—		
8. Constricted affect	.03	-.06	-.01	.20**	.21**	.27**	.10	—	
9. Social anxiety	.14*	.10	.03	.42**	.09	.09	.30**	.17*	—
Statistic									
<i>N</i>	225	225	225	225	225	225	225	225	225
<i>M</i>	.33	1.1	.72	.22	.19	.12	.41	.12	.11
<i>SD</i>	.56	.94	.90	.51	.52	.44	.76	.37	.34
Range	0–3	0–3	0–3	0–3	0–3	0–2.5	0–3	0–2	0–2.5
% Meeting diagnostic criterion	4.5	37.4	24.0	4.4	5.7	4.0	12.0	2.2	1.3
Interrater reliability <sup>a</sup>	.83	.92	.94	.83	.85	.81	.94	.75	.77

Note. SPD = schizotypal personality disorder; PDI = Personality Disorder Inventory.

<sup>a</sup> Measured using the Intraclass Correlation Coefficient, treating raters as random effects and the mean of the raters as the unit of reliability.

\*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed.

perceptual disturbances were associated with greater attention to emotion, whereas interpersonal disturbances were associated with less attention to emotion. In Study 2, cognitive–perceptual disturbances were positively correlated with affective instability, just as they had been positively correlated with affect intensity in Study 1. In Study 2, affective instability was also associated with suspiciousness, but was not associated with either interpersonal or disorganized symptoms.

As in Study 1, we conducted path analyses (using AMOS) to examine the degree to which each facet of emotion continued to be associated with the SPD dimension scores when taking the other facets of emotion into account. Comparison of the fit of the final reduced model (which is illustrated in Figure 2) was not significantly worse than the fit of the full model. The fit of the reduced model was moderate ( $\chi^2/df = 1.66$ ; AGFI = .93; NFI = .93; RMSEA = .06).

Figure 2 presents the path coefficients for the final reduced model.<sup>4</sup> The following associations depicted in Figure 2 were found in the bivariate analysis and replicated both the bivariate and multivariate analyses in Study 1: (a) Higher levels of NA were associated with higher levels of both cognitive–perceptual and interpersonal symptoms, (b) cognitive–perceptual disturbances were associated with greater attention to emotion, whereas interpersonal disturbances were associated with less attention to emotion, and (c) lower levels of emotional clarity were associated with higher levels of suspiciousness. The weak positive association between clarity of emotion and interpersonal symptoms depicted in Figure 2 was not found in the bivariate analysis, nor had it been found in Study 1. In the final reduced model, none of the paths from affective instability or to disorganization remained.

## Discussion

Two important findings, replicated across the two studies, are that (a) NA, attention to emotion, and clarity of emotion are

associated with dimensions of SPD even after taking each other and emotional intensity/instability into account, and (b) there is clear evidence of different dimensions of SPD being differentially associated with different facets of emotion. For example, cognitive–perceptual disturbances and suspiciousness were associated with different aspects of emotional awareness. This finding, along with several others, was replicated across two studies, examining different populations (college students in one study and adults from the community in the other), and using different approaches to measuring SPD (paper and pencil questionnaires in one study and semistructured diagnostic interviews in the other). Thus, the results of the two studies reported here provide strong evidence of emotional processes being associated with SPD.

In terms of emotional factors, past theorizing and research on peculiar perceptions and beliefs (including delusions), as well as SPD, have tended to focus on NA. We found that elevated levels of NA were associated with increased cognitive–perceptual and interpersonal symptoms in both studies, even after taking the other facets of emotion into account. This is consistent with the abundant evidence linking elevated NA with almost all forms of psychopathology, including the schizophrenia spectrum (e.g., Berenbaum & Oltmanns, 1992; Clark & Watson, 1991). The results of the present research provide strong evidence that, in addition to NA, emotional awareness is also associated with SPD. In particular, we

<sup>4</sup> To avoid visual clutter, these correlations are not included in Figure 2. The correlations among the emotion variables were as follows: NA  $\times$  Attention: .26; NA  $\times$  Clarity: -.39; NA  $\times$  Affective Instability: .38; Attention  $\times$  Clarity: .09; Attention  $\times$  Affective Instability: .21; Clarity  $\times$  Affective Instability: -.20. The correlations among the SPD residuals were as follows: Cognitive–Perceptual  $\times$  Interpersonal: .09; Cognitive–Perceptual  $\times$  Disorganized: .29; Cognitive–Perceptual  $\times$  Suspiciousness: .17; Interpersonal  $\times$  Disorganized: .15; Interpersonal  $\times$  Suspiciousness: .35; Disorganized  $\times$  Suspiciousness: .24.

Table 4  
Correlations Among the SPD Dimension and Emotion Scores in Study 2

Variable	1	2	3	4	5	6	7	8
1. Cognitive-perceptual	—							
2. Interpersonal	.10	—						
3. Disorganized	.30**	.22**	—					
4. Suspiciousness	.19**	.33**	.24**	—				
5. Clarity of emotions	-.05	.00	-.03	-.24**	—			
6. Attention to emotions	.27**	-.19**	-.09	.00	.09	—		
7. Negative affect	.28**	.19**	.13	.15*	-.39**	.26**	—	
8. Affective instability	.23**	.12	.11	.19**	-.21	.20**	.37**	—

Note. SPD = schizotypal personality disorder.  
\*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed.

found that emotional awareness was associated with the suspiciousness and cognitive-perceptual disturbances that are part of SPD, and that such associations are not an artifact of shared variance with NA or emotional intensity/instability. In both studies, we found that higher levels of attention to emotion were associated with more cognitive-perceptual symptoms. This is consistent with the findings of Kerns (2005), Kerns and Berenbaum (2000), and Mohanty et al. (2003). These results raise the possibility that despite being beneficial in many respects (e.g., Mayer & Salovey, 1995), increased attention to emotion may predispose individuals to a wide variety of “errors in thinking,” ranging from those studied by cognitive and social psychologists to those studied by psychopathologists. We propose that emotions may contribute to irrational and inaccurate judgments and decisions when they serve as heuristics, or rules of judgment, that are based on data of limited validity (Tversky & Kahneman, 1974).

Of course, we are not proposing that an irrational decision concerning the probability of winning a prize is equivalent to believing that one is controlled by alien forces. However, the results of the present research raise the possibility that they may

share some common mechanisms. A critical avenue for future research will be to elucidate when, why, and how paying attention to one’s emotions will contribute to different kinds of errors in thinking, including those studied by researchers outside of clinical psychology (e.g., Gilovich, Griffin, & Kahneman, 2002; Rozin, Markwith, & Ross, 1990; Tversky, & Kahneman, 1974), common peculiar beliefs such as belief in astrology and clairvoyance (Vyse, 1997), the delusional beliefs exhibited by individuals with schizophrenia, and the peculiar beliefs associated with other psychiatric disorders such as anorexia nervosa and obsessive-compulsive disorder. Whether attention to emotions leads to errors in thinking, and what specific types of odd thinking and beliefs develop, undoubtedly depend on a wide variety of other factors. The most common forms of errors in thinking may depend on little more than the combination of high attention to emotions and the presence of emotions that provide information of limited validity. In contrast, additional factors are undoubtedly necessary for someone to develop the sorts of delusions associated with schizophrenia. For example, delusional beliefs may develop as a result of increased attention to emotion being combined with other factors such as anomalous experiences (Maher, 1974), a jumping-to-conclusions bias (Hemsley & Garety, 1986), or the aberrant assignment of salience to external objects and internal representations as a result of stimulus-independent release of dopamine caused by dysregulated dopamine transmission (Kapur, 2003).

In both studies we found that greater attention to emotion was associated with more cognitive-perceptual symptoms, yet at the same time attention to emotion was beneficial by being associated with fewer interpersonal symptoms. It will be important for future research to explore how and why attention to emotion is associated with the interpersonal symptoms of SPD. Whereas we have several reasons to hypothesize that increased attention to emotion plays a causal role in the development of cognitive-perceptual disturbances, we do not have hypotheses about which we are confident concerning the link between attention to emotion and SPD interpersonal problems. On the one hand, low attention to emotion may make it difficult, or perhaps less appealing, to establish strong interpersonal ties (perhaps because attention to emotions may facilitate empathy and the ability to develop a sense of connection with others). On the other hand, we think it is equally plausible that interpersonal difficulties can lead individuals to cease attending to their emotions. And, of course, it is always possible that a third

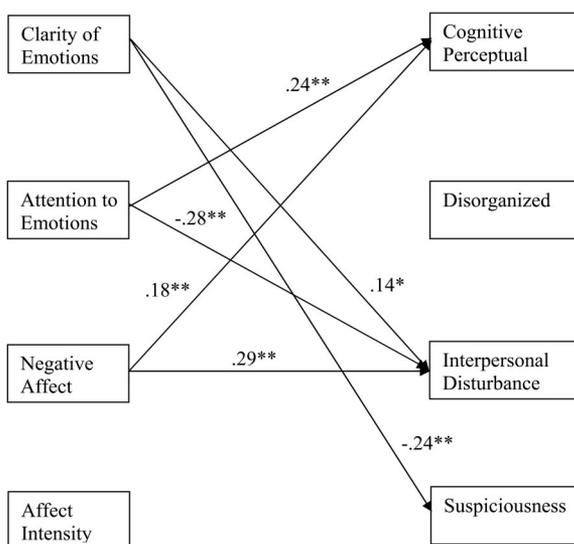


Figure 2. Path coefficients for the final reduced model for Study 2. \*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed.

variable, such as an avoidant coping style, contributes to both SPD interpersonal problems and diminished attention to emotion.

Past research on emotional awareness has not examined its association with suspiciousness. We found that whereas cognitive-perceptual disturbances were associated with attention to emotion and not clarity of emotion, suspiciousness was associated with lower clarity of emotion, and was not associated with attention to emotion. Thus, we found consistent evidence of odd beliefs and suspiciousness being associated with different facets of emotional awareness. We hypothesize that being unclear about one's emotions increases vulnerability to suspiciousness in two related ways. First, individuals who do not understand what they are feeling, and why, are likely to be confused about events that have an emotional impact on them and are thereby more likely to misinterpret other people's behaviors and intentions. Second, it seems quite plausible that diminished emotional clarity makes people more likely to inaccurately attribute the source of their unpleasant emotions to other people. Of course, these hypotheses concerning the nature of the causal relation between clarity and suspiciousness (if there in fact is a causal relation) will need to be tested in future research.

In bivariate analyses, affect intensity/lability was significantly associated with cognitive-perceptual symptoms in both studies. Furthermore, the strength of the association ( $r = .23$  in both studies) was similar to that found in past research (Kerns, 2005; Williams & Barry, 2003). However, in both studies, when the remaining facets of emotion were taken into consideration in the multivariate analyses, there was no longer any evidence of affect intensity/lability being associated with cognitive-perceptual symptoms.

There were a number of notable discrepancies between the results of the two studies. One half of the discrepancies concerned the relations between disorganization symptoms and emotional processes; in Study 1, disorganization was significantly associated with NA, clarity of emotions, and affect intensity, whereas in Study 2 disorganization was not significantly associated with any of the emotion variables. Another interesting discrepancy concerned the relation between cognitive-perceptual symptoms and clarity of emotions; in Study 1, higher levels of cognitive-perceptual symptoms were associated with diminished emotional clarity, whereas these two variables were not significantly associated in Study 2. The final discrepancy that we consider to be noteworthy concerned the relation between suspiciousness and NA; although the zero-order correlations were significant in both studies, the association was much weaker in Study 2, in which it ceased to be significant when taking the other emotional processes into account. There are a number of factors that may account for the discrepant results. One obvious possibility is that we used a questionnaire to measure SPD symptoms in Study 1, whereas we used an interview in Study 2. We believe this methodological difference is particularly important for measuring disorganization symptoms, which in Study 2 were measured using direct observations of participants rather than participants' reports. We are frankly somewhat skeptical about the ability of paper and pencil questionnaires to validly measure odd speech and behavior. Furthermore, in a college student sample in which there is probably very little speech or behavior that is truly disorganized, we think it is likely that self-reported odd speech and behavior mostly reflects a combination of self-deprecation and a sense of estrangement from others. We posit that the stronger association between sus-

piciousness and NA in Study 1 is due to self-consciousness (which is associated with both suspiciousness and depression; Combs & Penn, 2004; Ingram, 1990; Pyszczynski & Greenberg, 1987) being more strongly associated with the questionnaire measure of suspiciousness in the student sample than with the interview measure of suspiciousness in the community sample. Another possible explanation for the discrepant results is that the correlates of schizotypal symptoms and emotional processes vary as a function of age. Although this is certainly plausible, we do not have any reasons to expect it to be the case. A third possible explanation for the discrepant results concerns the degree of representativeness of the two samples and the kinds of schizotypal symptoms they exhibited. The participants in Study 1 were probably relatively representative, at least of college students. In contrast, the sample in Study 2 had a disproportionately large number of individuals with some SPD characteristics, such as odd beliefs, but did not have a particularly large number of individuals exhibiting other SPD symptoms such as suspiciousness. Thus it is possible that some of the failures to replicate findings from Study 1 were due to the unusual nature of the sample in Study 2. We think an even more likely explanation for the failure to replicate the finding from Study 1 that cognitive-perceptual symptoms are associated with lower emotional clarity is that the kinds and severity of cognitive-perceptual symptoms probably differed between the two samples. Of course, further research is needed to explore all of these possibilities.

Although the results of the present research provide convincing evidence that several facets of emotion, including attention to and clarity of emotion, are associated with SPD, a number of important questions remain. Perhaps the most important issue to be addressed is why emotions are associated with SPD. Although we hypothesize that NA, attention to emotion, and clarity of emotion contribute to the development of SPD, particularly to cognitive-perceptual disturbances and suspiciousness, we must acknowledge that this is mere speculation on our part given that our data are correlational. It is certainly quite plausible, for example, that cognitive-perceptual disturbances could contribute to emotional disturbances, and third variable explanations also need to be ruled out. Two research strategies that can help delineate the nature of the relations between emotions and SPD are prospective longitudinal research, most likely using high-risk designs, and analogue research using true experiments (Barch & Berenbaum, 1994; Sher & Trull, 1996). It will also be important for future research to continue examining the specificity of the associations between emotional disturbances and SPD. For example, future research should examine whether higher levels of cognitive-perceptual symptoms are specifically associated with increased attention to emotion or whether they are also associated with higher levels of all forms of self-focused attention or with higher levels of different forms of repetitive thought (e.g., Segerstrom, Stanton, Alden, & Shortridge, 2003) such as rumination. Even if it turns out to be the case that emotional disturbances play a causal role in the development of SPD, future research should explore how emotional disturbances contribute either additively or interactively with other etiological factors. This is important because the effect sizes we obtained in the present study were rather modest, making it quite clear that even if emotional disturbances play an important role in the development of SPD, other factors must be involved as well. Finally, future research needs to examine whether the emotional

disturbances that we found to be associated with SPD are also associated with phenotypically similar signs and symptoms of other mental disorders, such as schizophrenia.

## References

- Bagby, R. M., Taylor, G. J., & Parker, J. D. A. (1994). The twenty-item Toronto Alexithymia Scale—II: Convergent, discriminant, & concurrent validity. *Journal of Psychosomatic Research, 38*, 33–40.
- Barch, D., & Berenbaum, H. (1994). The relationship between information processing and language production. *Journal of Abnormal Psychology, 103*, 241–250.
- Bentall, R., Corcoran, R., Howard, R., Blackwood, N., & Kinderman, P. (2001). Persecutory delusions: A review and theoretical integration. *Clinical Psychology Review, 21*, 1143–1192.
- Bentall, R. P., Kinderman, P., & Kaney, S. (1994). The self, attributional processes and abnormal beliefs: Towards a model of persecutory delusions. *Behaviour Research and Therapy, 32*, 331–341.
- Berenbaum, H., & Fujita, F. (1994). Schizophrenia and personality: Exploring the boundaries and connections between vulnerability and outcome. *Journal of Abnormal Psychology, 103*, 148–158.
- Berenbaum, H., & Oltmanns, T. F. (1992). Emotional experience and expression in schizophrenia and depression. *Journal of Abnormal Psychology, 101*, 37–44.
- Berenbaum, H., Raghavan, C., Le, H. N., Vernon, L., & Gomez, J. (2003). A taxonomy of emotional disturbances. *Clinical Psychology: Science and Practice, 10*, 206–226.
- Berenbaum, H., Valera, E. M., & Kerns, J. G. (2003). Psychological trauma and schizotypal symptoms. *Schizophrenia Bulletin, 29*, 143–152.
- Blanchette, I., & Richards, A. (2004). Reasoning about emotional and neutral materials: Is logic affected by emotion? *Psychological Science, 15*, 745–752.
- Ciampi, L. (1997). The concept of affect logic: An integrative psychosocio-biological approach to understanding and treatment of schizophrenia. *Psychiatry, 60*, 158–170.
- Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology, 100*, 316–336.
- Clore, G. L., Gasper, K., & Garvin, E. (2001). Affect as information. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 121–144). Mahwah, NJ: Erlbaum.
- Coffey, E., Berenbaum, H., & Kerns, J. G. (2003). The dimensions of emotional intelligence, alexithymia, and mood awareness: Associations with personality and performance on an emotional stroop task. *Cognition and Emotion, 17*, 671–679.
- Combs, D. R., & Penn, D. L. (2004). The role of subclinical paranoia on social perception and behavior. *Schizophrenia Research, 69*, 93–104.
- Dizen, M., Berenbaum, H., & Kerns, J. G. (2005). Emotional awareness and psychological needs. *Cognition and Emotion, 19*, 1140–1157.
- Eid, M., & Diener, E. (1999). Intraindividual variability in affect: Reliability, validity, and personality correlates. *Journal of Personality and Social Psychology, 76*, 662–676.
- Ellis, H. C., & Moore, B. A. (1999). Mood and memory. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 193–210). New York: Wiley.
- Emmons, R. A., & King, L. A. (1989). Personal striving differentiation and affective reactivity. *Journal of Personality and Social Psychology, 56*, 478–484.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2001). *The Structured Clinical Interview for DSM-IV-TR Axis I disorders*. New York: NY State Psychiatric Institute, Biometrics Research.
- Freeman, D., Garety, P. A., Kuipers, E., Fowler, D., & Bebbington, P. E. (2002). A cognitive model of persecutory delusions. *British Journal of Clinical Psychology, 41*, 331–347.
- Gardner, H. (1983). *Frames of mind*. New York: Basic Books.
- Gasper, K., & Clore, G. L. (2000). Do you have to pay attention to your feelings to be influenced by them? *Personality and Social Psychology Bulletin, 26*, 698–711.
- George, A., & Soloff, P. H. (1986). Schizotypal symptoms in patients with borderline personality disorders. *American Journal of Psychiatry, 143*, 212–215.
- Gilovich, T., Griffin, D., & Kahneman, D. (Eds.). (2002). *Heuristics and biases*. New York: Cambridge University Press.
- Gohm, C. L., & Clore, G. L. (2000). Individual differences in emotional experience: Mapping available scales to processes. *Personality and Social Psychology Bulletin, 26*, 679–697.
- Gohm, C. L., & Clore, G. L. (2002). Four latent traits of emotional experience and their involvement in well-being, coping, and attributional style. *Cognition and Emotion, 16*, 495–518.
- Hemsley, D. R., & Garety, P. A. (1986). The formation and maintenance of delusions: A Bayesian analysis. *British Journal of Psychiatry, 149*, 51–56.
- Ingram, R. E. (1990). Self-focused attention in clinical disorders: Review and a conceptual model. *Psychological Bulletin, 107*, 156–176.
- Kahneman, D. (2003). A perspective on judgment and choice: Mapping bounded rationality. *American Psychologist, 58*, 697–720.
- Kahneman, D., Ritov, I., & Schkade, D. (1999). Economic preferences or attitude expressions? An analysis of dollar responses to public issues. *Journal of Risk and Uncertainty, 19*, 220–242.
- Kapur, S. (2003). Psychosis as a state of aberrant salience: A framework linking biology, phenomenology, and pharmacology in schizophrenia. *American Journal of Psychiatry, 160*, 13–23.
- Kavoussi, R. J., & Siever, L. J. (1992). Overlap between borderline and schizotypal personality disorders. *Comprehensive Psychiatry, 33*, 7–12.
- Keltner, D., & Kring, A. M. (1998). Emotion, social function, and psychopathology. *Review of General Psychology, 2*, 320–342.
- Kerns, J. G. (2005). Positive schizotypy and emotion processing. *Journal of Abnormal Psychology, 114*, 392–401.
- Kerns, J. G., & Berenbaum, H. (2000). Aberrant semantic and affective processing in people at risk for psychosis. *Journal of Abnormal Psychology, 109*, 728–732.
- Koenigsberg, H. W., Harvey, P. D., Mitropoulou, V., Schmeidler, J., New, A. S., Goodman, M., et al. (2002). Characterizing affective instability in borderline personality disorder. *American Journal of Psychiatry, 159*, 784–788.
- Larsen, R. J. (1987). The stability of mood variability: A spectral analytic approach to daily mood assessments. *Journal of Personality and Social Psychology, 52*, 1195–1204.
- Larsen, R. J., & Diener, E. (1987). Affect intensity as an individual difference characteristic: A review. *Journal of Research in Personality, 21*, 185–207.
- Larsen, R. J., Diener, E., & Emmons, R. A. (1986). Affect intensity and reactions to daily life events. *Journal of Personality and Social Psychology, 51*, 803–814.
- Le, H. N., Berenbaum, H., & Raghavan, C. (2002). Culture and alexithymia: Mean levels, correlates, and the role of parental socialization of emotions. *Emotion, 2*, 341–360.
- Leeser, J., & O'Donohue, W. (1999). What is a delusions? Epistemological dimensions. *Journal of Abnormal Psychology, 108*, 687–694.
- Lowenstein, G., Weber, E. U., Hsee, C. K., Welch, N. (2001). Risk as feelings. *Psychological Bulletin, 127*, 267–286.
- Maher, B. A. (1974). Delusional thinking and perceptual disorder. *Journal of Individual Psychology, 30*, 98–113.
- Matthews, G., & Wells, A. (2002). The cognitive science of attention and emotion. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 171–192). New York: Wiley.
- Mayer, J. D., & Salovey, P. (1995). Emotional intelligence and the con-

- struction and regulation of feelings. *Applied and Preventive Psychology*, 4, 197–208.
- Mohanty, A., Koven, N. S., Fisher, J. E., Herrington, J. H., Stewart, J. L., Heller, W., & Miller, G. A. (2003, November). *Emotion regulation and positive and negative symptoms in psychosis proneness*. Poster presented at the annual meeting of the Society for Research in Psychopathology, Madison, WI.
- Muntaner, C., Garcia-Sevilla, L., Fernandez, A., & Torrubia, R. (1988). Personality dimensions, schizotypal and borderline personality traits, and psychosis proneness. *Personality and Individual Differences*, 9, 257–268.
- Norman, R. M. G., Malla, A. K., Cortese, L., & Diaz, F. (1998). Aspects of dysphoria and symptoms of schizophrenia. *Psychological Medicine*, 28, 1433–1441.
- Pyszczynski, T., & Greenberg, J. (1987). Self-regulatory perseveration and the depressive self-focusing style: A self-awareness theory of reactive depression. *Psychological Bulletin*, 102, 122–138.
- Raine, A. (1991). The SPQ: A scale for the assessment of schizotypal personality based on *DSM-III-R* criteria. *Schizophrenia Bulletin*, 17, 555–564.
- Raine, A., Reynolds, C., Lencz, T., Scerbo, A., Triphon, N., & Kim, D. (1994). Cognitive-perceptual, interpersonal, and disorganized features of schizotypal personality. *Schizophrenia Bulletin*, 20, 191–201.
- Reynolds, C. A., Raine, A., Mellingen, K., Venables, P. H., & Mednick, S. A. (2000). Three-factor model of schizotypal personality: Invariance across culture, gender, religious affiliation, family adversity, and psychopathology. *Schizophrenia Bulletin*, 26, 603–618.
- Rozin, P., Markwith, M., & Ross, B. (1990). The sympathetic magical law of similarity, nominal realism and neglect of negatives in response to negative labels. *Psychological Science*, 1, 383–384.
- Salovey, P., Mayer, J. D., Goldman, S. L., Turvey, C., & Palfai, T. P. (1995). Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. Pennebaker (Ed.) *Emotion, disclosure, & health* (pp. 125–154). Washington, DC: American Psychological Association.
- Segerstrom, S. C., Stanton, A. L., Alden, L. E., & Shortridge, B. E. (2003). A multidimensional structure for repetitive thought: What's on your mind, and how, and how much? *Journal of Personality and Social Psychology*, 85, 909–921.
- Sher, K. J., & Trull, T. J. (1996). Methodological issues in psychopathology research. *Annual Review of Psychology*, 47, 371–400.
- Stefanis, N. C., Smyrnis, N., Avramopoulos, D., Evdokimidis, I., Ntzoufras, I., & Stefanis, C. N. (2004). Factorial composition of self-rated schizotypal traits among young males undergoing military training. *Schizophrenia Bulletin*, 30, 335–350.
- Stuart, S., Pfohl, B., Battaglia, M., Bellodi, L., Grove, W., & Cadoret, R. (1998). The cooccurrence of *DSM-III-R* personality disorders. *Journal of Personality Disorders*, 12, 302–315.
- Suhr, J. A., & Spitznagel, M. B. (2001). Factor versus cluster models of schizotypal traits. I: A comparison of unselected and highly schizotypal samples. *Schizophrenia Research*, 52, 231–239.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185, 1124–1131.
- Vyse, S. A. (1997). *Believing in magic*. New York: Oxford University Press.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Widiger, T. A., Mangine, S., Corbitt, E. M., Ellis, C. G., & Thomas, G. V. (1995). *Personality Disorder Interview-IV: A semistructured interview for the assessment of personality disorders*. Odessa FL: Psychological Assessment Resources.
- Williams, L. M., & Barry, J. (2003). Do sex differences in emotionality mediate sex differences in traits of psychosis-proneness? *Cognition and Emotion*, 17, 747–758.
- Winters, K. C., & Neale, J. M. (1983). Delusions and delusional thinking in psychotics: A review of the literature. *Clinical Psychology Review*, 3, 227–253.

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