LIST OF FIGURES

Figure Page

Abstract

The current dissertation contains six related studies that examine the roles of aberrant salience and self-relevant information processing in the development and maintenance of psychotic and psychotic-like experiences. Aberrant salience is the incorrect or unusual assignment of salience, importance, or significance to stimuli. Self-relevant information processing is individual differences in the way in which people process information related to self-concept. The current research focuses on two aspects of self-relevant information processing, self-concept clarity and self-esteem. Self-concept clarity reflects the coherence of self-concept, and self-esteem can be broadly defined as the valence with which one views oneself. The first four studies are large samples (n = 724, 667, 744, 998) of participants who were oversampled for a risk for schizophrenia. The fifth study (n = 160), is a follow-up study including a subset of participants from Study 1 and Study 4 who met standardized criteria for risk for psychosis. Study 6 included a group of participants with schizophrenia (n = 53) and a comparison group of community controls without a history of mental illness (n = 33). In the first five studies, an interaction between aberrant salience and self-concept clarity was found such that participants with high aberrant salience and low self-concept clarity had the highest levels of psychotic-like experiences, measured with both questionnaires and interviews. In addition, aberrant salience and self-concept clarity interacted to predict a supplemental measure of delusions in Study 1 and anomalous perceptual experiences in Study 2. In Study 3, in contrast to low self-concept clarity, neuroticism did not interact with aberrant salience to predict psychotic-like experiences, suggesting that the relationship between low self-concept clarity and psychosis may not be due to general distress. Additionally,

aberrant salience and self-concept clarity did not interact to predict social anhedonia or paranoia, which suggests the interaction is specific to psychotic-like experiences. Study 4 was in part a screening study to recruit participants for Study 5, but it also examined the relationship between psychotic-like experiences and performance on a task that is presumably sensitive to dysregulated dopamine, a theorized mechanism of aberrant salience. In Study 5, I replicated the interaction between self-concept clarity and aberrant salience in predicting psychotic-like experiences measured with a structured interview. Finally, Study 6 found that participants with schizophrenia had higher aberrant salience and lower self-concept clarity and that these two variables interacted (in a different pattern from Study 1-Study 4) to predict positive--but not negative or disorganized—symptoms of schizophrenia. Overall, these results are consistent with several social-cognitive models of psychosis suggesting that aberrant salience and self-concept clarity might be important mechanisms in the occurrence of psychosis and psychotic-like experiences.

Understanding Delusions: The Role of Aberrant Salience and Self-Relevant Information Processing

Psychotic symptoms include delusions and hallucinations and are a common experience in people with schizophrenia-spectrum disorders and people at risk for psychosis (e.g., Andreasen, Arndt, Alliger, Miller, & Flaum, 1995). Recent research suggests that psychotic-like experiences also may be relatively common in the general population, with estimates as high as one out of every five people reporting at least one psychotic experience at some point in their lifetime (Kelleher & Cannon, 2010; van Os, Hanssen, Bijl, & Vollebergh, 2001; van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). In addition, the presence of psychotic-like experiences is associated with an increased risk for psychotic disorders (Chapman et al., 1994). Many theorists who have attempted to explain the origin of psychosis and psychotic-like experiences have posited a role for social-cognitive mechanisms in the development and maintenance of these experiences (e.g., Beck & Rector, 2005; Bell, Halligan, & Ellis, 2006b; Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Fenigstein & Vanable, 1992; Fowler, 2000; Freeman, 2007; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001). The current research examined the relations between psychosis and psychotic-like experience and two social-cognitive mechanisms, aberrant salience and low self-concept clarity.

Aberrant salience is the incorrect assignment of importance to neutral stimuli and has been proposed to be centrally involved in psychosis (J. A. Gray, Feldon, Rawlins, Hemsley, & Smith, 1991; Kapur, 2003; Roiser et al., 2008). Anecdotal reports of people with psychosis suggest that they initially often go through periods in which stimuli that

ordinarily would not seem significant become much more salient and important (Bowers, 1968; Moller & Husby, 2000). Based in part on these phenomenological observations of people with psychosis, Kapur (2003) suggested that occurrences of aberrant salience may be central to the development of psychosis. Positing a role for aberrant salience in psychosis is also derived in part from research on normal incentive salience processes. Incentive salience refers to the "wanting" and motivational importance component of learning as opposed to the "liking" component (Berridge, 2007). Given the role of dopamine in incentive salience, this suggests that dopamine dysregulation should be associated with aberrant salience (Kapur, 2003). This is consistent with a long line of research supporting an association between psychosis and increased subcortical dopamine (Davis, Kahn, Ko, & Davidson, 1991; Guillin, Abi-Dargham, & Laruelle, 2007; Seeman, 1987). For example, brain imaging studies have found dysregulated dopamine activity when people with schizophrenia are actively psychotic (e.g., Abi-Dargham et al., 2000; Laruelle & Abi-Dargham, 1999; Soares & Innis, 1999) and in the prodromal phase of the illness (Howes et al., 2009). Therefore, both phenomenological and neurobiological research suggests a role for aberrant salience in psychosis.

A role for aberrant salience in psychosis and psychotic-like experiences is also consistent with most previous models of psychosis. Two social-cognitive mechanisms that are common to nearly all models of psychosis and psychotic-like experiences are (a) aberrant salience or anomalous experiences and (b) self-relevant information processing (e.g., Bell et al., 2006; Bentall et al., 2001; Freeman, 2007). According to these models, anomalous experiences contribute to psychosis because people adopt delusional beliefs in part to account for these anomalous experiences (Maher, 1974). In addition, a number of

these models have also hypothesized that aberrant salience is the mechanism that contributes to the occurrence of anomalous experiences (Freeman, 2007; Kapur, 2003) or the mechanism by which these experiences are attributed to external sources.

Until recently, there was not a direct method for measuring aberrant salience. In a series of studies, we recently developed the Aberrant Salience Inventory (ASI; Cicero, Kerns, & McCarthy, 2010), and found that it can be a valid and reliable measure of aberrant salience in people at risk for the development of psychosis. The current research aims to further test the nomological network of the construct of aberrant salience by using the ASI to examine theories of psychosis and psychotic-like experiences that posit a central role for aberrant salience.

Another social-cognitive mechanism of psychosis examined in the current research is low self-concept clarity. Self-concept clarity (SCC) refers to "to the extent to which one's beliefs about one's attributes are clear, confidently held, internally consistent, stable, and cognitively accessible" (Stinson, Wood, & Doxey, 2008, p. 1541). People with low self-concept clarity have been found to report more fluctuating levels of self-esteem (Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000), which is associated with a host of negative psychological outcomes (Campbell et al., 1996).

A role for low self-concept clarity in psychosis is generally consistent with most previous models of psychosis. As mentioned, researchers have long suggested that basic problems with self-relevant information processing may be related to the development of psychosis (e.g., Fabrega, 1989; Hemsley, 1998; Parnas, Handest, Saebye, & Jansson, 2003; Raballo, Saebye, & Parnas, 2009). Recently, some evidence suggests that low self-concept clarity in particular might be related to psychosis and psychotic-like experiences.

One phenomenological study concluded that "disturbance of perception of self" is a core experiential dimension of the development of psychosis (Moller & Husby, 2000), with this disturbance described as a loss of a clear conceptualization of the self. For instance, people in the prodromal phase of psychosis reported often feeling like they were confused about their identities (Moller & Husby, 2000), suggesting low self-concept clarity. Moreover, Moller and Husby (2000) concluded that these experiences represent a broader construct than the detachment often reported in dissociative disorders, such as depersonalization. Hemsley (1998) referred to this phenomenon as a "gradually developing instability in the sense of personal identity (p.117)." Additionally, other researchers have found that low coherence in autobiographical memories is related to cognitive impairments, hopelessness and lack of insight in people with schizophrenia (Lysaker, Clements, Plascak-Hallberg, Knipscheer, & Wright, 2002). In another recent study, paranoia was found to be associated with frequent fluctuations in self-esteem (Thewissen, Bentall, Lecomte, van Os, & Myin-Germeys, 2008; Thewissen et al., 2007), which is strongly correlated with low self-concept clarity (Kernis, et al., 2000). Therefore, it is possible that low self-concept clarity might be a specific type of self-processing disturbance related to psychosis and psychotic-like experiences.

As previously discussed, a role for both aberrant salience and low self-concept clarity in psychosis and psychotic-like experiences is generally consistent with nearly all models of psychosis. However, another important feature of social-cognitive models of psychosis is that they suggest that by themselves neither aberrant salience nor self-processing disturbances may be sufficient to produce psychotic symptoms. Instead, these

models posit that the combination of aberrant salience and self-processing disturbances results in psychosis (Bell, et al., 2006b).

Therefore, based on previous psychosis theories and research, aberrant salience and low self-concept clarity might be two social-cognitive mechanisms that interact to predict psychotic-like experiences and psychosis. Nevertheless, a number of important questions have not been examined in previous research. For instance, no previous research has actually examined whether aberrant salience and low self-concept clarity interact to predict psychotic-like experiences. Similarly, previous research has not examined whether aberrant salience and low self-concept clarity interact to uniquely predict psychosis and psychotic-like experiences and do not interact to predict other aspects of psychopathology associated with psychosis. Furthermore, although previous research suggests that low self-concept clarity might be associated with psychosis, no previous research has directly measured and examined whether self-concept clarity is associated with psychosis and psychotic-like experiences. Given that self-processing disturbances are also associated with increased neuroticism (Campbell, et al., 1996), it is important to examine whether self-concept clarity is uniquely associated with psychotic-like experiences or whether neuroticism would be similarly associated with psychotic-like experiences.

In six studies, the current research examined whether aberrant salience and self-concept clarity interacted to predict psychotic-like and full-blown psychotic symptoms. Study 1 tested whether there was an interaction between aberrant salience and self-concept clarity in predicting two psychotic-like experiences: magical ideation and perceptual aberration (Chapman, Chapman, Kwapil, Eckblad, & Zinser, 1994). In

addition, Study 1 tested whether this interaction was specific to psychotic-like experiences and not to another facet of schizophrenia-spectrum disorders, social anhedonia. Study 1 also included a supplementary measure of delusion-like beliefs, the Peters Delusion Inventory (PDI; Peters, Joseph, Day, & Garety, 2004). In Study 2, I replicated the interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences and included a supplementary measure of hallucinatory-like experiences, the Cardiff Anomalous Perceptions Scale (Bell, Halligan, & Ellis, 2006a). In Study 3, I tested whether only self-concept clarity interacted with aberrant salience to predict psychotic-like experiences, or whether neuroticism would also interact with aberrant salience to predict psychotic-like experiences. Study 3 also tested whether the interaction was specific to psychotic-like experiences or whether aberrant salience and self-concept clarity would interact to predict paranoia. The main purpose of Study 4 was to screen participants and identify enough participants who met standardized schizotypy criteria for positive, negative, and control groups. The goal of Study 5 was to examine the roles of aberrant salience and self-processing variables in a sample of people at risk for the development of schizophrenia with an in-depth structured clinical interview. Finally, study 6 sought to extend the results of Study 1-Study6 by examining the role of aberrant salience and self-concept clarity in a sample of people with a diagnosis of schizophrenia.

Study 1

The main goal of Study 1 was to test the prediction that questionnaire measures of aberrant salience and self-concept clarity interact to predict psychotic-like experiences. In this study, we also examined whether aberrant salience would interact with a task measure of self-concept clarity (the Me-Not-Me-Decision Task) to predict psychotic-like experiences. Additionally, we examined whether aberrant salience and self-concept clarity interacted to predict specific delusional experience). Finally, we tested whether this interaction is specific to predicting psychotic-like experiences and whether aberrant salience and self-concept clarity would not interact to predict social anhedonia.

Method

Participants. Participants were 724 native English-speaking undergraduate students who took part in the study as partial fulfillment of a course requirement. To ensure adequate numbers of participants with high levels of schizotypy, participants were prescreened from a larger pool (n=2,244). These participants completed abbreviated versions of the Magical Ideation Scale (MagicId; Eckblad & Chapman, 1983), Perceptual Aberration Scale (PerAb; Chapman, Chapman, & Raulin, 1978), and Social Anhedonia Scale (SocAnh; Chapman, Chapman, & Raulin, 1976). Participants scoring two standard deviations above the mean or higher on these scales or a combined three standard deviations above the mean on MagicId and PerAb were recruited to the laboratory for an individual testing session. Participants who scored less than 0.5 standard deviations above the mean on all three scales were also recruited. When participants came to the lab, they completed full versions of these three scales. All analyses are based on the full version of the scales. Based on previously established cut-points (Kerns & Berenbaum,

2003), 60 participants met criteria for having high positive schizotypy (i.e., greater than 1.96 SD above the mean on the MagicId or PerAb or a combined three standard deviations above the mean on both scales) and 72 met criteria for high negative schizotypy (i.e., greater than 1.96 SDs above the mean on SocAnh). This strategy of oversampling resulted in a wider range of scores in all three studies when compared to unselected samples. Thirty-two participants were excluded for having Wisconsin Infrequency Scores of three or greater. Participants ranged from 18-26 years old, with an average age of 18.44 (*SD* = 0.84). Participants were 64% female, 84% White, 11% African-American, and 5% other.

Measures. ***Aberrant Salience.*** Aberrant Salience was measured with the Aberrant Salience Inventory (ASI; Cicero, et al., 2010). The ASI is a 29-item yes-no questionnaire that has five subscales measuring different aspects of the experience of aberrant salience including feelings of increased significance (e.g., Do certain trivial things suddenly seem especially important or significant to you?), sharpening of senses (e.g., Do you senses ever seem especially strong or clear?), impending understanding (e.g., Do you sometimes feel like you are on the verge of something really big or important but you aren't sure what it is?), heightened emotionality (e.g., Do you go through periods in which you feel over-stimulated by things or experiences that are normally manageable?), and heightened cognition (e.g., Do you ever feel like the mysteries of the universe are revealing themselves to you?). Previous research has found that the ASI is highly correlated with other measures of psychosis-proneness, is elevated in participants at risk for the development of psychotic disorders, and is elevated in inpatients with a history of psychosis compared to inpatients without a history of psychosis (Cicero, et al., 2010).

Moreover, the ASI has discriminant validity from other measures of psychosis-proneness, as the ASI has been found to be correlated with the measures reflecting increased subcortical dopamine, whereas other psychosis-proneness measures were not (Cicero et al., 2010).

Self-Concept Clarity (SCC). Our primary measure of self-concept clarity was the Self-Concept Clarity Scale (SCCS; Campbell, 1990). The SCCS is a 12-item scale on which participants rate statements on a scale from 1 *Strongly Agree* to 5 *Strongly Disagree* (e.g., My beliefs about myself often conflict with on another). The SCCS has been found to be correlated with other measures of self-concept clarity including agreement of pairs of adjectives describing the self (Campbell, et al., 1996). A second measure of self-concept clarity was the Me-Not-me Decision Task (MNMDT; Campbell et al., 1996) in which participants are asked to decide whether 60 adjectives describe themselves or do not describe themselves. Among these 60 adjectives are 30 pairs of opposites (e.g., beautiful-ugly, nice-mean). SCC is conceptualized as the number of consistent responses (e.g., responding "me" to beautiful and "not me" to ugly). Prior to analyzing the data, the item-total correlation for each pair was examined. Six pairs had negative item-total correlations and were dropped from the analyses. As can be seen in Table 1, the MNMDT was moderately correlated with the SCCS. Although this correlation is consistent with previous research (Campbell et al., 1996), this moderate correlation raises questions about the convergent validity of the MNMDT and SCCS. The MNMDT was significantly more strongly correlated with the SCCS than with the ASI ($Z = 4.22$, $p < .001$), PerMag ($Z = 2.33$, $p = .02$), and the PDI ($Z = 5.24$, $p < .001$), but not SocAnh ($Z =$

.48, p = .63**).** The high correlation with SocAnh may be explained by the high correlation between SCCS and SocAnh.

Psychotic-like Experiences. In Study 1, magical ideation was measured with the Magical Ideation Scale (Eckblad & Chapman, 1983), a 30-item true-false scale designed to measure "beliefs in forms of causation that by conventional standards are invalid" (Eckbald & Chapman, 1983, p.215). For example, "I have worried that people on other planets may be influencing what happens on Earth." The Perceptual Aberration Scale (Chapman, et al., 1978) is a 35-item true-false scale that measures schizophrenic-like distortions in perception of one's own body (e.g., "my hearing is sometimes so sensitive that ordinary sounds become uncomfortable"). The MagicId and PerAb have considerable support for the reliability and validity of their scores (for a review, see Edell, 1995). As is commonly done in schizotypy research (Chapman, et al., 1994) scores on PerAb and MagicId were added together to form a single Perceptual Aberration/Magical Ideation (PerMag) score.

In addition to PerMag, psychotic-like experiences were measured with the 21-item Peters Delusion Inventory (PDI; Peters, et al., 2004), which includes *yes-no* questions regarding delusion-like experiences (e.g., Have your thoughts ever been so vivid that you were worried other people would hear them?). For each affirmative answer, participants are asked three follow-up questions. Participants are asked, "How distressing is this belief or experience?" answered on a Likert-type scale from *1 (Not at all Distressing) to 5 (Extremely distressing)*, "How true do you believe this belief or experience to be?" on a scale from *1 (Don't believe it's True) to 5 (Believe it's absolutely true)*, and "how often do you think about this belief or experience?" on a scale from *1*

(Hardly ever think about it) to 5 (Think about it all the time). Subscale scores are calculated for three proposed dimensions of delusional experience: Delusional Preoccupation, Delusional Distress, and Delusional Conviction.

Social Anhedonia. Social Anhedonia was measured with the Revised Social Anhedonia Scale (SocAnh; Chapman, et al., 1976). The SocAnh contains 40 true-false items that measure a lack of relationships and a lack of enjoyment derived from social interactions (e.g., "I am usually content just to sit alone, thinking and daydreaming") and has been found to predict future development of schizophrenia-spectrum disorders (e.g., Gooding, Tallent, & Matts, 2005).

Infrequency. Participants also completed the Wisconsin Infrequency Scale, which measures invalid or careless responding. The scale includes items that should rarely be answered in the affirmative (e.g., I have never talked to someone wearing eyeglasses). Following convention in schizotypy research, participants who answered "true" to three or more items were excluded from the analyses (Chmielewski, Fernandes, Yee, & Miller, 1995).

Procedure. Participants completed the study on a single occasion in an isolated room. The entire study took approximately 60 minutes. First, participants completed the Me-Not-me Decision Task, followed by the Aberrant Salience Inventory, Self-Concept Clarity Scale, and then the Magical Ideation, Perceptual Aberration, Social Anhedonia Scales, and Wisconsin Infrequency Scales mixed together and called the "Survey of Attitudes and Experiences." Then, participants completed the Peters Delusion Inventory.

Results

Zero-Order Correlations. First, we examined the correlations among aberrant salience, self-concept clarity, and psychotic-like experiences. Due to the large number of correlations being examined, we used the Bonferroni method of correcting the p-value for multiple comparisons (Dunn, 1961). Thus, only correlations significant at the $p < .001$ level are presented and interpreted. As can be seen in Table 1, aberrant salience was associated with magical ideation, perceptual aberration, and PDI scores. It was negatively correlated with both measures of self-concept clarity. The SCCS was negatively correlated with magical ideation, perceptual aberration, PDI scores, and social anhedonia. The MNMDT was negatively correlated with magical ideation, perceptual aberration, and social anhedonia.

Aberrant Salience, Self-Concept Clarity, and Psychotic-like Experiences. In all of the regression analyses reported across studies, we first conducted regression diagnostics as suggested by Pedhazur (1997) to detect outliers. In order to treat outliers consistently across studies, data points with Cook's Ds greater than .05 and leverage values greater than .04 were excluded from the analyses. The specifics of excluded data points are presented where appropriate.

We then tested the prediction of social-cognitive models of psychotic-like experiences that an interaction between high aberrant salience and low self-concept clarity predicts psychotic-like experiences. To test this interaction, ASI scores and SCCS scores were centered around their means and entered as step one of a hierarchical linear regression predicting PerMag scores. The product of ASI and SCCS scores was entered in step two of the analysis. Following Aiken & West (2001), to interpret the interaction, scores were calculated for +1 and -1 standard deviations from the mean for both aberrant

salience and self-concept clarity. Overall, there was a significant interaction between aberrant salience and self-concept clarity predicting PerMag (t (692) = -4.36, $p < .001$; See table 2). No outliers were identified. As can be seen in Figure 1, participants with high aberrant salience but low self-concept clarity had the highest PerMag scores. Participants with high aberrant salience tended to have extreme levels of PerMag only if they had low levels of self-concept clarity as well, which is consistent with social-cognitive models of psychosis. To probe the interaction, we tested the simple slope of the relation between self-concept clarity and PerMag at high and low levels of aberrant salience (Hayes & Matthes, 2009). Self-concept clarity was associated with PerMag when participants were one standard deviation above the mean on the ASI (t (692) = 6.01, $p < .001$), but not when participants were one standard deviation below the mean on the ASI (t (692) = -0.08, $p = .93$). This suggests that self-concept clarity is only related to PerMag at high levels of aberrant salience.

In addition, we tested the same model to see if aberrant salience and self-concept clarity interacted to predict PDI scores. There was a significant interaction between aberrant salience and self-concept clarity in predicting PDI total scores (t (691) = 2.01, p = .04, see Table 2). One outlier was excluded from these analyses. This participant had a Cook's distance value of .11 and a leverage score of .04, which suggests that the participant was an outlier in terms of residual distance from the slope and that this observation had an unduly large influence on the data (Pedhazur, 1997). Like PerMag, self-concept clarity was associated with PDI when participants had high ASI scores (t (691) = 4.26, $p < .001$), but not low ASI scores (t (691) = 1.37, $p = .17$). This suggests that self-concept clarity is only related to PDI scores at high levels of aberrant salience.

Aberrant Salience, Task Self-Concept Clarity, and PerMag. The current research also examined the relations between aberrant salience and a task measure of self-concept clarity. There was a significant interaction between self-reported aberrant salience and task self-concept clarity in predicting PerMag (t (691) = 1.97 p = .05, see Table 2). One outlier was excluded from this analysis. This participant had a Cook's distance of .05 and a leverage score of .05. Similar to the SCCS, MNMDT scores were associated with PerMag when participants had high ASI scores (t (691) = 4.04, p < .001), but not low ASI scores (t (691) = 1.18, p = .24). This suggests that MNMDT scores are only related to PerMag scores at high levels of aberrant salience.

In contrast to PerMag, there was not a significant interaction between MNMDT scores and ASI scores in predicting PDI-total score (t (692) = 0.41, p = .69). No outliers were identified. An analysis of the main effects revealed that ASI was significant associated with PDI-total scores (t (692) = 16.99, p < .001), but the MNMDT was not (t (692) = 0.25, p = .80). ***Specificity of Moderation.*** *T*o test if interaction between aberrant salience and self-concept clarity was specific to psychotic-like experiences, we tested whether there was a significant interaction between the ASI and SCCS in predicting social anhedonia. There was not a significant interaction between aberrant salience and self-concept clarity in predicting social anhedonia (t (692) = -1.21, p = .22), which suggests that the interaction between aberrant salience and self-concept clarity is specific to psychotic-like experiences and not schizotypy in general. No outliers were identified. Examining the main effects revealed that SCCS is negatively related to social anhedonia (t (692) = -8.14, p < .001), but ASI is not (t (692) = -0.06, p = .95).

Discussion

The results of Study 1 are consistent with several social-cognitive models of psychosis as well as phenomenological descriptions of psychotic-like experiences (Bell, et al., 2006b; Freeman, 2007; Moller & Husby, 2000). Specifically, Study 1 found that participants with a combination of high aberrant salience and low self-concept clarity had the highest levels of psychotic-like experiences. The probe of the interaction revealed that low self-concept clarity tended to be unrelated to psychotic-like experiences in people with low aberrant salience, but was strongly associated with increased psychotic-like experiences in people with high aberrant salience. This suggests that low SCC alone may not be sufficient to produce psychotic-like experiences, but may only do so in the presence of high aberrant salience. This finding is consistent with social-cognitive models of psychotic-like experiences that have predicted that self-relevant information processing interacts with aberrant salience or anomalous experiences to produce psychotic-like experiences (Bell, et al., 2006b; Freeman, 2007).

In addition to being consistent with social-cognitive models of psychosis, Study 1 found that the interaction between aberrant salience and self-concept clarity is specific to psychotic-like experiences. This was evident in that there was not a significant interaction between aberrant salience and self-concept clarity in predicting social anhedonia, a common negative symptom associated with psychosis. This, too, is consistent with previous theoretical models of psychosis, which suggest that aberrant salience may only be related to positive symptoms, but not to negative symptoms (Kapur, 2003).

Study 1 used two measures of self-concept clarity, including a questionnaire measure and a task measure. It is important to note that the same pattern of results was found for both the task and the questionnaire. This replication with different methods

provides further evidence for the interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences. However, as can be seen in Table 1, the reliability of the task measure of self-concept clarity was low. Future research could attempt to refine or develop new implicit task measures of self-concept clarity to obtain additional converging evidence about the role of self-concept clarity in psychotic-like experiences.

Study 2

The first goal of Study 2 was to replicate the results of Study 1 in an independent sample. This is important because Study 1 was the first study to test whether there was an interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences. In addition, in Study 2 we included a supplemental measure of anomalous perceptions.

Method

Participants. Participants were 667 undergraduate students who took part in the study as partial fulfillment of a course requirement. Just as in Study 1, participants were prescreened from a larger pool of participants (n= 1,901), by completing abbreviated versions of Magical Ideation, Perceptual Aberration, and Social Anhedonia Scales. As in Study 1, participants completed full version of these three scales in the lab and all analyses are based on the full versions of the scales. According to previous research (Kerns & Berenbaum, 2003), 41 participants met criteria for high positive schizotypy and 70 participants met criteria for high negative schizotypy. Sixty-two participants were excluded for having Wisconsin Infrequency scores of three or greater. Participants ranged from 18-26 years old, with an average age of 18.47 (*SD* = 0.93). Participants were 63% female, 86% White, 6% African-American, and 8% other.

Measures. ***Aberrant Salience.*** Aberrant Salience was measured with the Aberrant Salience Inventory (Cicero, et al., 2010), like in Study 1.

Self-Concept Clarity. Self-concept clarity was measured with the Self-Concept Clarity Scale (Campbell, 1990), like in Study 1.

Psychotic-Like Experiences. As in Study 1, psychotic-like experiences were measured with the Magical Ideation Scale (Eckblad & Chapman, 1983) and the Perceptual Aberration Scale (Chapman, et al., 1978). Another measure of psychotic-like experiences was the Cardiff Anomalous Perceptions Scale (CAPS; Bell, et al., 2006a). The CAPS contains 32 yes-no items that measure anomalous perceptual experiences (e.g., Do you ever find that sounds are distorted in strange or unusual ways?). In previous research, the CAPS has been found to be correlated with other measures of unusual perceptual experiences and to be higher in psychotic populations than in non-psychotic populations.

Social Anhedonia. Social Anhedonia was measured with the Revised Social Anhedonia Scale (Chapman, et al., 1976) as in Study 1.

Infrequency. Participants completed the Wisconsin Infrequency Scale like in Study 1.

Procedure. Like in Study 1, participants completed the study on a single occasion in an isolated room, which took approximately 60 minutes. Participants completed the Magical Ideation, Perceptual Aberration, Social Anhedonia, and Wisconsin Infrequency Scales mixed together. Then participants completed a battery of questionnaires including the Aberrant Salience Inventory, Self-Concept Clarity Scale, Cardiff Anomalous Perceptual Experiences Scale, and filler items.

Results

Zero Order Correlations. As can be seen in Table 2, aberrant salience was associated with increased PerMag experiences and CAPS scores. Self-concept clarity was negatively associated with aberrant salience, PerMag, and CAPS scores.

Psychotic-like Experiences. The first goal of Study 2 was to replicate the results of the interaction between aberrant salience and self-concept clarity in predicting magical ideation and perceptual aberration. Since PerMag and CAPS scores were highly correlated, the scores were combined to form a single PerMag/CAPS score. Z-scores were calculated for PerMag and CAPS scores within gender and a mean was taken. Like in Study 1, we tested whether there was a significant interaction between aberrant salience and self-concept clarity in predicting PerMag/CAPS scores by entering mean-centered ASI and SCCS scores in step one of a hierarchical linear regression model and the product of these scores in step 2. Just as in Study 1, aberrant salience and self-concept clarity interacted to predict PerMag/CAPS scores (t (605) = 7.30, $p < .001$; See Table 4). As found in Study 1, participants with high aberrant salience and low self-concept clarity had the highest levels of PerMag/CAPS scores and self-concept clarity was associated with PerMag at one standard deviation above the mean on aberrant salience (t (605) = 9.15, $p < .001$), but not at one standard deviation below the mean (t (605) = 0.42, p =.67). No outliers were identified.

Specificity of Moderation. Like Study 1, Study 2 found that there was not a significant interaction between aberrant salience and self-concept clarity in predicting social anhedonia (t (605) = 0.98, $p < .33$). As can be seen in Table 4, self-concept clarity, but not aberrant salience, was significantly associated with social anhedonia.

Discussion

The first goal of Study 2 was to replicate the results of Study 1 in a separate sample. It is especially important to replicate the results of Study 1 because, to my knowledge, Study 1 was the first study to test an interaction between aberrant salience

and self-concept clarity. Study 2 found the same interaction as in Study 1. In addition, Study 2 included a supplemental measure of anomalous perceptual experiences and found the same interaction, which suggests that the aberrant salience/self-concept clarity interaction can explain perceptual aberrations in addition to magical ideation.

Study 3

Although Study 2 replicated and extended the results of Study 1, one potential explanation for the finding that self-concept clarity interacts with aberrant salience to predict psychotic-like experiences is that the role of self-concept clarity can be explained by its overlap with neuroticism. For example, previous research has found that low self-concept clarity is associated with neuroticism (Campbell, et al., 1996). Similarly, there is a great deal of literature linking psychosis with a tendency to experience negative affect, particularly as a response to stressors (e.g., Berenbaum & Fujita, 1994; van Os, Kenis, & Rutten, 2010). Theorists have suggested that stress sensitivity, defined as an increased negative mood reaction to stress and assessed with measures of neuroticism, may be a suitable endophenotype for psychosis (see Myin-Germeys & van Os, 2007, for a review). Aberrant salience may interact with negative affect, or neuroticism, such that people with high aberrant salience have psychotic-like experiences if they also have high neuroticism. This would suggest that it is not disturbances in self-processing that contribute to psychotic-like disturbances, but neuroticism. If the current result is specific to self-disturbances, then we would expect to replicate the interaction between aberrant salience and self-concept clarity found in Study 1 and Study 2, but not find an interaction between aberrant salience and neuroticism in predicting psychotic-like experiences.

In addition to testing the specificity of aberrant salience interacting with self-concept clarity to predict psychotic-like experiences, a goal of Study 3 was to test whether the interaction between aberrant salience and self-concept clarity was specific to psychotic-like experiences. In Study 1 and Study 2, social anhedonia was used to examine specificity. However, previous research suggests that schizotypy is multidimensional and

includes a paranoid factor in addition to a positive and negative factor (Stefanis et al., 2004). Thus, Study 3 examined whether there was a significant interaction between aberrant salience and self-concept clarity in predicting paranoia. Paranoia serves as a more stringent test of the specificity of the interaction because paranoia is more strongly correlated with psychotic-like experiences than is social anhedonia (Stefanis, et al., 2004).

The first goal of Study 3 was to replicate the results of Study 1 and Study 2 by showing that there was a significant interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences. The second goal of Study 3 was to test whether this interaction is specific to self-concept clarity or whether aberrant salience would also interact with neuroticism to predict psychotic-like experiences. The third goal of Study 3 was to test the specificity of the interaction by testing whether aberrant salience and self-concept clarity also interact to predict paranoia.

Method

Participants. Participants were 744 introductory psychology students who participated in the study for partial completion of a course requirement. Like Study 1 and Study 2, participants were prescreened from a larger pool of participants (n= 2,197), by completing abbreviated versions of the Magical Ideation, Perceptual Aberration, and Social Anhedonia scales. According to previous research (Kerns & Berenbaum, 2003), 81 participants met criteria for high positive schizotypy and 60 participants met criteria for high negative schizotypy. Sixty-four participants were excluded for having Wisconsin Infrequency scores of three or greater. Participants ranged from 18-24 years old, with an

average age of 18.47 (*SD* = 0.77). Participants were 61% female, 88% White, 4% African-American, and 10% other.

Measures. ***Aberrant Salience.*** Aberrant Salience was measured with the Aberrant Salience Inventory (Cicero, et al., 2010), like in Study 1 and Study 2.

Self-Concept Clarity. Self-concept clarity was measured with the Self-Concept Clarity Scale (Campbell, 1990), like in Study 1 and Study 2.

Psychotic-Like Experiences. As in Study 1 and Study 2, psychosis proneness was measured with the Magical Ideation Scale (Eckblad & Chapman, 1983), the Perceptual Aberration Scale (Chapman, et al., 1978)

Social Anhedonia. Like in Study 1 and Study 2, participants completed the Revised Social Anhedonia Scale (Chapman, et al., 1976).

Neuroticism. Neuroticism was measured with the 10-item subscale of the International Personality Item Pool (IPIP; Goldberg, 1999). Participants rate items on a scale from *1 (very accurate)* to *5 (very inaccurate).* An example item is, "I get stressed out easily." Previous research has found that the 10-item neuroticism subscale of the IPIP is highly correlated with other measures of neuroticism and has high internal consistency.

Paranoia. Paranoia was measured with the eight--item yes-no Suspiciousness subscale of the Schizotypal Personality Questionnaire (SQP-S; Raine, 1991; e.g., Do you sometimes get concerned that friends or coworkers are not really loyal or trustworthy?)**.** In previous research, the SPQ-S has consistently been found to load with other measures of paranoia on a factor distinct from PerMag scales (e.g., Cicero & Kerns, 2010b).

Infrequency. Participants completed the Wisconsin Infrequency Scale like in Study 1 and Study 2.

Procedure. As part of a larger study that included filler items, participants completed the Magical Ideation, Perceptual Aberration, Social Anhedonia, and Wisconsin Infrequency Scales mixed together and called the "Survey of Attitudes and Experiences." Then participants completed the Aberrant Salience Inventory, the Self-Concept Clarity Scale, the Neuroticism subscale of the International Personality Item Pool, and the Suspiciousness subscale of the Schizotypal Personality Questionnaire.

Results

First, we tested whether there was a significant three-way interaction between ASI, SCC, and Neuroticism scores in predicting PerMag scores (see Table 6). Mean centered ASI, SCC, and Neuroticism scores were entered in step 1 of a hierarchical linear regression. The three two-way interactions were entered in step 2, and the three-way interaction was entered in step 3. There was not a significant three-way interaction (t (675) = .72, p = .47). However, as in Study 1 and Study 2, there was a significant interaction between ASI and SCC scores in predicting PerMag (t (675) = 3.73, p <.001) such that participants with high aberrant salience and low self-concept clarity had the highest levels of PerMag. There was not a significant interaction between aberrant salience and neuroticism in predicting PerMag (t (680) = 0.94, p = .34). Since there was not a significant two-way interaction between aberrant salience and neuroticism, we tested whether there were significant main effects for aberrant salience and neuroticism. Both aberrant salience (t (680) = 18.45, p < .001) and neuroticism (t (680) = 3.98, p = .03) uniquely contributed to the prediction of PerMag. Similarly, there was not a significant interaction between neuroticism and self-concept clarity in predicting PerMag (t (680) = 1.86, p = .06), but both SCC (t (680) = 9.14, p < .001) and neuroticism (t (680)

= 2.35, p = .02) uniquely contributed to the prediction of PerMag. This suggests that the interaction between aberrant salience and self-concept clarity is specific to self-concept clarity, and not related to an interaction between aberrant salience and negative affectivity.

Additionally, there was not a significant interaction between self-concept clarity and aberrant salience in predicting paranoia (t (680) = 0.54, p = .59). However, there were main effects for both self-concept clarity and aberrant salience in predicting paranoia (see Table 7).

Discussion

Study 3 replicated the results of Study 1 and Study 2 by finding that there was a significant interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences. In addition, Study 3 found that there was not a significant interaction between aberrant salience and neuroticism in predicting psychotic-like experiences. Although neuroticism is associated with psychotic-like experiences, this association remains constant at all levels of aberrant salience. Thus, it appears that there is something specific about self-concept clarity that is distinct from negative affect that interacts with aberrant salience to predict psychotic-like experiences. This is consistent with previous theoretical models and phenomenological descriptions of psychosis, which suggest that it is a specific disturbance in the processing of self-relevant information that results in psychosis, rather than just a general feeling of negative affect (Freeman, 2007; Moller & Husby, 2000). The current research also found that self-concept clarity and aberrant salience did not interact to predict paranoia, which provides a more stringent test

for the specificity of the interaction between aberrant salience and self-concept clarity in predicting PerMag.

Study 1 –Study 3 included unselected samples of college students oversampled for a risk for schizophrenia. Moreover, these studies relied on self-report as the primary measure of psychotic-like experiences. Research has suggested that interview measures, while still partially self-report, may provide a better indicator of psychotic-like experiences than self-report alone (Kendler, Lieberman, & Walsh, 1989; Kendler, Thacker, & Walsh, 1996). The first goal of Study 4 was to screen a large number of participants to identify a sample of people with high positive schizotypy and negative schizotypy, as well as 50 control participants for participation in Study 5, which included an in-depth interview assessment of psychotic-like experiences, the Structured Interview for Prodromal Syndromes (Miller et al., 2003). In addition, a second goal of Study 4 was to include an additional task measure associated with dopamine function, the Probabilistic Selection Task (Frank, Seeberger, & O'Reilly R, 2004). I hypothesized that scores on this task would be correlated with measures of psychotic-like experiences and would be elevated in a group of participants with high positive schizotypy.

Study 4

The primary goal of Study 4 was to screen participants for high positive and negative schizotypy. Study 4 includes the 724 participants in Study 1 and an additional 274 participants. In the current research, this is reported as a separate study for ease of presentation. The second goal of Study 4 was to test whether people with positive schizotypy had higher levels of aberrant salience than negative and control participants. This study also included a task measure that is sensitive to differences in subcortical dopamine, which I hypothesized would be higher in positive than negative and control participants. The third goal of Study 4 was to examine between group differences in self-relevant information processing. I expected to find that participants with high positive schizotypy would have lower self-esteem and self-concept clarity than would negative schizotypy and control participants. As described below, participants were recruited for Study 4 from a larger pool of undergraduate students using abbreviated versions of the Wisconsin Schizotypy Scales, following convention. Participants who met criteria for Positive, Negative, and Control groups, as described below were invited to participate in Study 5. Study 5 included the Structured Interview for Prodromal Syndromes, which is a more in-depth and time-consuming measure of psychotic-like experiences.

Method

Participants. Participants were recruited in a two-step process. First, participants were recruited from a larger pool of undergraduate students (n=2,244). These participants completed abbreviated versions of the Magical Ideation Scale (Eckblad & Chapman, 1983), the Perceptual Aberration Scale (Chapman, et al., 1978), and the Revised Social Anhedonia Scale (Eckblad, Chapman, Chapman, & Mishlove, 1982). Following previous

research (e.g., Chapman, et al., 1994; Edell, 1995; Lenzenweger, 1994), participants were recruited to take part in the second screening phase if they scored above two standard deviations above the mean on the Magical Ideation Scale, Perceptual Aberration Scale, or Revised Social Anhedonia Scale, or if they scored a combined three standard deviations above the mean on the Magical Ideation and Perceptual Aberration Scales. In addition, a comparison group of participants scoring less than 0.5 standard deviations above the mean on all three scales were recruited to participate in the second screening phase.

In the second screening phase, participants completed the full versions of the Magical Ideation, Perceptual Aberration, and Social Anhedonia Scales and were categorized into a Positive, Negative, or control group based on norms established in previous research (Kerns & Berenbaum, 2003) in the manner described above.

Positive Schizotypy Group. Participants in the positive schizotypy (n = 85) group scored two standard deviations above the mean on the Magical Ideation Scale or the Perceptual Aberration Scale or a combined three standard deviations above the mean on both scales. Participants were 48% Female, 80% White, 9% African-American, 3% Asian American, 5% Biracial, and 4% Other. The mean age was 18.53 (*SD* = 0.79).

Negative Schizotypy Group. Participants in the negative schizotypy group (n = 91) scored above two standard deviations above the mean on the Revised Social Anhedonia Scale. Participants were 71% female, 71% White, 18% African-American, 3% Asian-American, 3% biracial, and 4% other. The mean age was 18.72 (*SD* = 1.23).

Control Group. Participants in the control group (n = 441) scored below 0.5 standard deviations above the mean on the Magical Ideation Scale, Perceptual Aberration Scale, and Revised Social Anhedonia Scale. Participants were 60% female, 89% White,

6% African-American, 2% Asian American, 1% Hispanic, 1% Biracial, and 1% other. The mean age was 18.60 (*SD* = 1.09).

Materials

Positive Schizotypy. Like in Study 1, Study 2, and Study 3, magical ideation was measured with the Magical Ideation Scale (Eckblad & Chapman, 1983), and perceptual aberration was measured with the Perceptual Aberration Scale (Chapman, et al., 1978).

Negative Schizotypy. As described in Study 1, Study 2, and Study 3, negative schizotypy was measured with the Revised Social Anhedonia Scale (Eckblad, et al., 1982).

Aberrant Salience. Like in Study 1, Study 2, and Study 3, aberrant salience was measured with the Aberrant Salience Inventory (Cicero, et al., 2010).

Reward Processing. The Probabilistic Selection Task (PST; Frank, et al., 2004) was used to measure individual differences in reward processing style. In particular, the PST assesses preference for approaching rewards versus avoiding punishment. In this task, participants choose the correct stimulus among pairs of stimuli (unfamiliar Hiragana characters). These stimuli are reinforced probabilistically. In the AB pair, A is rewarded 80% of the time, while B is rewarded only 20% of the time. In the CD pair, C is rewarded 70% of the time while D is rewarded only 30% of the time, and in the EF pair, E is rewarded 60% of the time while F is rewarded 40% of the time. Participants complete the first block of the task until they learn to reliably choose A over B (at least 70% of the time), C over D (at least 60% of the time), and E over F (at least 50% of the time). Participants are then presented with novel combinations of stimuli (e.g., AD, AF, BC, BF) and asked to choose a stimulus in the absence of feedback. The dependent variable is

the individual difference in preference for choosing stimulus A vs. avoiding stimulus B. We chose to include the PST in the current research because it has been found to be associated with levels of dopamine (Frank, et al., 2004), delusions in people with schizophrenia (Waltz & Gold, 2007), and brain regions that are associated with dopamine activity, including the nucleus accumbens (Frank, 2005).

Self-Concept Clarity (SCC). Like in Study 1, Study 2, and Study 3, self-concept clarity was measured with the Self-Concept Clarity Scale (SCCS; Campbell, 1990). A second measure of self-concept clarity was the Me-Not-Me Decision Task (MNMDT; Campbell et al., 1996), also described in Study 1.

Self-Esteem. Explicit self-esteem was measured with the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES has been shown to have high internal consistency and test-retest reliability (Rosenberg, 1965) and may be the most commonly used measure of trait self-esteem (Leary, Tambor, Terdal, & Downs, 1995).

Results

Participant Recruitment. The first goal of Study 4 was to screen participants and identify people who meet Wisconsin Schizotypy criteria for high positive schizotypy, high negative schizotypy, and control. Of the 998 participants who participated in Study 4, 85 met criteria for positive schizotypy, 91 met criteria for negative schizotypy, and 441 met criteria for the control group. All participants meeting criteria for positive schizotypy, all meeting criteria for negative schizotypy, and a subset of the participants meeting criteria for the control group were invited to participate in Study 5. Following convention (Chapman, et al., 1994), if participants met criteria for both the positive and

negative group, they were assigned to the group that for the scale on which they had the highest z-score.

Between Groups Comparisons for Aberrant Salience Variables. The second goal of Study 4 was to examine whether the positive group displayed increased aberrant salience, impaired approach or avoidance learning, and an increased preference for approach over avoidance learning. Prior to examining this, I tested whether aberrant salience, as measured with the ASI, was associated with PST scores. This was done to see if the PST and ASI were highly correlated enough to create a composite aberrant salience variable. Clearly, they were not, as the ASI was not significantly correlated with approach learning (r = .01), avoidance learning (r =.02), or a preference for approach over avoidance learning (r = .03).

To test for differences between groups in aberrant salience, I used a one-way ANOVA to examine group differences, followed by planned independent samples t-tests for the three comparisons between groups (i.e., positive vs. control, positive vs. negative, and negative vs. control). As can be seen in Table 8, the positive group had higher ASI scores than both the negative group (t (605) = 22.99, p < .001) and the control group (t (605) = 10.20, p < .001), while the negative group had higher scores than the control group (t (605) = 5.00, p < .001).

The second measure of aberrant salience was the Probabilistic Selection Task (Frank, et al., 2004). I hypothesized that positive participants would display a tendency to approach rewards more than to avoid punishments, reflecting an increase in subcortical dopamine. As can be seen in Table 8, the positive group showed deficits in both approaching rewards (t (605) = 2.24, p = .03) and avoiding punishments (t (605) = 2.31, p

= .03) when compared to the control group. The negative group was also impaired in approach (t (605) = 2.23, p = .03) and avoidance (t (605) = 2.31, p = .03) compared to the control group. However, the positive and the negative group did not differ in terms of approach (t (605) = 0.12, p = .91) or avoidance learning (t (605) = 1.20, p = .91). In contrast to my hypothesis, there were no significant differences among groups in terms of a preference for approach vs. avoidance learning (F (2, 603) = 0.54, p = .58).

Between Group Comparisons in Self-Relevant Information Processing. The third goal of Study 4 was to test between group differences in self-esteem and self-concept clarity. Prior to conducting these analyses, I examined how strongly the self-relevant information processing variables were correlated with each other. As expected, the Self-Concept Clarity Scale was positively correlated with the MNMDT and negatively correlated with the reaction time measure, which suggests that as self-concept clarity increased participants made me not-me decisions faster. Moreover, self-esteem was positively correlated with the MNMDT and negatively correlated with MNMDT reaction times (see Table 9).

As can be seen in Table 10, participants in the positive (t (605) = 9.24, p < .001) and negative (t (605) = 8.99, p < .001) group had lower SCCS scores than control group, but did not significant differ from each other (t (605) = 0.66, p = .51). Participants in the positive (t (605) = 2.68, p = .01) and negative (t (605) = 4.79, p < .001) group had lower SCCS scores than control group, but did not significant differ from each other (t (605) = 1.42, p = .16). Participants in the negative group were slower to rate words as “me” or “not me” than were participants in the control group (t (605) = 2.21, p = .03), but did not differ from the positive group (t (605) = 0.47, p = .64). The positive group did not differ

from the control group in MNMDT reaction times (t (605) = 1.47, p = .14). Finally, participants in the positive (t (605) = 5.12, p = .01) and negative (t (605) = 7.86, p < .001) group had lower SCCS scores than control group, but did not significantly differ from each other (t (605) = 1.47, p = .15).

Study 4 Discussion

The first goal of Study 4 was to identify enough participants who meet criteria for Wisconsin Schizotypy Positive, Negative, and Control groups. Of the nearly 1,000 participants in this study, 85 met criteria for positive schizotypy, 91 met criteria for negative schizotypy, and 441 met criteria for the control group. Thus, roughly 8.5% of the sample met criteria for high positive schizotypy and 9.2% met criteria for high negative schizotypy. This percentage of participants with high positive schizotypy exceeds the rate of participants with positive schizotypy (3.0%) that I have found in previous research that made no effort to specifically recruit participants with high positive schizotypy (Cicero & Kerns, 2010b). This suggests that the strategy of prescreening participants was successful in increasing the number of positive schizotypy participants in the study.

Study 4 also showed that participants with positive schizotypy had elevated scores on the Aberrant Salience Inventory. This finding is consistent with previous research using the ASI in college student populations with high-risk designs (Cicero, et al., 2010) and with other research on aberrant salience in schizotypy (Schmidt & Roiser, 2009). However, Study 4 did not find the expected preference for approach versus avoidance learning in participants with high positive schizotypy, and PST scores were not significantly associated with aberrant salience scores. One potential reason for not finding

a significant result in this study was that the study was limited by time constraints. In the PST, participants repeat the initial trial until they meet criterion. Essentially, participants continue on the first block until they successfully learn the reward contingencies, demonstrated by choosing the rewarded stimuli and avoiding the non-rewarded stimuli. However, due to time constraints, participants moved on to the second block after ten tries, even if they did not meet criterion. Some participants may not have successfully learned the contingencies and the approach-minus-reward variable may not actually reflect a preference for approach learning in these participants. If participants who did not meet criterion were excluded from the study, the pattern of results did not change.

Instead of finding an elevated preference for approach versus avoidance learning in Study 4, I found that participants with both high positive and high negative schizotypy chose the rewarded stimulus and avoided the non-rewarded stimulus less than did control participants. This suggests that people with high schizotypy have impairments in learning reward contingencies, and that this effect is not specific to positive schizotypy as hypothesized. However, this finding is consistent with some previous research, which suggests that schizotypy and schizophrenia are associated with impaired associative learning (Martins Serra, Jones, Toone, & Gray, 2001). Moreover, previous research has found that schizotypy is associated with a reduction in learned irrelevance, which may be associated with general impairments in learning (e.g., N. S. Gray & Snowden, 2005; Le Pelley, Schmidt-Hansen, Harris, Lunter, & Morris, 2010; Schmidt-Hansen, Killcross, & Honey, 2009).

Study 4 also found that both the positive and negative groups had lower Self-Concept Clarity Scale, Me Not-Me Decision Task, Rosenberg Self-Esteem Scale scores

and slower Me Not-Me Decision Task reaction times than the control group. These findings are consistent with social-cognitive models of psychotic-like experiences that posit a central role for self-relevant information processing (e.g., Freeman, 2007; Garety, et al., 2001). The schizotypy groups consistently had lower self-concept clarity scores with the self-report measure, the consistency of their responses on the MNMDT and the speed with which they made these responses. This suggests that participants have low self-concept clarity both in their explicit judgments of their personalities, as well as with measures that may be outside of conscious awareness (Campbell, et al., 1996).

The finding that the positive and negative schizotypy groups have lower self-esteem than the control group is consistent with some previous research that suggests low self-esteem is associated with facets of schizotypy, including paranoia (Cicero & Kerns, 2010a; Combs & Penn, 2004; Thewissen, et al., 2008) and referential thinking (Cicero & Kerns, 2011). However, to my knowledge, no published research has shown that magical ideation or perceptual aberration is associated with self-esteem, despite several studies showing that magical ideation and perceptual aberration are associated with constructs highly correlated with self-esteem such as neuroticism (Ross, Lutz, & Bailley, 2002), depression (Rey, Jouvent, & Dubal, 2009), and low positive affect (Watson & Naragon-Gainey, 2009).

One limitation of Study 1-Study 4 is that they used largely unselected college student samples and relied primarily on self-report instruments. Although, Study 1 and Study 4 included a task measure of self-concept clarity and Study 4 included a task measure of dopamine functioning. The reliance on subclinical samples raises questions about the generalizability of the results to samples that include people with clinically

meaningful psychotic-like and psychotic symptoms. In Study 5, these limitations were addressed by recruiting only participants who met criteria for positive, negative, and control groups and using an interview measure of psychotic-like experiences.

Study 5

The main finding of Study 1, Study 2, and Study 3 was that there was a significant interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences. The first goal of Study 5 was to replicate this result with interview-rated psychotic-like experiences. The second goal of Study 5 was to examine whether the positive schizotypy group would show more aberrant salience on other questionnaire and task measures of aberrant salience compared to the negative schizotypy and control groups. Additionally, Study 5 examined whether aberrant salience was associated with interview-rated psychotic-like experiences. The third goal of Study 5 was to test whether the positive group had lower self-concept clarity and self-esteem than the negative and control groups, and whether self-concept clarity was negatively correlated with interview-rated psychotic-like experiences.

In addition to examining the relations among aberrant salience, self-concept clarity, and interview-rated psychotic-like experiences, the fourth goal of Study 5 was to compare the effectiveness of several schizotypy questionnaire measures in identifying people who would be rated as having clinically meaningful interview assessed psychotic-like experiences. There has been a debate in recent research about the best methodology for identifying people at risk for developing schizophrenia (Kulhara, Banerjee, & Dutt, 2008; Phillips, Yung, & McGorry, 2000). Research suggests that interview measures are generally more accurate than self-report questionnaire measures (Kendler, et al., 1989; Kendler, et al., 1996). By far, the most commonly used measures for identifying undergraduate college students at risk for the development of psychosis is the Wisconsin Schizotypy Scales. This has been referred to as the psychometric high-risk strategy

(Lenzenweger, 1994). A goal of the current research was to examine how well participants identified with this strategy correspond to participants identified as having clinically significant psychotic-like experiences on the Structured Interview for Prodromal Syndromes. In addition to the Wisconsin Schizotypy Scales, several other scales have more recently been developed to measure schizotypy. Another goal of the current research was to examine which of these measures were the best predictors of interview-rated psychotic-like experiences.

Method

Participants. Participants who met criteria for positive, negative, or comparison groups in Study 4 were asked to participate in Study 5, which took about approximately two hours to complete. Thus, participants' group membership was based on their scores on the Wisconsin Schizotypy Scales in Study 4. In addition, participants' scores on the ASI and SCCS in Study 4 were used to examine the interaction between aberrant salience and self-concept clarity in predicting interview-rated psychotic-like experiences. Like in Study 4, if a participant met criteria for both the positive and negative group, they were assigned to the group for the scale on which they had the highest Z-score.

Positive Group. Like in Study 4, participants in the positive group scored 1.96 standard deviations above the mean or higher on the Magical Ideation or Perceptual Aberrant Scale, or a combined 3.0 standard deviations above the mean on both scales. There were 51 participants in the positive group who had a mean age of 18.56, (*SD* = 0.85), were 43% female, 76% White, 10% African-American, 4% Asian American, and 8% other.

Negative Group. Like in Study 4, participants in the negative group scored more than 1.96 standard deviations above the mean on the Revised Social Anhedonia Scale. There were 61 participants in the negative schizotypy group who had a mean age of 18.96 (*SD* = 1.53), were 65% female, 72% White, 19% African-American, 4% biracial, and 6% other.

Control Group. Like in Study 4, participants in the control group scored less than .5 standard deviations above the mean on the Magical Ideation Scale, Perceptual Aberration Scale, and Revised Social Anhedonia Scale. There were 44 participants in the comparison group who had a mean age of 18.58 (*SD* = 1.03), were 54% female, 94% White, 2% African-American, and 2% Asian American.

Materials. ***Symptom Assessment and Ratings.*** The Structured Interview for Prodromal Syndromes (SIPS; Miller, et al., 2003) was used to assess for risk for psychosis and to obtain ratings for positive, negative, and disorganized symptoms of the prodromal syndrome. The SIPS is a semi-structured interview designed to assess the prodromal stage of the development of schizophrenia. The SIPS, and the accompanying Scale of Prodromal Syndromes (SOPS), were designed to be similar to the Positive and Negative Syndrome Scales (PANNS; Kay, Fiszbein, & Opler, 1987) but to assess prodromal symptoms rather than full-fledged clinical symptoms. The SIPS was designed to measure the three main factors of schizophrenia symptoms: positive, negative, and disorganized. The SIPS was chosen for the current study because it contains modifications to the positive symptom scales in order to access a wider variety of symptoms in more detail and to extend these assessments into less severe, pre-psychotic ranges.

Prior to conducting Study 5, I was trained in the administration and scoring of the interview by one of the creators of the SIPS, Barbara Walsh, at the Psychosis Prodrome Research Clinic (PRIME Clinic) at Yale University. I met criteria for certification in the administration of the SIPS by meeting a standard for inter-rater reliability with clinicians and researchers at the PRIME Clinic.

Anomalous Perceptual Experiences. The Structured Interview of Assessing Perceptual Anomalies (SIAPA; Bunney et al., 1999) was used to assess anomalous perceptual experiences**.** Participants are asked open-ended questions about their perceptual experiences in the last week, and ratings are made on a Likert scale. The SIAPA contains three subscales for perceptual hypersensitivity, inundation, and selective attention to external sensory stimuli. These ratings are made on a scale of 1 (Never), 2 (Rarely), 3 (Half the time), 4 (Often), and 5 (Always). Previous research has found that the SIAPA has high inter-rater reliability, and patients with schizophrenia had higher scores than control participants on all three rating scales (Bunney, et al., 1999).

A second measure of anomalous perceptual experiences was the Cardiff Anomalous Perception Scale (CAPS; Bell et al., 2006b). The CAPS contains 32 items that measure anomalous perceptual experiences (e.g., do you ever find that sounds are distorted in strange or unusual ways?). Participants answer "yes" or "no" to each question. For each affirmative answer, they answer three follow-up questions about how distressing the experience was (1 *not at all distressing* to 5 *very distressing*), how distracting the experience was (1 *not at all distracting* to 5 *completely distracting*), and how frequently the experience occurs (1 *happens hardly at all* to 5 *happens all the time*). Thus, subscale scores can be calculated for distress, distraction, and frequency. In

previous research the CAPS has been found to be correlated with other measures of unusual perceptual experiences and to be higher in psychotic populations than in non-psychotic populations.

Aberrant Salience. One measure of aberrant salience was the Salience Attribution Test (SAT; Roiser, et al., 2008). The SAT was designed to assess impaired learning of task-relevant stimulus-reinforcement associations in the presence of task-irrelevant cues. In the task, participants make a speeded response to a probe in order to earn money. Cues appear just before the onset of the probe and signal the probability that the participant will earn money on that trial. Cues vary on two dimensions: Color (red or blue) and Shape (chair or animal). The probability of earning money on a given trial is only related to one stimulus dimension (e.g., chair cues signal the probability of being rewarded 87.5% of the time, while animal cues signal being rewarded 12.5% of the time; color is not relevant to whether the participant is rewarded). The task-relevant dimension was counterbalanced to avoid the possibility that one type of stimuli is inherently more salient than others. Implicit and explicit aberrant salience scores were calculated. *Implicit aberrant salience* reflects the extent to which participants do not speed up their reaction times for the high probability of reward in comparison to the low probability of reward cues (i.e., the absolute value of the difference in reaction times for the high probability of reward cues and the low probability of reward cues). After the task, participants were asked to estimate how frequently they think the stimuli were rewarded. *Explicit aberrant salience* refers to the absolute value of the difference between estimates of the reward level for the task irrelevant stimuli. The SAT contains two blocks of 64 trials each**.**

In addition to implicit and explicit aberrant salience, the SAT provides information about how well participants are actually learning the reward contingencies. This is referred to as adaptive salience. *Implicit Adaptive Salience* refers to how much faster participants are for the rewarded stimuli, in which faster responses result in earning more points, than they are for non-reward stimuli, in which participants do not earn points regardless of the speed of their responses. For example, if red chairs and red cats are the rewarded variables and blue chairs and blue cats are the non-rewarded variables, *Implicit Adaptive Salience* is the difference score between reaction times for the mean of the blue stimuli and the mean of the red stimuli.

Similarly, *Explicit Adaptive Salience* is the difference score between the participants' estimates of the how often the truly rewarded stimuli were rewarded minus their estimates of how often the truly non-rewarded stimuli were rewarded. This represents how well the participants explicitly learned the reward contingencies.

In addition to these four scores (implicit aberrant salience, implicit adaptive salience, explicit aberrant salience, and explicit adaptive salience), I examined group differences for the implicit reaction times and explicit ratings for the rewarded and non-reward stimuli. This allowed for the examination of whether there were group differences in estimates of the reward stimuli that were not also dependent on estimates of non-rewarded stimuli, and vice versa.

A second measure of aberrant salience in Study 5 was a modified version of the ASI used in Study 1-Study 4. Participants were presented with the same items as in previous studies, but were instructed to respond only for experiences they had in the last two weeks. This allowed for us to examine the relations between current, as opposed to

lifetime, aberrant salience and other variables in Study 5. Additionally, if participants answered affirmatively to an item, they were instructed to answer a follow-up question about how frequently it happened in the last two weeks. Two scores were calculated based on this version of the ASI. First, the affirmative answers were summed for an ASI last-two-weeks score. Second, the frequency scores were summed to create an ASI-Frequency score.

Self-Concept Clarity. Self-concept clarity was measured with the Self-Concept Clarity Scale as in Study 1 – Study 4. A second measure of self-concept clarity in Study 5 was a modified version of the MNMDT from Study 4. Participants were not asked to respond as quickly as possible. Instead, participants were asked follow-up questions about how sure they were about their responses. If the participant answered "me" to the adjective, they were asked, "How sure are you that this word describes you?" on a scale from 1 (Not at all sure) to 7 (Completely sure). Conversely, if they answered "not me" to the adjective, they were asked "How sure are you that this word does not describe you?" on the same 1-7 scale. This allowed for the calculation of a self-concept clarity confidence score in addition to the score of consistent responding like in Study 1.

Paranoia. Like in Study 3, paranoia was measured with the Suspiciousness Subscale of the Schizotypal Personality Questionnaire (SPQ-S; Raine, 1991).

Results

Aberrant Salience, Self-Concept Clarity, and Interview-Rated Psychotic-Like Experiences. The first goal of Study 5 was to replicate the interaction from Study 1-Study 3 with interview measures of psychotic-like experiences. Prior to conducting the regression analysis, I examined a scatter plot of the interaction term (ASI X SCCS) and

positive symptom ratings. One participant was identified as an outlier. This participant had very high ASI (27) and SCC (51) scores, which lead to the participant having the highest ASI X SCC product score in the sample. Removing this participant from the study did not change the pattern of results. Since this participant was identified as an outlier based on ASIXSCC scores, this participant was removed from all moderator analyses.

To test the interaction between ASI and SCC, mean centered ASI scores and mean centered SCCS scores were entered in step one of a hierarchical linear regression predicting a composite positive rating score (the mean of the five positive ratings). The product of ASI and SCCS scores was entered in step 2. As can be seen in Table 11, there was a significant interaction between aberrant salience and self-concept clarity such that participants with high aberrant salience and low self-concept clarity had the highest levels of interview rated positive symptoms (t (159) = 2.64, p = .02; see Figure 2). Like in Study 1-Study 3, self-concept clarity was negatively associated with positive symptoms at high levels of aberrant salience (t (159) = 3.13, p < .01), but not at low levels of aberrant salience (t (159) = 0.16, p = .87). Similarly, there was a significant interaction between aberrant salience and self-concept clarity in predicting delusional ideation (t (159) = 2.00, p < .05) and Grandiosity (t (159) = 2.43, p = .02), but not paranoia (t (159) = 4.45, p = .15), perceptual anomalies (t (159) = 1.50, p = .14), or disorganized communication (t (159) = 1.34, p = .18). Like the composite positive score, SCCS was negatively correlated with delusional ideation at high levels of aberrant salience (t (159) = 2.03, p = .04), but not at low levels of aberrant salience (t (159) = 0.70, p = .48). The SCCS was negatively correlated with grandiosity at high levels of aberrant salience (t (159) = 2.79, p < .01), but

not at low levels of aberrant salience (t (159) = 0.25, p = .80). As can be seen in Table 11, there were main effects for both aberrant salience and self-concept clarity in predicting paranoia. However, SCCS was unrelated to perceptual anomalies and disorganized communication at all levels of aberrant salience.

Aberrant Salience, Self-Concept Clarity, and Negative Symptoms. As can be seen in Table 12, there was not a significant interaction between aberrant salience and self-concept clarity in predicting negative composite scores (t (159) = -0.45, p = .66), social anhedonia (t (159) = 1.11, p = .27), avolition (t (159) = -0.32, p = .75), impaired expression of emotion (t (159) = -0.69, p = .49), impaired experience of emotions and self (t (159) = -1.49, p = .14), ideational richness (t (159) = 0.26, p = .79), or impaired occupational function (t (159) = -0.45, p = .66). Since these interaction effects were not significant, main effects were examined. There was not a significant main effect for aberrant salience in predicting negative composite (t (159) = -0.86, p = .39), social anhedonia (t (159) = -1.63, p = .11), avolition (t (159) = 0.93, p = .35), impaired expression of emotion (t (159) = -0.04, p = .68), impaired experience of emotions and self (t (159) = -0.10, p = .24), ideational richness (t (159) = -0.14, p = .89), or impaired occupational function (t (159) = .07, p = .94). Conversely, self-concept clarity was negatively associated with negative composite (t (159) = -4.26 p < .001), social anhedonia (t (159) = -2.35, p = .02), avolition (t (159) = -.295, p = .004), impaired expression of emotion (t (159) = -2.58, p = .01), impaired experience of emotions and self (t (159) = -4.30, p < .001), or impaired occupational function (t (159) = -1.04, p = .30), but not ideational richness (t (159) = -1.40, p = .17) ratings.

Aberrant Salience, Self-Concept Clarity, and Disorganized Symptoms. As can be seen in Table 13, there was not a significant interaction between aberrant salience and self-concept clarity in predicting disorganized composite scores (t (159) = -0.65, p = .52), odd behavior (t (159) = -0.21, p = .84), bizarre thinking (t (159) = -1.82, p = .07), or impaired focus and attention (t (159) = 0.13, p = .13). Since these interactions were not significant, main effects were examined. As can also be seen in Table 13, aberrant salience was associated with disorganized composite scores (t (159) = 3.13, p < .01), odd behavior (t (159) = 2.04, p = .04), bizarre thinking (t (159) = 3.09, p = .002), and impaired focus and attention (t (159) = 2.31, p = .02). Additionally, self-concept clarity was negatively associated with disorganized composite scores (t (159) = -2.11, p = .04) and impaired focus and attention (t (159) = -3.70, p < .001), but not odd behavior (t (159) = -0.94, p = .35), or bizarre thinking (t (159) = -0.66, p = .51).

Aberrant Salience, Self-Concept Clarity, and Interview-Rated Anomalous Perceptual Experiences. As can be seen in Table 14, there was a significant interaction between aberrant salience and self-concept clarity in predicting SIAPA total scores (t (159) = -3.10, p = .002). The probe of the interaction showed that self-concept clarity was associated with SIAPA scores at 1 SD above the mean on aberrant salience (t (159) = -3.88, p < .001), but not at -1 SD below the mean (t (159) = 0.12, p = .91). Similarly, there was a significant interaction between aberrant salience and self-concept clarity in predicting all three subscales of the SIAPA. Self-concept clarity was associated with SIAPA Hypersensitivity, Inundation, and Selective Attention scores at high levels of aberrant salience but not at low levels of aberrant salience.

Between Group Comparison for Aberrant Salience. The second goal of Study 5 was to examine whether there were group differences in aberrant salience variables. I hypothesized that the positive group would display more aberrant salience in both the questionnaire and task measures of aberrant salience. Prior to testing group differences in aberrant salience, I examined the bivariate correlations among the aberrant salience variables. As can be seen in Table 15, the non-modified ASI administered in Study 4 was positively correlated with the modified ASI (Last 2 weeks) in Study 5 and the ASI last-two-weeks frequency scores from the follow-up question. ASI frequency scores were positively correlated with Implicit Aberrant Salience on the Salience Attribution Task. Explicit Aberrant Salience scores were negatively correlated with Implicit Aberrant Salience Scores.

To test for group comparisons in aberrant salience variables, I used a one-way ANOVA, followed by planned independent samples t-tests for the three comparisons between groups (i.e., positive vs. control, positive vs. negative, and negative vs. control). As predicted, the positive group had higher ASI scores compared to the negative (t (159) = 6.62, $p < .001$) and control group (t (159) = 5.29 $p < .001$) when participants were instructed to restrict their responses to just the past two weeks (see Table 16). There was a trend for the negative group to have higher scores than the control group (t (159) = 1.85, $p = .07$). As expected, participants in the positive group reported that these experiences of aberrant salience occurred more frequently than the experiences of aberrant salience reported by negative (t (159) = 6.06, $p < .001$) and control participants (t (159) = 4.98, $p < .001$), and there was a trend for the negative group to report a higher frequency of aberrant salience experiences than the control group (t (159) = 6.62, $p = .07$)

The other measure of aberrant salience in Study 5 was the Salience Attribution Task. The Salience Attribution Task provides both explicit and implicit ratings of aberrant salience as well as implicit and explicit ratings of rewarded and non-rewarded stimuli. As can be seen in Table 16, there was a trend for the positive group to rate the rewarded stimuli as more rewarding than did the negative group (t (159) = 1.89, p = .06), and the control group rated the rewarded stimuli are more rewarding than did the negative group (t (159) = 2.76, p < .01). In contrast to my hypothesis, there was a trend for the negative group to display more explicit aberrant salience than did the positive group (t (159) = 1.89, p = .06) and there were no group differences in implicit aberrant salience (F (2, 147), 1.00, p = .37), reaction times for rewarded trials (F (2, 147), 0.61, p = .54), or reaction times for non-rewarded trials (F (2, 147), 0.42, p = .66).

Group Differences in Self-Relevant Information Processing. The third goal of Study 5 was to examine whether there were differences between Wisconsin Schizoytpy groups in self-concept clarity and self-esteem. I hypothesized that the positive group would have lower self-concept clarity and self-esteem than the negative and control groups. Prior to testing for group differences, I examined the correlations among the self-processing variables in the studies. As can be seen in Table 17, nearly all of the self-processing variables were strongly positively correlated with each other. Notably, the modified MNMDT, in which participants were not instructed to go as quickly as possible, was more strongly correlated with the self-report measure of self-concept clarity than was the original MNMDT in which participants are instructed to go as quickly as possible in Study 4 (r = .33 vs. .20, respectively). This suggests that allowing people to take their

time and make ratings increases the correspondence between the consistency of their responses and their explicit opinions of the clarity of their self-concepts.

As can be seen in Table 18, the positive (t (159) = 7.12, $p < .001$) and negative groups (t (159) = 5.58, $p < .001$) had lower SCCS scores than the control group, and there was a trend for the positive group to have lower SCCS scores than the negative group (t (159) = 1.87, $p = .06$). The second measure of self-concept clarity was the modified MNMDT in which participants did not have to respond quickly and were asked follow-up questions about the "confidence" of their responses. Positive participants had lower modified MNMDT scores than the control group (t (159) = 4.78, $p < .001$), and there was a trend for positive participants to have lower scores than the control group (t (159) = 1.84, $p = .07$). Negative participants had lower modified MNMDT scores than the control group (t (159) = 3.16, $p < .01$). The negative group had less confidence in their ratings than the control group (t (159) = 2.40, $p = .02$), but the positive group did not differ from the negative group (t (159) = 1.31, $p = .19$) or the control group (t (159) = 1.06, $p = .29$). Like in Study 4, both the positive (t (159) = 3.46, $p < .001$) and negative (t (159) = 3.85, $p < .001$) groups had lower self-esteem scores than the control groups, but the positive and negative groups did not differ from each other (t (159) = 0.24, $p = .81$).

Group Comparisons of Interview-Rated Psychotic-Like Experiences. If the Wisconsin Schizotypy groups are valid indicators of psychotic-like experiences, then I would expect to find that the positive group had more interview-rated positive symptom than the negative and control group. Moreover, the Wisconsin negative group should have higher interview-rated negative symptoms than the positive and control groups. As can be seen in Table 19, the positive group had higher global interview-rated positive

scores than the negative (t (155) = 5.45, $p < .001$) and control (t (155) = 8.43, $p < .001$) group, and the negative group was significantly higher than the control group (t (155) = 3.54, $p < .001$). The positive group had higher interview-rated delusional ideation than the negative (t (155) = 5.92, $p < .001$) and control groups (t (155) = 7.76, $p < .001$), while the negative group was higher than the control group (t (155) = 2.39, $p = .02$). Similarly, the positive group had higher paranoia scores than the control group (t (155) = 7.19, $p < .001$) and the negative group (t (155) = 2.80, $p = .01$), which was higher than the control group (t (155) = 5.10, $p < .001$). The positive group had higher grandiosity scores than the control group (t (155) = 5.44, $p < .001$) and the negative group (t (155) = 4.68, $p < .001$), but there was not a significant difference between the control and negative groups (t (155) = 1.17, $p = .24$). The positive group had higher interview-rated perceptual anomalies than the control group (t (155) = 5.82, $p < .001$) and the negative group (t (155) = 2.80, $p = .01$), which was higher than the control group (t (155) = 5.10, $p < .001$). Finally, the positive (t (155) = 5.10, $p < .001$) and negative (t (155) = 3.42, $p = .001$) groups had higher disorganized communication scores than the control group, but the positive group did not differ from the negative group (t (155) = 1.34, $p = .18$).

Group Comparisons of Interview-Rated Negative Symptoms. As can be seen in Table 20, the negative group had higher global negative ratings than the control group (t (155) = 6.99, $p < .001$) and the positive group (t (155) = 3.24, $p = .001$), which was higher than the control group (t (155) = 3.73 $p < .001$). Additionally, the negative group had higher interview-rated social anhedonia than the control (t (155) = 8.87, $p < .001$) and positive group (t (155) = 7.02, $p < .001$), which had higher scores than the control group (t (155) = 2.06, $p = .04$). Both the negative (t (155) = 2.91, $p = .004$) and positive (t

(155) = 3.29, p = .001) had higher interview-rated avolition scores than the control group, but they did not significantly differ from each other (t (155) = 0.54, p = .59). The negative group had higher interview-rated impairment in the expression of emotion than the control (t (155) = 2.93, p = .004) and positive group (t (155) = 4.90, p < .001), which was higher than the control group (t (155) = 2.00, p = .05). Both the negative group (t (155) = 4.48, p < .001) and the positive group (t (155) = 2.78, p = .01) had higher interview-rated impairments in the experience of emotions and self scores than the control group, but the positive and negative groups did not differ significantly from each other (t (155) = 1.68, p = .10). None of the groups differed significantly from each other on interview-rated ideational richness (F (2, 153) = 0.83, p = .44), and only the positive group differed from the control group on impairment in occupational functioning (t (155) = 2.27, p = .03).

Group Comparisons of Interview-Rated Disorganized Symptoms. As can be seen in Table 21, the positive group had higher global disorganized ratings than the control group (t (155) = 5.90, p < .001) and the negative group (t (155) = 2.52, p = .03), which was higher than the control group (t (155) = 3.22 p = .002). Both the positive (t (155) = 3.65, p < .001) and negative (t (155) = 2.73, p = .007) groups had higher odd behavior ratings than the control group but did not differ from each other (t (155) = 1.12, p = .27). The positive group had higher bizarre thinking ratings than the control group (t (155) = 4.32, p < .001) and the negative group (t (155) = 2.52, p = .01), which was higher than the control group (t (155) = 2.08 p = .04). Similarly, the positive group had higher impairment in attention/focus ratings than the control group (t (155) = 5.32, p < .001) and the negative group (t (155) = 3.16, p = .002), which was higher than the control group (t

(155) = 2.50 p = .01). There were no significant difference among groups for impairment in personal hygiene (F (2, 153) = 1.962, p = .14).

Correspondence between Wisconsin Schizotypy Groups and Interview-Rated Psychotic-Like Experiences. On the SIPS, ratings of 3 or higher represent clinically meaningful psychotic-like experiences. One major goal of most schizotypy research is to provide insight into psychosis, and researchers have questioned how similar psychometrically identified people with schizotypy are to people who experience clinically meaningful psychotic-like symptoms. If the Wisconsin Schizotypy Scales identify people with clinically relevant symptoms, then we would expect these participants to have ratings of three or higher on the SIPS. Thus, I created groups to mirror the Wisconsin Schizotypy groups for interview-rated psychotic-like experiences. Participants with at least one rating of 3 or higher on any of the five positive symptom scales (i.e., delusional ideation, perceptual anomalies, paranoia, grandiosity, and disorganized communication) were assigned to the Positive SIPS Group. Participants with at least one negative symptom rating of 3 or higher were assigned to the Negative group. Participants with no ratings over 3 were assigned to the Control group. For these analyses, participants were allowed to belong to both the Positive and Negative groups.

Next, I tested how well the Wisconsin and SIPS groups corresponded with each other. As can be seen in Table 22, 75.4% of participants who were in the Wisconsin Positive group were also in the SIPS positive group, 22.8% met criteria for the negative SIPS group, and 27.5% met criteria for the SIPS control group (i.e., no rating of 3 or higher). Wisconsin Negative participants were more spread out, with 58.1% in the SIPS negative group, 43.5% in the SIPS positive group, and the remaining 24.6% in the SIPS

control group. Eighty-four percent of participants in the Wisconsin control group were in the SIPS control group, with 11.4% in the positive group and 4.5% in the negative group.

These results suggest good agreement between groups created by Wisconsin scores and by SIPS scores. However, a much higher percentage of participants met criteria for clinically meaningful symptoms than was found in previous research using a structured interview (Chapman et al., 1994). Although this may be attributable to differences in sensitivity between the interview used by Chapman et al. and the SIPS, I tested the same analysis, but with more stringent criteria for SIPS group membership (i.e., ratings of 4 or higher). As can be seen in Table 22, 38.6% of Wisconsin Positive Participants had SIPS positive scores of 4 or greater, while 52.6% met criteria for the SIPS control group, and 10.2% did not have any ratings of 4 or greater. In the Wisconsin Negative Schizotypy Group, 21% had SIPS negative ratings of 4 or above, while 14.5% had SIPS positive ratings of 4 or greater, and 67.7% did not have any ratings of 4 or greater. For the Wisconsin Control Participants, 93.2% did not have SIPS ratings of 4 or greater, and only 4.5% and 2.3% had positive and negative ratings of 4 or greater, respectively. These results suggest that the Wisconsin Schizotypy Scales may not be as sensitive in measuring more severe psychotic-like experiences.

Comparison of the Predictive Power of Self-Report Schizotypy Scales for Interview-Rated Psychotic-Like Experiences. In addition to the Wisconsin Schizotypy Scales, the current research included measures of delusion-like beliefs (e.g., PDI), anomalous perceptions (e.g., CAPS), aberrant salience (e.g., ASI), and paranoia (e.g., SPQ-S). In the current research, all of these measures were correlated with each other, and all of them were correlated with interview ratings of psychotic-like experiences. To

test which questionnaire measures were the strongest predictors of interview-rated psychotic-like experiences, I ran a series of simultaneous regressions with the Magical Ideation Scale, Perceptual Aberration Scale, Social Anhedonia Scale, PDI-Total Score, CAPS-Total Score, Aberrant Salience Inventory, and SPQ-Suspiciousness subscale predicting each interview rated psychotic-like experience. As can be seen in Table 23, when these variables were entered into a simultaneous regression predicting composite positive scores, only the CAPS was a significant predictor, and there was a trend for Magical Ideation. Similarly, only the CAPS was a significant predictor of delusional ideation, and there was a trend for PDI scores. The CAPS, SPQ-S, and Magical Ideation scales were significant predictors of interview-rated paranoia. Both the CAPS and PDI were significant predictors of interview-rated grandiosity, while the CAPS and SocAnh scales were significant predictors of interview-rated perceptual anomalies. There was a trend for Magical Ideation in predicting perceptual anomalies. None of these scales was a significant predictor of disorganized communication, but there was a trend for the CAPS to predict it.

In addition to the positive ratings, I tested the same simultaneous regression models predicting the negative ratings. As can be seen in Table 24, social anhedonia was the only significant predictor for the negative composite, social anhedonia, expression of emotion, and experiences of emotion and self scores. There was a trend for social anhedonia in predicting avolition, and for SPQ-Suspiciousness in predicting expression of emotion. There were no significant predictors of Ideational Richness or Occupational Functioning.

Using the same simultaneous regression, both PerAb and CAPS were significant predictors of the disorganized composite score and there was a trend for SocAnh (see Table 25). PerAb and Social Anhedonia predicted odd behavior while suspiciousness was negatively related to odd behavior. CAPS significantly predicted bizarre thinking, while suspiciousness was negatively associated with bizarre thinking and there was a trend for PerAb and SocAnh. Both CAPS and SPS-Suspiciousness were significant predictors of impairment in focus/attention and PerAb was a significant predictor of impairments in personal hygiene.

Wisconsin Schizotypy between Groups Comparisons for Self-Reported Psychotic-Like Experiences. As can be seen in Table 26, the positive group had higher scores than the negative and control groups for PDI-Total, Distress, Preoccupation, and Conviction subscale scores. The negative group had higher scores than the control group on all four measures as well. The positive group had higher CAPS-Total scores, Distress, Distraction, and Frequency subscale scores compared to the negative and control groups. The negative and control group did not differ from each other on any of these subscales. Finally, the positive group had higher SPQ-Suspiciousness scores than the negative and control groups and the negative group had higher scores than the control group.

Study 5 Discussion

Study 5 replicated the results of Study 1-Study 3 in that there was an interaction between aberrant salience and self-concept clarity in predicting interview-rated positive symptoms, including a composite of all positive scales, delusional ideation, and grandiosity. Study 5 also replicated the results of Study-1-Study 3 in that this interaction was specific to positive psychotic-like experiences and not negative symptoms,

disorganized symptoms, or paranoia. Instead, like in Study 1-3, there was a main effect for self-concept clarity being negatively associated with negative symptoms, but no main effect for aberrant salience. Both aberrant salience and self-concept clarity uniquely contributed to the prediction of paranoia, but they did not interact. In contrast to my hypothesis and the results of Study 1- Study 3, there was not a significant interaction between aberrant salience and self-concept clarity in predicting hallucination-like experiences. As mentioned, this makes some sense because theories of the role of aberrant salience and self-concept clarity may better explain delusion-like experiences than hallucination-like experiences. However, most of these models posit that a combination of aberrant salience/anomalous experiences and self-processing are involved in the development of hallucinations in addition to delusions (e.g., Garety, et al., 2001; Kapur, 2003).

Perhaps the most important aspect of Study 5 is that the results were replicated with an interview measure of psychotic-like experiences. To my knowledge, this is the first study to use the Structured Interview for Prodromal Syndromes in a large sample of college students. Given that the majority of schizotypy research has been done with college students, the current study provides valuable information about the psychotic-like experiences among this population. Study 5 may help to bridge the gap between schizotypy research done with college students (e.g., Chapman, et al., 1994; Gooding, et al., 2005; Kwapil, Chapman, & Chapman, 1999; Lenzenweger, 1994) and prodromal research done with people at “ultra-high risk” (e.g., Seidman et al., 2010; Woods et al., 2009).

There may be meaningful differences between these two high-risk strategies. For example, researchers have suggested that the participants identified as "at risk" in college student samples may be higher functioning than participants with similar schizotypy scores in the general population because they are functioning well enough to be enrolled in college (e.g., Lenzenweger, 2006). Conversely, participants in ultra-high risk studies are typically patients already experiencing symptoms (Addington et al., 2007), and many are seeking treatment for psychotic-like or related symptoms. For example, in the North-American Prodrome Longitudinal Study (NAPLS), more than 80 percent of the participants had sought help for treatment prior to participating in the study and receiving specialized treatment for prodromal symptoms (Cadenhead et al., 2010). This suggests that individuals identified as prodromal in clinics may have more severe symptoms than do participants identified as at risk in college student samples.

The DSM-V Psychosis Work Group is considering adding an "Attenuated Psychosis Syndrome (APS)" diagnostic category to the next edition of the DSM (Carpenter & van Os, 2011; Woods, Walsh, Saksa, & McGlashan, 2010). The first criterion of the proposed syndrome is the presence of attenuated delusions, hallucinations, or disorganized speech "…with intact reality testing, but of sufficient severity and/or frequency that it is not discounted or ignored (Carpenter & Van Os, 2011, p.2)." On the SIPS, this is conceptualized as ratings of 3 or greater on the positive rating scales. Study 5 found that 75% percent of the Wisconsin Positive Schizotypy group met this criterion for the proposed syndrome. This suggests that a large percentage of participants with high positive schizotypy are experiencing clinically meaningful psychotic-like symptoms. This result is in contrast to previous research that has reported

only 66 out of 191 (35%) participants with high PerMag had psychotic-like experiences at the initial interview (Chapman, et al., 1994). However, these results may be attributed to differences in the interviews used to access psychotic-like experiences. Chapman et al. used the Personality Disorders Examination (PDE; Loranger, 1988), in which participants are rated 0, 1, or 2 on schizotypal personality disorder symptoms, and clinically relevant scores are operationalized as a sum of 4 or greater. This rating system may be less sensitive than the SIPS, in which participants are rated on a scale from 0-7, and meaningful ratings are operationalized as 3 or greater. A score of 4 or greater on the SIPS may be more analogous to a score of 4 or greater on the PDE. The current research found that 38% of positive schizotypy participants had scores of 4 or greater on a SIPS positive item, which is consistent with the rates found by Chapman et al.

Despite 75% of positive participants in Study 5 having clinically meaningful psychotic-like experiences, it is unclear how many of these participants would actually meet proposed DSM-V criteria for APS. This diagnostic category would also require these experiences to occur at least once a week in the past month, begun or significantly worsened in the past year, and involve enough distress for the person to seek treatment. One area for future research/data analysis is to calculate how many of the current participants would meet all the criteria for APS. It is expected that very few of the participants who were rated as a 3 or greater on the SIPS ratings would meet the other criteria for APS.

Another goal of Study 5 was to test which self-report scales are the best predictors of SIPS-rated psychotic-like symptoms. There is an abundance of scales purporting to measure psychotic-like experiences or psychosis-proneness. As researchers have noted,

many of these scales do not have discriminant validity from each other (e.g., Watson, 2001). Thus, in Study 5, I examined which of these scales independently predicted psychotic-like experiences. Surprisingly, the strongest predictor of the positive composite, delusional ideation, paranoia, perceptual anomalies, and disorganized communication was the Cardiff Anomalous Perceptions Scale, which is used much less commonly than the Wisconsin Schizotypy Scales. This suggests that the CAPS may be a better predictor of psychotic-like experiences than more commonly used scales. Potentially, future research could use the CAPS to identify people at risk for psychosis and closer approximate psychotic-like experiences. As expected, the Revised Social Anhedonia Scale appeared to be the strongest predictor of negative symptoms. Another area for future research could be to include additional measures of schizotypy to test for stronger predictors of psychotic-like experiences. For example, recent research has found that the Prodromal Questionnaire (Loewy, Bearden, Johnson, Raine, & Cannon, 2005; Loewy, Pearson, Vinogradov, Bearden, & Cannon, 2011), a combination of Schizotypal Personality Questionnaire items and the probes from the SIPS, can be used with 91% sensitivity and 49% specificity to diagnose people as prodromal in help seeking individuals referred to a prodromal specialty clinic. Future research could test whether existing measures have incremental validity over and above the prodromal questionnaire in predicting SIPS ratings.

One potential limitation of Study 1 – Study 5 is that they involved college student samples. However, one methodological problem in examining social-cognitive models of psychosis is that people with psychotic disorders typically take antipsychotic medications that block dopamine. This might be especially important for examining the construct of

aberrant salience, as aberrant salience is thought to be related to dysregulated dopamine (Kapur, 2003). Kapur has argued that, since antipsychotic medications block dopamine, their main function in reducing psychotic-like experiences is to eliminate occurrences of aberrant salience. The current research over-sampled participants with a high level of psychotic-like experiences that are associated with future psychotic disorder (Chapman et al., 1994). This allowed us to examine the social-cognitive mechanisms associated with psychotic-like experiences while removing some of the confounds associated with research on patient populations (Neale & Oltmanns, 1980).

Although the current research examined psychotic-like experiences and not full-blown psychosis, the current studies can provide useful information on the nature of psychosis. Previous research has found that measures of positive schizotypy are strongly correlated with ratings of positive symptoms in people with schizophrenia (Cochrane, Petch, & Pickering, 2010), and that psychotic-like experiences measured with the Perceptual Aberrant/Magical Ideation Scales are very similar to psychotic experiences in individuals who go on to develop psychotic-disorders (see Kwapil, et al., 1999, for a review). In addition to not including people with full-blown psychosis, one limitation could be that the participants in the current research were undergraduates. However, research suggests that the level of psychotic-like experiences in undergraduate populations is similar to that of the general population (Lenzenweger, Lane, Loranger, & Kessler, 2007). Despite these findings in previous research, there may be meaningful differences between subclinical psychotic-like experiences in college students and psychotic experiences in people diagnosed with a psychotic disorder. For example, college students may be higher functioning than other people with schizotypy or

psychosis by virtue of functioning well enough to be enrolled in college. Thus, Study 6 examined the same hypotheses, but in a sample of patients with schizophrenia and a group of community controls without a history of mental illness. Study 6 aimed to test whether the experience of high aberrant salience and low self-concept clarity are specific to the pre-psychotic or prodromal phase of the disorder or whether these relations hold true in people with schizophrenia or with other psychotic disorders as well.

Study 6

The findings of Study 1-Study 5 support a role for the combination of aberrant salience and self-concept clarity in predicting delusion-like beliefs. Studies 1-4 involved college students who were oversampled for a risk for psychosis. Study 5 involved a subset of participants in Study 4 who were at elevated risk for psychosis. Theorists have suggested that psychotic-like experiences only become psychotic symptoms, when either a delusional explanation is adopted for an anomalous experience or when the anomalous perceptual experience is judged to be originating from an external source (e.g., Garety, et al., 2001; Maher, 1974, 2003). Studies 1-5 provide strong support that high aberrant salience and low self-concept clarity are related to psychotic-like experiences, and the overarching goal of Study 6 is to examine whether high aberrant salience and low self-concept clarity are also related to psychotic symptoms.

The first goal of Study 6 was to examine whether participants with schizophrenia had higher levels of aberrant salience compared to a control group. The second goal of Study 6 was to test whether patients with schizophrenia had lower self-esteem and lower self-concept clarity than the control group. The third goal was to examine whether aberrant salience and self-concept clarity were specifically associated with positive symptoms of psychosis, including delusions and hallucinations. The fourth goal of Study 6 was to examine the interaction between aberrant salience and self-concept clarity in predicting positive symptoms.

Method

Participants. Participants in Study 6 were 54 people with schizophrenia and 32 non-psychiatric controls. Participants in the schizophrenia group all met criteria for either schizophrenia or schizoaffective disorder and were recruited from a state mental hospital

with a largely forensic population. They were 49.1% White, 36.4% African-American, and 10% mixed ethnicities. 87.3 % of these participants where male. Participants in the control group were recruited via online advertisements on Craigslist and a university-wide email. Participants with a current or history of any Axis I mental disorder were excluded from the control group. Participants were 93.9% White, 3% African-American, and 3% other. 90.9% of the control group was male. All participants received $30 for participating in the study and an additional $5-10 based on performance on the Salience Attribution Task (described below).

Materials. ***Aberrant Salience.*** As in Study 1-Study 4, aberrant salience was measured with the Aberrant Salience Inventory. In previous research, I found that inpatients with a history of psychosis had elevated scores compared to inpatients without a history of psychosis (Cicero, et al., 2010).

Like in Study 5, aberrant salience was also measured with the Salience Attribution Task. However, the salience attribution task was modified for use in Study 6 in two ways. First, participants earned money based on how quickly they responded to the stimulus instead of points. Second, I tailored the amount of money participants received to their specific reaction time because I expected to see a wider range of reaction times. The mean and standard deviations of responses were calculated for each participant during the practice trial. The e-prime program was then modified so that participants were rewarded based on their reaction times. For each trial, participants received $.15 if they responded faster than one SD below their mean during the practice block, $.14 if they responded between 8/9 SD and one SD below their mean, $.13 if they responded between 7/8 and 8/9 below their mean, etc., down to $.05 if they responded

below their mean or did not respond before the probe disappeared. Thus, the strength of the reward for rewarded trials was specifically matched to each participant's baseline reaction time.

Reward Processing. Like Study 4, reward processing was measured with the Probabilistic Selection Task (PST; Frank, et al., 2004). Following previous research (Waltz, Frank, Wiecki, & Gold, 2011), the PST was modified for use in patients with schizophrenia. Instead of using unfamiliar Hiragana characters, more familiar pictures were used (i.e., an egg, school bus, wrench, clock, leaf, and cow). Familiar characters were used due to reports in the literature that patients had difficulty learning reward contingencies with unfamiliar symbols (Waltz, Frank, Robinson, & Gold, 2007). The rest of the task was the same as in Study 1.

Self-Concept Clarity (SCC). Like in Study 1-Study 5, the primary measure of self-concept clarity was the Self-Concept Clarity Scale (SCCS; Campbell, 1990). Also like in Study 1 and Study 4, the Me-Not-Me Decision Task (MNMDT; Campbell et al., 1996) was used to measure self-concept clarity. Like in Study 5, participants also completed the modified untimed MNMDT with follow-up questions about how confident they were in their me/not-me ratings.

Self-Esteem. Like in Study 4 and Study 5, self-esteem was measured with the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965).

Diagnosis and General Symptom Ratings. Diagnoses were made with the Structured Clinical Interview for the DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1998). The SCID has high test-retest and inter-rater reliability (Zanarini & Frankenburg, 2001; Zanarini et al., 2000). General levels of symptoms were measured with the Brief

Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962), the Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1984), and the Scale for the Assessment of Positive Symptoms (SAPS; Andreasen, 1982). Global functioning was assessed with the Strauss-Carpenter Outcome Scale (Strauss & Carpenter, 1972; Strauss, Kokes, Klorman, & Sacksteder, 1977), which contains subscales for duration of time hospitalized, social functioning, employment functioning, and severity of Symptoms. Global functioning was also measured with the Global Assessment Scale (GAS).

Anomalous Perceptual Experiences. Like in Study 1 and Study 5, anomalous perceptual experiences were measured with the Cardiff Anomalous Perception Scale (Bell, et al., 2006a).

Paranoia. Like in Study 3 and Study 5, paranoia was measured with the Suspiciousness subscale of the Schizotypal Personality Questionnaire (SPQ-S; Raine, 1991).

Mental Status. Participants completed the Mini-Mental Status Exam (MMSE). The MMSE is one of the most commonly used screening measures for cognitive impairment and dementia (Hodges, 1994; Manning et al., 2007). MMSE scores have been found to have high inter-rater reliability (Tombaugh & McIntyre, 1992), internal consistency, and well-established normative data (Tombaugh, McDowell, Kristjansson, & Hubley, 1996). In the current research, the MMSE was used to screen for and exclude participants with dementia.

Procedure. First, participants read and signed the informed consent form. Then, they were given the Mini Mental Status Exam. All participants exceeded the cutoff of 22 on the Mini Mental Status Exam, which suggests that all participants did not have

dementia. Participants then completed a series of questionnaires including the Aberrant Salience Inventory, the Self-Concept Clarity Task, and the Rosenberg Self-Esteem Scale. Then participants completed the Probabilistic Selection Task. Next, the Structured Clinical Interview for the DSM-IV was conducted, which was videotaped. Participants then completed the Peters Delusion Inventory, the first half of the Word Recognition Psychometric Task, a group of questionnaires including the modified Me Not-Me Decision Task with confidence follow-up questions, the Cardiff Anomalous Perceptions Scale, and the Suspiciousness subscale of the Schizotypal Personality Questionnaire. Then, participants completed the second half of the Word Recognition Psychometric Task, the Me Not-me Decision Task, and the Salience Attribution Task.

Results

Group Comparisons for Aberrant Salience. The first goal of Study 6 was to test whether the schizophrenia group had higher aberrant salience than the control group. To test for these differences, I conducted independent samples t-tests comparing the group of participants with schizophrenia to the control group. As can be seen in Table 27, participants in the schizophrenia group had higher ASI scores than participants in the control group (t (85) = 2.69, p = .01). Participants with schizophrenia were impaired in the number of times they choose the rewarded stimuli (t (85) = -2.05, p = .04)**,** but not in the number of times they avoided the non-rewarded stimuli (t (85) = -1.25, p = .22). There was not a significant difference between groups in the choose-minus avoid variable (t (85) = -.42, p = .68). This suggests that there was not a significant difference in learning preference between the two groups. With respect to the SAT, there were not significant differences between groups in explicit reward ratings, non-reward ratings, and

adaptive salience. In contrast to my hypothesis, the control group displayed higher levels of explicit aberrant salience (t (85) = -3.65 $p < .001$)**.** There were no significant differences between groups on the reaction time variables from the SAT.

Group Comparisons for Self-Relevant Information Processing. The second goal of Study 6 was to examine whether the schizophrenia group had low self-esteem and self-concept clarity than did the control group. As can be seen in Table 28, people with schizophrenia had lower self-esteem than control participants, as measured with the Rosenberg Self-Esteem Scale (t (86) = -11.79, $p < .001$). Additionally, participants with schizophrenia had lower self-concept clarity as measured with the Self-Concept Clarity Scale (t (86) = -2.26 $p = .03$), the Me Not-Me Decision Task consistency score (t (85) = -6.13, $p < .001$), and the Me Not-Me Decision Task reaction time measure (t (85) = -3.79, $p < .001$). Patients also had lower MNMDT consistency scores for the modified version of the task (t (85) = -5.29, $p < .001$), but did not differ in the self-reported confidence of these decisions (t (85) = -.31, $p = .76$). However, patients took longer to make their confidence ratings than did controls (t (85) = 3.085 $p < .01$). Taken together, these results suggest that patients with schizophrenia have lower self-concept clarity than do controls.

Correlations among Aberrant Salience Variables. The third goal of Study 6 was to examine the correlations between aberrant salience variables and the positive symptoms of schizophrenia. As can be seen in Table 29, there was a significant correlation between the Probabilistic Selection Task Approach Minus Avoid score and Explicit Adaptive Salience scores on the Salience Attribution Task. Additionally, there was a trend for a significant relation between Implicit Aberrant Salience scores on the SAT and the tendency to choose the rewarded stimulus on the PST. However, there were

not significant correlations between the ASI and other variables in the study, and there were not significant correlations between explicit aberrant salience on the SAT and aberrant salience as measured by other variables.

Correlations between Aberrant Salience Variables and Interview-Rated Positive Symptoms. The correlations between aberrant salience variables and Scale for the Assessment of Positive Symptoms can be found in Table 30. Correlations among aberrant salience and all BPRS ratings can be found in Appendix B. The ASI was positive correlated with a composite Delusions/Hallucinations score, and separately with hallucinations. Additionally, there was a trend for a negative relationship between reward learning and SAPS bizarre behavior, and a significant correlation between SAPS bizarre behavior and preference for reward learning over punishment learning. Correlations among aberrant salience variables and specific SAPS-rated delusions can be found in Appendix B.

Correlations between Aberrant Salience and Negative Symptoms. As can be seen in Table 31, avoidance learning was associated with affective flattening and there was a trend for a correlation between avoidance learning an alogia. There was a trend for a negative relationship between a preference for approach vs. avoidance learning and affective flattening.

Correlations between Aberrant Salience and Global Functioning. As can be seen in Table 32, there was a trend for a positive relation between avoidance learning and social functioning. Global Assessment Scale scores were positively correlated with a preference for approach vs. avoidance learning.

Correlations among Self-Relevant Information Processing Variables. The fourth goal of Study 6 was to examine the correlations between self-relevant information processing variables and positive symptoms of schizophrenia. Prior to testing these correlations, I examined the correlations among the self-processing variables in Study 6. As can be seen in Table 33, in patients with schizophrenia, self-esteem was positively correlated with the Self-Concept Clarity Scale and the modified MNMDT confidence ratings, but negatively correlated with reaction times on the MNMDT and reaction times for confidence ratings on the modified version of the task. There was a trend for a negative correlation between the SCCS and reaction times on the MNMDT. The MNMDT was strongly correlated with the modified version of the task and reaction times for the MNMDT were positively correlated with reaction times for confidence ratings during the modified version of the task. Confidence ratings on the modified version of the task were significantly correlated with modified MNMDT scores.

Correlations between Self-Relevant Information Processing Variables and Interview Rated Positive Symptoms. I hypothesized that self-concept clarity would be negatively correlated with positive symptoms of schizophrenia. As can be seen in Table 34, there was a trend for a negative correlation between the SCCS and SAPS-rated hallucinations. Additionally, the unmodified MNMDT task was negatively correlated with the composite delusions/ hallucinations variable and with global ratings of delusions. Similarly, there was a trend for negative correlations between MNMDT scores Hallucinations. There was a significant correlation between the modified MNMDT confidence ratings and bizarre behavior. Finally, there was a trend for hallucinations to be

negatively correlated with the time it took participants to make confidence ratings on the modified MNMDT.

Correlations between Self-Relevant Information Processing Variables and Interview-Rated Negative Symptoms. Previous research suggests that negative symptoms of schizophrenia may be related to low self-esteem and self-concept clarity. As can be seen in Table 35, the MNMDT was negatively correlated with the composite negative symptom score and there was a trend for a negative correlation between MNMDT and anhedonia. MNMDT confidence rating reaction times were associated with composite negative symptoms, affective flattening, and alogia.

Correlations between Self-Relevant Information Processing and Global Functioning. As can be seen in Table 36, MNMDT scores were associated with increased social functioning scores and with increased GAS scores.

Aberrant Salience, Self-Concept Clarity, and Interview-Rated Delusions. To test whether there was an interaction between aberrant salience and self-concept clarity in predicting interview-rated positive symptoms of schizophrenia, I entered mean-centered ASI and SCCS values in step 1 of a hierarchical linear regression predicting interview-rated positive symptoms. I entered the product of aberrant salience and self-concept clarity in step 2. This analysis was done only with the schizophrenia group because the overwhelming majority of controls received the lowest possible ratings on all positive symptoms.

Like in Studies 1-5, there was a significant interaction between aberrant salience and self-concept clarity in predicting the composite positive symptom score. However, as can be seen in Table 37 and Figure 4, the interaction showed a different pattern. For the

delusions/ hallucinations composite score (t (52) = 2.36, p =.02), SAPS Global Delusions (t (52) = 2.20, p = .03) and BPRS Unusual Thought Content (t (52) = 2.09, p = .04), participants with high ASI scores tended to have high levels of positive symptoms regardless of their level of SCC, but participants with low ASI only tended to have high positive symptoms if they had low SCC.

Probes of the interaction revealed that aberrant salience was unrelated to delusions/hallucinations at low levels of SCC (t (52) = .20, p = .85) and strongly positively associated with delusions/hallucinations (t (52) = 3.24, p < .01) at high levels of SCC. As can be seen in Table 38, ASI and SCCS did not interact to predict SAPS or BPRS rated hallucinations.

Group Differences in SPQ, PDI, and CAPS Scores. As can be seen in Table 38, patients had higher SPQ suspiciousness (t (85) = 7.05, p < .001), CAPS Total (t (85) = 4.92, p < .001), Distress (t (85) = 6.24, p < .001), Distraction (t (85) = 6.28, p < .001), and Frequency Scores (t (85) = 6.56, p < .001), and PDI Total (t (85) = 5.02, p < .001), Distress (t (85) = 4.96, p < .001), Preoccupation (t (85) = 5.77, p < .001), and Conviction Scores (t (85) = 4.53, p < .001).

Study 6 Discussion

The results of Study 6 provide further evidence that aberrant salience and self-relevant information processing may be important mechanisms in psychosis. Consistent with previous research, patients with schizophrenia had higher ASI scores than did control participants. In a previous study, I found that inpatients with a history of psychosis had higher ASI scores than inpatients without a history of schizophrenia

(Cicero, et al., 2010). The current research provides further evidence for the construct validity of the ASI.

In contrast to my hypothesis, patients with schizophrenia did not show an elevated preference to approach over avoidance learning. Instead, people with schizophrenia showed deficits in approach but not avoidance. One explanation for this result could be that patients were all taking antipsychotic medications, which lower the levels of subcortical dopamine (Kapur, 2004). In previous research, Frank et al. (2004) found that patients with Parkinson's Disease, who have low levels of dopamine, showed a preference for approach vs. avoidance learning if they were taking dopamine agonists. In contrast, they found that participants with Parkinson's displayed a preference for avoidance learning if they were not taking dopamine agonists. It is possible that patients with schizophrenia show deficits in reward learning because they are taking dopamine antagonists that are in effect dampening salience. Thus, patients with schizophrenia may display a preference for approach vs. avoidance learning only if they are not medicated. The finding that the schizophrenia group was impaired in approach but not avoidance learning is consistent with other studies that have used the PST in similar populations (Waltz, et al., 2007; Waltz, et al., 2011).

In Study 6, I hypothesized that aberrant salience would be elevated in patients with schizophrenia, but also that it would be related to positive symptoms specifically. This hypothesis was partially supported. ASI scores were positively correlated with the delusions/hallucinations composite variable and with hallucinations specifically. The task measures of aberrant salience were not correlated with positive symptoms. There may have been problems with one task measure, the Salience Attribution Task. This task was

calibrated to the participants' mean reaction times in a practice version of the task. Participants had to respond faster than their mean reaction times on the practice block in order to earn more than the minimum reward. However, participants' reaction times in the practice block may have created a "ceiling effect," such that participants were not capable of reliably responding faster than their mean. Thus, many of the rewarded trials may have felt like non-rewarded trials since participants often received the message "missed/too slow + $.05." Both groups of participants in Study 6 judged the rewarded stimuli to be rewarded much less than they were rewarded in reality, and much less than did participants in Study 5. This suggests that the rewarded trials may not have seemed rewarding to participants in Study 6.

In addition to positive symptoms, I examined the correlations among aberrant salience variables and negative symptoms of schizophrenia. Consistent with previous research, avoidance learning was associated with negative symptoms (Kasanova, Waltz, Strauss, Frank, & Gold, 2011). This preference for avoidance learning may be related to a failure to use positive reinforcement to guide behavior, and is consistent with neuro-computational models that suggest negative symptoms are associated with impairments in D1 pathways in the basal ganglia but relatively intact D2 pathways (Kasanova, et al., 2011). In other words, participants with high negative symptoms may avoid punishments more than approach rewards because they have deficits in learning from rewards but intact punishment learning.

Study 6 also provided evidence that people with schizophrenia have lower self-concept clarity and self-esteem than do community controls. This finding was replicated with self-report and behavioral measure of self-concept clarity. This is consistent with

previous research suggesting that disturbances the sense of self are central to the phenomenology of schizophrenia (Fabrega, 1989; Lysaker & Lysaker, 2010; Parnas & Handest, 2003; Raballo, et al., 2009).

In addition to hypothesizing that people with schizophrenia would have lower self-concept clarity than did controls, I expected to find that self-concept clarity would be negatively correlated with positive symptoms in people with schizophrenia. Interestingly, the self-report measure of self-concept clarity was not associated with the interview-rated positive symptoms but the MNMDT scores were negatively correlated with positive symptoms. Moreover, the SCCS was not correlated with the MNMDT in this sample, despite them being significantly correlated in Study 1 and Study 4. The MNMDT might reflect an aspect of self-concept clarity that is not accessible to introspection (Campbell, 1990). Researchers have often suggested that people with delusions do not present themselves accurately on self-report measures (Bentall, et al., 2001). Rather, they are especially motivated to present themselves in a positive light, which may explain the difference between MNMDT and SCCS findings.

Finally, Study 6 attempted to replicate the results of Study 1-Study 5: an interaction between aberrant salience and self-concept clarity in predicting positive symptoms. There was a significant interaction, but the pattern was not the same as in Studies 1-5. Aberrant salience was associated with positive symptoms only at high levels of self-concept clarity. One potential explanation for the difference in findings for the schizophrenia group in Study 6, the at-risk group in Study 5, and the unselected samples in Studies 1-4, could be that people with schizophrenia tend to have more conviction in their delusional beliefs. In Study 1, I found that aberrant salience and self-concept clarity

interacted to predict PDI-Total scores as well as the distress and preoccupation subscales, but not the conviction subscale. Since psychotic-like experiences only become psychotic symptoms when delusional explanations are adopted, I hypothesized that this finding was a result of participants with psychotic-like experiences lacking the conviction that is common among people with psychotic-symptoms. As mentioned, participants may not be accurate in their assessments of the coherence of their self-concepts, given that MNMDT scores are not correlated with SCCS scores in this sample. In people with schizophrenia, high self-concept clarity may represent conviction in delusional beliefs, driving up positive symptom ratings in people who have high aberrant salience.

Another potential explanation for the difference in these results could be that it is a methodological artifact. Participants with schizophrenia had lower self-concept clarity and higher aberrant salience than the control group. Thus, in examining the interaction between aberrant salience and self-concept clarity in this sample, I am examining the interaction between these two variables in only one-quadrant of the data. Methodologists have suggested that this restriction of range on the independent variables (i.e., high aberrant salience and low self-concept clarity) may make it difficult to detect moderations or contribute to a spurious results (Preacher, Rucker, MacCallum, & Nicewander, 2005). Hence, in the current research, this result should be interpreted with caution.

General Discussion

In five separate samples, the current research found that there was an interaction between aberrant salience and self-concept clarity. In the four non-clinical samples (Study 1- Study 5), participants with high aberrant salience and low self-concept clarity had the highest levels of psychotic-like experiences. In contrast, in the sample of patients with schizophrenia in Study 6, participants with high aberrant salience and low self-concept clarity had the highest levels of positive symptoms. These findings are broadly consistent with social-cognitive models and phenomenological descriptions of psychotic experiences that have suggested a prominent role for both aberrant salience and self-concept clarity in psychosis and psychotic-like experiences (e.g., Bell, et al., 2006b; Bentall, et al., 2001; Freeman, 2007; Moller & Husby, 2000). These results were specific to positive psychotic-like experiences and not related to social anhedonia, paranoia, or negative symptoms of schizophrenia. Additionally, the results of Study 3 suggest that the interaction with aberrant salience is specific to self-concept clarity because aberrant salience did not interact with neuroticism to predict psychotic-like experiences.

As previously discussed, several researchers have suggested a central role for aberrant salience in psychosis (e.g., Kapur, 2003; Roiser, et al., 2008). In my own work, we have found that the ASI is correlated with psychotic-like experiences in unselected samples, is elevated in people at-risk for developing psychosis, and is higher in inpatients with a history of psychosis compared to inpatients without a history of psychosis (Cicero, et al., 2010). The current research extends these previous findings to suggest that aberrant salience alone may not be sufficient to produce psychosis. Rather, the current research found that high levels of aberrant salience produced more extreme levels of psychotic-

like experiences when those individuals also had unclear self-concepts. Study 6 found a different pattern, with aberrant salience being associated with positive symptoms only when participants had high levels of self-concept clarity. This is consistent with previous social-cognitive models, which suggest that beliefs about the self and the world frame the response of the individual to an occurrence of aberrant salience (Freeman, 2007). Thus, an unclear self-concept may make an individual more likely to develop a psychotic-like explanation for an occurrence of aberrant salience. In contrast, high self-concept clarity in psychosis may lead someone to develop conviction in their delusional explanations.

The current research also has implications for the role of disturbances of self-relevant information processing in psychotic-like experiences. Recently, self-disturbances have received attention in the schizophrenia literature, particularly with respect to the prodrome (Lysaker & Lysaker, 2010). However, much of this research has been phenomenological or qualitative (e.g., Davidsen, 2009; Moller & Husby, 2000). As mentioned, one recent phenomenological study concluded that self-disturbances and aberrant salience were the two core variables associated with the development of psychosis (Moller & Husby, 2000). One strength of the current research is that self-disturbance was measured with a quantitative measure while most research in this area has been qualitative in nature. The probe of the interaction suggests that self-concept clarity is only related to psychotic-like experiences at high levels of aberrant salience.

One area for future research could be to examine self-disturbances in other quantitative ways. For example, previous research suggests that people with psychosis show a lack of coherence in personal narratives of their life stories (Lysaker, et al., 2002). Additionally, psychosis has been linked to other deficits in the processing of self-relevant

information such as monitoring of internally vs. externally generated speech (Johns, Gregg, Allen, & McGuire, 2006), impaired sense of self agency (Lysaker, Wickett, Wilke, & Lysaker, 2003), and insight into mental illness (e.g., Baier, 2010). Future research could examine whether these impairments in self-processing also interact with aberrant salience to predict psychotic-like experiences.

In addition to being consistent with models of psychosis and psychotic-like experiences, the current research is consistent with models of normal belief formation. For example, the Meaning Maintenance Model (Heine, Proulx, & Vohs, 2006) posits that people reinstate meaning after a threat to meaning. A meaning threat may include a threat to a person's worldview or self-esteem. Consistent with this, aberrant salience involves irrelevant stimuli being imbued with significance and is thought to trigger a search for an explanation (Kapur, 2003). At the same time, low self-concept clarity may itself be a threat to meaning that could result in people being more likely to seek meaning for experiences. In one study, Proulx and Heine (2009) had participants write an essay arguing against the unity of their self-concepts, which may be analogous to experimentally causing low self-concept clarity. They found that participants in this condition were more likely to perceive meaning in stimuli following this manipulation. This suggests that occurrences of aberrant salience might be especially likely to be perceived as meaningful if people also have low self-concept clarity, which may lead to psychotic symptoms.

The current research suggests several areas for future research. One limitation of the current research is that it is correlational and thus could not establish whether the combination of high aberrant salience and low self-concept clarity actually causes

psychotic-like experiences. This could be addressed in at least two ways. For example, future research could follow participants longitudinally and establish the temporal precedence of aberrant salience and low self-concept clarity before the development of psychotic-like experiences. If having high aberrant salience and low self-concept clarity causes psychotic-like experiences, then we would expect participants to report this them to reporting psychotic-like experiences. Moreover, a longitudinal study with participants at risk for schizophrenia would enable researchers to test whether the interaction between aberrant salience and self-concept clarity changes when participants "convert" from the prodrome to full-blown psychosis.

A second way to examine whether aberrant salience and self-concept clarity cause psychotic-like experiences could be to experimentally manipulate aberrant salience and or self-concept clarity. For example, future research could use Proulx and Heine's (2009) procedure to experimentally induce low self-concept clarity and test whether participants with high aberrant salience were more likely to report psychotic-like experiences than people with low aberrant salience. Similarly, future research could experimentally manipulate aberrant salience and test whether people with low self-concept clarity experienced more psychotic-like experiences than people with high self-concept clarity. These studies could potentially establish whether high aberrant salience and low self-concept clarity actually produce psychotic-like experiences. In addition, future research could use a similar paradigm to test whether aberrant salience could actually cause an increase in anomalous experiences.

The proposed interaction between aberrant salience and self-concept clarity may make more intuitive sense when explaining delusion-like beliefs than hallucination-like

experiences. However, Kapur (2003) suggested that hallucinations may arise on a similar path in which salience is aberrantly attributed to perceptual aberrations or anomalous experiences. Such experiences, which may be ephemeral in people with low aberrant salience, capture attention and continue to occur more frequently in people with high aberrant salience. Garety et al. (2001) suggest that psychotic-like *experiences* only become psychotic *symptoms* when the individual misattributes the source of the experience to something external. Similarly, low self-concept clarity may exacerbate this source misattribution. Thus, high aberrant salience and low self-concept clarity may fuel a feedback loop in which hallucination-like experiences capture attentional resources, in turn leading to more hallucination-like experiences. In contrast, the results of Study 5 and Study 6 suggest that aberrant salience and self-concept clarity may interact only to predict delusion-like beliefs (Study 5) and delusions (Study 6), but not hallucination-like experiences and hallucinations. Future research could continue to examine the applicability of the interaction between aberrant salience and self-concept clarity to hallucination-like experiences in addition to delusion-like experiences.

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Table 1: Bivariate Correlations for the Measures Used in Study 1

	1	2	3	4	5	6
Aberrant Salience						
1) Aberrant Salience	*.86*					
Self-Concept Clarity						
2) SCCS	-.34*	*.86*				
3) MNMDT	-.09	.27*	*.32*			
Psychotic-Like Experiences						
4) PerMag	.59*	-.32*	-.17*	*.88*		
5) PDI-Total	.55*	-.31*	-.04	.61*	*.74*	
Social Anhedonia						
6) Social Anhedonia	.12*	-.29*	-.29*	.23*	.19*	*.85*
Mean	15.63	37.82	17.87	12.82	6.10	7.34
Standard Deviation	6.12	9.42	2.67	9.61	3.18	5.70

* $p < .001$, numbers on the diagonal represent Cronbach's alpha. SCCS = Self-Concept Clarity Scale. MNMDT = Me Not-me Decision Task, PDI = Peters Delusion Inventory. PerMag = Combined Perceptual Aberration and Magical Ideation Scales.

Table 2

Regression analyses for the interaction between aberrant salience and self-concept clarity predicting PerMag, PDI total scores, and social anhedonia in Study 1.

	PerMag	PDI-Total Score	SocAnh
Aberrant Salience by Self-Concept Clarity Scale			
Step 1 (ΔR^2)	.36***	.33***	.09***
ASI (β)	.55***	.52***	.03
SCCS (β)	-.13***	-.12***	-.28***
Step 2 (ΔR^2)	.02***	.01*	.00
ASI X SCCS (β)	-.13***	-.07*	-.05
Aberrant Salience by Me Not-Me Decision Task			
Step 1 (ΔR^2)	.37***	.30***	.09***
ASI (β)	.58***	.55***	.10*
MNMDT (β)	-.12**	-.01	-.28***
Step 2 (ΔR^2)	.01*	.00	.00
ASI X MNMDT (β)	-.07*	-.01	.01

*** p < .001, ** p < .01, * p <.05. ASI = Aberrant Salience Inventory, PerMag = combined Perceptual Aberration Scale and Magical Ideation Scale, PDI = Peters Delusion Inventory, SocAnh = the Revised Social Anhedonia Scale.

Table 3: Bivariate Correlations for the Measures Used in Study 2

	1	2	3	4	5
Aberrant Salience					
1) Aberrant Salience Inventory	*.90*				
Self-Concept					
2) SCCS	-.43*	*.91*			
Psychotic-Like Experiences					
3) PerMag	.65*	-.41*	*.89*		
4) CAPS-Total	.65*	-.41*	.70*	*.88*	
Social Anhedonia					
5) Social Anhedonia	.19*	-.28*	.31*	.25*	*.82*
Mean	14.18	38.27	11.35	5.05	8.66
Standard Deviation	6.80	5.04	9.04	5.20	5.17

* $p < .001$, numbers on the diagonal represent Cronbach's alpha. SCCS = Self-Concept Clarity Scale. PerMag = Combined Perceptual Aberration and Magical Ideation Scales. CAPS = Cardiff Anomalous Perceptions Scale.

Table 4

Regression Analyses for the Interaction between Aberrant Salience and Self-Concept Clarity Predicting PerMag/CAPS and Social Anhedonia.

	PerMag/CAPS	SocAnh
Step 1 (ΔR^2)	.54***	.08***
ASI (β)	.65***	.07
SCCS (β)	-.17***	-.25***
Step 2 (ΔR^2)	.04***	.01
ASI X SCCS (β)	-.20***	-.03

*** $p < .001$, ASI = Aberrant Salience Inventory, SCCS = Self-Concept Clarity Scale, PerMag/CAPS = combined Perceptual Aberration Scale, Magical Ideation Scale, and Cardiff Anomalous Perceptions Scale, SocAnh = the Revised Social Anhedonia Scale.

Table 5: Bivariate Correlations for the Measures Used in Study 3

	1	2	3	4	5	6
1) Aberrant Salience Inventory	*.90*					
2) SCCS	-.33*	*.91*				
3) PerMag	.59*	-.37*	.85			
4) Neuroticism	.09	-.30*	.19*	*.88*		
5) SPQ-S	.46*	-.40*	.45*	.24*	*.72*	
6) SocAnh	.17*	-.26*	.41*	.15*	.39*	*.81*
Mean	13.94	37.32	13.77	30.24	2.62	7.24
Standard Deviation	7.11	8.10	10.15	7.08	2.21	5.28

*p < .001, Neuroticism = the neuroticism subscale of the International Personality Item Pool, SPS-S = Suspiciousness subscale of the Schizotypal Personality Questionnaire.

Table 6

Regression Analyses for the Three-Way Interaction between the Aberrant Salience Inventory, Self-Concept Clarity Scale, and IPIP-Neuroticism Scale in Study 3.

	PerMag
Step 1 (ΔR^2)	.37***
ASI (β)	.51***
SCC (β)	-.18**
Neuroticism (β)	-.08*
Step 2 (ΔR^2)	.01
ASI X SCC (β)	-.12***
ASI X Neuroticism (β)	.04
Neuroticism X SCC (β)	.04
Step 3 (ΔR^2)	.01
ASI X SCC X Neuroticism (β)	-.03

*** $p < .001$, ** $p < .01$, PerMag = combined Perceptual Aberration and Magical Ideation Scales, Neuroticism = the Neuroticism Subscale of the International Personality Item Pool.

Table 7

Regression Analyses for the Interaction between Aberrant Salience and Self-Concept Clarity Predicting Paranoia in Study 3.

	SPQ-S
Step 1 (ΔR^2)	.29***
ASI (β)	.37***
SCC (β)	-.28**
Step 2 (ΔR^2)	.00
ASI X SCC (β)	.01

*** $p < .001$, ** $p < .01$, SPQ-S = The Suspiciousness subscale of the Schizotypal Personality Questionnaire.

Table 8

Wisconsin Schizotypy Group comparisons of Aberrant Salience Variables in Study 4

	Positive Group Mean (SD)	Negative Group Mean (SD)	Control Group Mean (SD)
Aberrant Salience Inventory	24.01 (3.28)[a]	16.70 (5.76)[b]	13.35 (5.68)[c]
PST Avoid	45.81 (14.47)[a]	46. 05 (12.80)[a]	49.56 (12.71)[b]
PST Approach	42.17 (11.44)[a]	42.41 (12.08)[a]	45.51 (11.59)[b]
PST Approach minus Avoid	-3.64 (3.91)[a]	-3.65 (4.14)[a]	-4.05 (4.24)[a]

Means that share a superscript letter do not significantly differ from each other.

Table 9

Correlations among Self-Processing variables in Study 4

	SCCS	MNMDT	MNMDT-RT
MNMDT	.20***		
MNMDT-RT	-.15***	.05	
RSES	.62***	.19***	-.16***

*** $p < .001$, SCCS = Self-Concept Clarity Scale, MNMDT = Me Not-Me Decision Task, MNMDT-RT = Me Not-Me Decision Task Reaction Time, RSES = Rosenberg Self-Esteem Scale.

Table 10

Wisconsin Group comparisons of Self-Processing Variables in Study 4 and Study 5

	Positive Group	Negative Group	Control Group
	Mean (SD)	Mean (SD)	Mean (SD)
Self-Concept Clarity Scale	30.83 (8.25)[a]	31.73 (9.34)[a]	40.94 (8.80)[b]
Me Not-me Decision Task	19.75 (2.94)[a]	19.15 (3.00)[a]	20.65 (2.60)[b]
Me Not-me Decision Task (RT)	1534.01 (576.37)[ab]	1568.45 (527.40)[a]	1446.97 (443.12)[b]
Rosenberg Self-Esteem Scale	29.67 (5.11)[a]	28.36 (6.38)[a]	32.88 (4.57)[b]

Means that share a superscript letter do not significantly differ from each other.

Table 11

Regression Analyses for the Interaction between Aberrant Salience and Self-Concept Clarity Predicting SIPS Positive Ratings

	Positive Composite	Delusional Ideation	Paranoia	Grandiosity	Perceptual Aberration	Disorganized Communication
Step 1 (ΔR^2)	.30***	.27***	.24***	.13***	.17***	.12***
ASI (β)	.43***	.46***	.35***	.24***	.33***	.28***
SCC (β)	-.11	-.04	-.18*	-.10**	-.08	-.06
Step 2 (ΔR^2)	.03*	.02*	.01	.03*	.01	.02*
ASI X SCC (β)	-.17*	-.15*	-.11	-.19*	-.12	-.11

*** $p < .001$, ** $p < .01$, * $p < .05$, ASI = Aberrant Salience Inventory, SCC = Self-Concept Clarity Scale.

Table 12

Regression Analyses for the Interaction between Aberrant Salience and Self-Concept Clarity Predicting SIPS Negative Ratings

	Negative Composite	Social Anhedonia	Avolition	Expression of Emotion	Experience of Emotions and self	Ideational Richness	Occupational Functioning
Step 1 (ΔR^2)	.12***	.03	.10***	.06*	.14***	.01	.05*
ASI (β)	-.07	-.14	.08	-.04	.10	-.01	.01
SCC (β)	-.37***	-.21*	-.26**	-.23*	-.37***	-.13	-.20*
Step 2 (ΔR^2)	.00	.01	.00	.00	.01	.00	.01
ASI X SCC (β)	-.04	.09	-.03	-.06	-.12	.02	-.09

*** $p < .001$, ** $p < .01$, * $p < .05$, ASI = Aberrant Salience Inventory, SCC = Self-Concept Clarity Scale.

Table 13

Regression Analyses for the Interaction between Aberrant Salience and Self-Concept Clarity Predicting SIPS Disorganized Ratings

	Disorganized Composite	Odd Behavior	Bizarre Thinking	Impaired Focus/Attention	Impaired Personal Hygiene
Step 1 (ΔR^2)	.15***	.05*	.11***	.18***	.02
ASI (β)	.26**	.18*	.26**	.19*	.12
SCC (β)	-.18*	-.08	-.06	-.30***	-.05
Step 2 (ΔR^2)	.00	.00	.02^{+}	.00	.00
ASI X SCC (β)	-.05	-.02	-.15^{+}	.01	.03

*** $p < .001$, ** $p < .01$, * $p < .05$, ASI = Aberrant Salience Inventory, SCC = Self-Concept Clarity Scale.

Table 14

Regression Analyses for the Interaction between Aberrant Salience and Self-Concept Clarity Predicting SIAPA Ratings

	SIAPA Total	Hypersensitivity	Inundation	Selective Attention
Step 1 (ΔR^2)	.13***	.18***	.15***	.13***
ASI (β)	.24**	.30***	.24**	.24**
SCC (β)	-.08*	-.11	$-.15^{+}$	-.08
Step 2 (ΔR^2)	.04**	.04**	.03*	.04
ASI X SCC (β)	-.22**	-.21*	-.18*	-.22**

*** $p < .001$, ** $p < .01$, * $p < .05$, $^{+}$ $p < .10$, ASI = Aberrant Salience Inventory, SCC = Self-Concept Clarity Scale.

Table 15

Correlations among Aberrant Salience Variables from Study 5

	ASI Last 2 weeks	ASI Frequency	ABSAL-Implicit
ASI Frequency	.91***		
ABSAL-Implicit	.07	.19*	
ABSAL-Explicit	-.01	-.01	-.17*

* $p < .05$, ** $p < .01$, *** $p < .001$

ASI-Last 2 weeks = modified ASI limiting response to the last 2 weeks, ASI Frequency = Follow-up questions for frequency of aberrant salience experiences, ABSAL Implicit = Aberrant salience reaction times on the Salience Attribution Task, ABSAL Explicit = Explicit ratings of aberrant salience on the Salience Attribution Task.

Table 16

Wisconsin Group comparisons of Aberrant Salience Variables in Study 4 and Study 5

	Positive Group	Negative Group	Control Group
	Mean (SD)	Mean (SD)	Mean (SD)
Last 2 weeks ASI	9.49 (7.23)	4.09 (4.67)[a]	2.32 (2.46)[a]
ASI Frequency	34.85 (31.18)	14.09 (17.40)[a]	8.04 (9.69)[a]
SAT-Reward Explicit	74.87 (22.13)[a]	66.35 (24.53)[a]	78.86 (20.20)[a]
SAT Non-Reward Explicit	20.50 (16.49)	15.12 (12.63)	19.66 (21.55)
Adaptive Salience Explicit	54.37 (29.84)[a]	51.24 (30.70)[a]	59.20 (35.36)[a]
Aberrant Salience Explicit	7.04 (7.98)[a]	10.87 (11.08)[b]	8.67 (10.91)[ab]
SAT-Reward RT	223.46 (59.97)[a]	219.85 (79.52)[a]	233.89 (51.07)[a]
SAT-Non Reward RT	242.96 (73.62)[a]	219.52 (79.52)[a]	244.90 (61.89)[a]
SAT-Adaptive Salience RT	19.50 (51.26)[a]	9.71 (29.94)[a]	11.72 (29.84)[a]
SAT-Aberrant Salience RT	20.90 (29.92)[a]	16.09 (15.2)[a]	14.89 (18.85)[a]

SAT = Salience Attribution Task. RT = Reaction Time. Last 2 weeks ASI = Modified ASI in which participants were asked specifically about the last 2 weeks, ASI Frequency = Frequency of Aberrant Salience Experiences in the Last 2 weeks. SAT-Reward Explicit = Explicit Ratings of the Rewarded Stimuli. SAT Non-Reward Explicit = Explicit Ratings of the Non-Rewarded Stimuli, Adaptive Salience Explicit = Difference between ratings for rewarded stimuli vs. non-rewarded stimuli. Aberrant Salience Explicit = Absolute value of the difference between ratings for reward-irrelevant stimulus dimension. SAT Reward RT = Reaction time for rewarded stimuli. SAT-Non Reward RT

= reaction times for non-rewarded stimuli. SAT-Adaptive Salience RT = difference in reaction times between the rewarded and non-rewarded stimuli. SAT Aberrant Salience RT = Absolute value of the difference in reaction times between the reward-irrelevant stimulus dimension.

Means that share a superscript letter do not significantly differ from each other.

Table 17

Correlations among Self-Processing variables in Study 5

	SCCS Time 2	Modified MNMDT	MNMDT Confidence
Modified MNMDT	.33***		
MNMDT Confidence	.32***	.29*	
RSES	.61***	.35***	.35***

*** $p < .001$, * $p < .05$, SCCS = Self-Concept Clarity Scale, Modified MNMDT = untimed MNMDT with follow-up confidence questions. MNMDT Confidence = mean confidence ratings on follow up questions.

Table 18

Wisconsin Group comparisons of Self-Processing Variables in Study 5

	Positive Group Mean (SD)	Negative Group Mean (SD)	Control Group Mean (SD)
Rosenberg Self-Esteem Scale	30.23 (4.67)[a]	29.93 (6.61)[a]	33.96 (4.98)[b]
Self-Concept Clarity Scale	31.57 (9.45)[a]	34.60 (9.84)[a]	44.30 (9.17)[b]
Modified MNMDT (Untimed)	18.04 (3.38)[a]	19.14 (2.57)[b]	20.96 (2.62)[c]
Modified MNMDT Confidence Ratings	5.16 (0.71)[ab]	5.02 (0.67)[a]	5.31 (0.62)[b]

SCCS = Self-Concept Clarity Scale, Modified MNMDT = untimed MNMDT with follow-up confidence questions. MNMDT Confidence = mean confidence ratings on follow up questions.

Means that share a superscript letter do not significantly differ from each other.

Table 19

Wisconsin Schizotypy between Group Comparisons of Interview-Rated Positive Symptoms in Study 5

	Positive Group Mean (SD)	Negative Group Mean (SD)	Control Group Mean (SD)
Global Positive Rating	9.94 (5.18)[a]	5.33 (4.56)[b]	2.20 (3.26)[c]
Delusional Ideation	2.80 (1.54)[a]	1.25 (1.45)[b]	0.59 (1.09)[c]
Paranoia	2.14 (1.11)[a]	1.56 (1.20)[b]	0.53 (0.88)[c]
Grandiosity	1.78 (1.71)[a]	0.64 (1.23)[b]	0.34 (0.65)[b]
Perceptual Anomalies	2.00 (1.52)[a]	0.97 (1.35)[b]	0.43 (0.93)[b]
Disorganized Communication	1.22 (1.19)[a]	0.92 (1.14)[a]	0.32 (0.64)[b]

Means that share a superscript letter do not significantly differ from each other.

Table 20

Wisconsin Schizotypy between Group Comparisons of Interview-Rated Negative Symptoms in Study 5

	Positive Group Mean (SD)	Negative Group Mean (SD)	Control Group Mean (SD)
Global Negative Rating	3.59 (3.56)[a]	5.74 (4.22)[b]	0.90 (1.95)[c]
Social Anhedonia	0.53 (0.92)[a]	2.05 (1.61)[b]	0.05 (0.21)[c]
Avolition	0.86 (1.00)[a]	0.77 (0.97)[a]	0.25 (0.65)[b]
Expression of Emotion	0.67 (0.97)[a]	1.23 (1.24)[b]	0.25 (0.61)[c]
Experience of Emotion and Self	0.69 (1.16)[a]	1.03 (1.35)[a]	0.07 (0.33)[b]
Ideational Richness	0.33 (0.71)[a]	0.31 (0.76)[a]	0.16 (0.64)[a]
Occupational Functioning	0.51 (0.90)[a]	0.34 (0.90)[b]	0.13 (0.35)[b]

Means that share a superscript letter do not significantly differ from each other.

Table 21

Wisconsin Schizotypy between Group Comparisons of Interview-Rated Disorganized Symptoms in Study 5

	Positive Group Mean (SD)	Negative Group Mean (SD)	Control Group Mean (SD)
Global Disorganized Rating	3.06 (2.81)[a]	2.00 (2.30)[b]	0.59 (0.94)[c]
Odd Behavior	0.67 (0.99)[a]	0.49 (0.94)[a]	0.05 (0.21)[b]
Bizarre Thinking	0.84 (1.22)[a]	0.43 (0.78)[b]	0.07 (0.33)[c]
Focus/Attention	1.38 (0.94)[a]	0.87 (0.87)[b]	0.45 (0.66)[c]
Personal Hygiene	0.18 (0.56)[a]	0.21 (0.61)[a]	0.02 (0.15)[b]

Means that share a superscript letter do not significantly differ from each other.

Table 22

Correspondence between Wisconsin Schizotypy Groups and SIPS Ratings of 3 and 4 or Higher for Positive and Negative Symptoms

	Wisconsin Control (n = 44)	Wisconsin Positive (n = 57)	Wisconsin Negative (n = 62)	Total (n = 156)
SIPS Control (3)	84.1%	27.5%	24.6%	42.5%
SIPS Positive (3)	11.4%	75.4%	43.5%	44.4%
SIPS Negative (3)	4.5%	22.8%	58.1%	29.4%
SIPS Control (4)	93.2%	52.6%	67.7%	71.3%
SIPS Positive (4)	4.5%[a]	38.6%	14.5%	20.0%
SIPS Negative (4)	2.3%[a]	10.5%	21.0%	11.3%

Note: Numbers in Positive, Negative, and Total Columns add up to more than 100% because some participants met criteria for the positive and the negative SIPS and/or positive and negative Wisconsin schizotypy group. SIPS Control (3) = No ratings of 3 or more on any of the SIPS positive and negative ratings, SIPS Positive (3) = at least one rating of 3 or more on a positive SIPS item, SIPS Negative (3) = at least one ratings of 3 or more on a negative SIPS item. SIPS Control (4) = No ratings of 3 or more on any of the SIPS positive and negative ratings, SIPS Positive (4) = at least one rating of 3 or more on a positive SIPS item, SIPS Negative (4) = at least one ratings of 3 or more on a negative SIPS item.

Table 23

Simultaneous Regression of all Questionnaire Variables Predicting Interview-Rated Positive Symptoms.

	Positive Composite	Delusional ideation	Perceptual Anomalies	Disorganized Communication	Paranoia	Grandiosity
Cardiff Anomalous Perceptions Scale (β)	.51***	.50***	.67***	.20^{+}	.29**	.24*
Magical Ideation (β)	.18^{+}	.17	.19^{+}	-.07	.27*	.11
Perceptual Aberration (β)	.02	-.05	.04	.08	.00	.02
Aberrant Salience Inventory (β)	.04	.08	.02	.13	.03	-.09
Peters Delusion Inventory (β)	.12	.18^{+}	-.14	.10	.01	.32**
SPQ-Suspiciousness (β)	-.01	-.11	-.17*	-.01	.23**	.07
Social Anhedonia (β)	.08	.06	.14*	.11	.09	-.09

*** $p < .001$, ** $p < .01$, * $p < .05$, $^{+} < .10$

Table 24

Simultaneous Regression of all Questionnaire Variables Predicting Interview-Rated Negative Symptoms

	Negative Composite	Social Anhedonia	Avolition	Expression of Emotion	Experiences of Emotion and Self	Ideational Richness	Occupational Functioning
Magical Ideation (β)	.10	-.04	.20	.10	.01	.03	.14
Perceptual Aberration (β)	.06	.10	-.02	-.16	.06	.20	.07
Social Anhedonia (β)	.52***	.65***	.15^{+}	.44***	.32***	.14	.05
Aberrant Salience Inventory (β)	-.12	-.15	.01	.04	-.14	-.09	-.09
Peters Delusion Inventory (β)	.03	.06	-.03	.01	.20	-.17	-.07
Cardiff Anomalous Perceptions Scale (β)	.13	-.01	.07	.20^{+}	.10	.15	.04
SPQ-Suspiciousness (β)	-.03	-.05	.05	-.18^{+}	-.01	-.04	.15

*** $p < .001$, ** $p < .01$, * $p < .05$, $^{+} < .10$

Table 25

Simultaneous Regression of all Questionnaire Variables Predicting Interview-Rated Delusional Ideation.

	Disorganized Composite	Odd Behavior	Bizarre Thinking	Impairment in Focus/Attention	Impairments in Personal Hygiene
Magical Ideation (β)	-.03	-.08	-.06	.17	-.16
Perceptual Aberration (β)	.26*	.35*	.23^{+}	-.09	.37*
Social Anhedonia (β)	.14^{+}	.18*	.14^{+}	-.01	.10
Aberrant Salience Inventory (β)	.03	-.04	.05	.04	.05
Peters Delusion Inventory (β)	.05	.09	.17	-.05	-.13
Cardiff Anomalous Perceptions Scale (β)	.30**	.16	.38***	.27*	-.01
SPQ-Suspiciousness (β)	-.12	-.20*	-.32***	.20*	.01

*** p < .001, ** p < .01, * p < .05, $^{+}$ < .10

Table 26

Comparisons among Wisconsin Schizotypy Groups for Self-Report Schizotypy Scales

	Positive Group	Negative Group	Control Group
	Mean (SD)	Mean (SD)	Mean (SD)
Peters Delusion Inventory			
PDI-Total	11.12 (3.64)[a]	6.90 (3.39)[b]	4.34 (2.21)[c]
PDI-Distress	32.97 (14.98)[a]	19.88 (10.68)[b]	10.79 (6.75)[c]
PDI-Preoccupation	35.48 (14.89)[a]	20.27 (10.64)[b]	12.34 (7.43)[c]
PDI-Conviction	38.36 (15.59)[a]	23.48 (12.65)[b]	15.26 (8.25)[c]
Cardiff Anomalous Perceptions Scale			
CAPS-Total	10.68 (6.98)[a]	3.90 (4.40)[b]	2.95 (3.37)[b]
CAPS-Distress	28.21 (22.51)[a]	8.76 (10.28)[b]	5.91 (7.71)[b]
CAPS-Distraction	30.79 (24.67)[a]	9.69 (12.93)[b]	7.07 (9.18)[b]
CAPS-Frequency	27.68 (24.32)[a]	8.93 (11.83)[b]	5.22 (6.02)[b]
Paranoia			
SPQ-Suspiciousness	4.45 (2.50)[a]	3.62 (2.22)[b]	1.52 (1.80)[c]

Means that share a superscript letter do not significantly differ from each other

Table 27

Comparison between Schizophrenia and Control Groups on Aberrant Salience Variable

	Schizophrenia Mean (SD)	Control Mean (SD)
Self-Report Aberrant Salience		
Aberrant Salience Inventory	15.20 (7.78)*	10.94 (6.00)
Probabilistic Selection Task		
Choose Rewarded Stimulus	35.56 (11.27)*	40.70 (11.56)
Avoid Punished Stimulus	38.59 (12.07)	43.55 (12.99)
Preference for Reward Learning	-3.19 (3.68)	-2.85 (3.62)
Salience Attribution Task-Explicit Ratings		
Explicit Reward	38.90 (20.22)	44.31 (21.69)
Explicit Non-Reward	35.90 (20.97)	35.73 (19.11)
Explicit Adaptive Salience	3.0 (21.75)	8.58 (35.69)
Explicit Aberrant Salience	14.49 (15.98)*	32.80 (26.94)
Salience Attribution Task- Reaction Time Measures		
Adaptive Salience RT	0.58 (26.38)	-6.633 (44.57)
Aberrant Salience RT	20.49 (17.04)	17.96 (12.66)

* $p < .05$, Reward Explicit = Explicit Ratings of the Rewarded Stimuli, SAT Non-Reward Explicit = Explicit Ratings of the Non-Rewarded Stimuli, Explicit Adaptive Salience = Difference between ratings for rewarded stimuli vs. non-rewarded stimuli. Explicit

Aberrant Salience = Absolute value of the difference between ratings for reward-irrelevant stimulus dimension. SAT Reward RT = Reaction time for rewarded stimuli, SAT Aberrant Salience RT = Absolute value of the difference in reaction times between the reward-irrelevant stimulus dimension.

Table 28

Comparison between Schizophrenia and Control Groups on Self-Relevant Information Processing Variables.

	Schizophrenia Mean (SD)	Control Mean (SD)
Self-Esteem		
Rosenberg Self-Esteem Scale	19.53 (4.67)*	31.79 (4.82)
Self-Report Self-Concept Clarity		
Self-Concept Clarity Scale	40.64 (7.89)*	44.49 (7.44)
Me Not-me Decision Task		
Me Not-me Decision Task	17.61 (3.73)*	22.21(2.69)
MNMDT_RT	4264.24 (3023.37)*	2173.42 (3023.57)
Modified Me Not-me Decision Task		
Modified MNMDT	18.08 (4.14)*	22.57 (2.96)
SCC-Confidence	5.37 (1.14)	5.30 (0.69)
Confidence RT Mean	4005.18 (2364.70)*	2639.34 (1017.17)

* $p < .05$

Table 29

Correlations among Aberrant Salience Variables in Schizophrenia Patients.

	ASI	PST Approach	PST Avoid	Approach - Avoid	ABSAL-RT	ADAPT-RT	ABSAL-Explicit	Adapt-Explicit
PST Approach	-.07							
PST Avoid	-.09	.27*						
Approach minus Avoid	.04	.53***	-.67***					
ABSAL-RT	.01	.25^{+}	-.02	.21				
ADAPT-RT	.01	-.15	-.08	-.03	.23			
ABSAL-Explicit	-.16	-.09	.10	-.16	-.06	.09		
ADAPT-Explicit	-.19	.23	-.16	.35*	.22	.07	-.09	

*** $p < .001$, * $p < .05$

Table 30

Correlations between Aberrant Salience Variables and Interview-Rated Positive Symptoms in Patients with Schizophrenia in Study 6.

	ASI	PST Approach	PST Avoid	Approach - Avoid	ABSAL -RT	ADAPT -RT	ABSAL -Explicit	Adapt-Explicit
Delusions/Hallucinations	.36**	-.16	-.08	-.21	.14	-.22	-.15	.08
Hallucinations	.40**	-.10	-.12	.03	.15	-.20	-.23	.04
Global Rating of Delusions	.19	-.12	.13	-.20	.07	-.16	.01	.11
Bizarre Behavior	.24^{+}	-.27^{+}	.15	-.35*	-.20	-.05	-.19	-.08
Formal Thought Disorder	.15	-.04	-.02	-.02	-.16	-.28^{+}	.15	-.08

** $p < .01$, $p < .05$, $^{+}$ $p < .10$

Table 31

Correlations between Aberrant Salience and Negative Symptoms in People with Schizophrenia in Study 6.

	ASI	PST Approach	PST Avoid	Approach - Avoid	ABSAL -RT	ADAPT -RT	ABSAL -Explicit	Adapt-Explicit
Negative Composite	-.03	.05	.09	-.13	-.03	-.05	.09	-.04
Affective Flattening	.12	-.03	.28*	-.27^{+}	-.11	.04	.01	-.10
Alogia	-.15	.00	.23^{+}	-.20	-.07	-.02	.22	.16
Avolition/Apathy	.05	-.01	.19	-.18	.23	-.09	-.05	.01
Anhedonia	.01	.02	-.02	.13	-.10	-.03	.03	-.02

* $p < .05$, $^{+}$ $p < .10$

Table 32

Correlations between Aberrant Salience and Global Impairment in People with Schizophrenia in Study 6.

	ASI	PST Approach	PST Avoid	Approach - Avoid	ABSAL -RT	Adapt-RT	ABSAL-Explicit	Adapt-Explicit
Strauss-Carpenter								
Hospitalization	-.07	.19	-.10	.23	.11	.10	.09	.05
Social Functioning	-.06	.12	.25+	-.11	.01	.02	.07	-.06
Employment	.06	.05	-.17	.17	-.13	.01	.04	-.20
Symptom Severity	-.09	.06	-.08	.12	-.14	.21	-.05	-.10
Global Assessment Scale	-.21	.20	-.16	.29*	-.13	.04	-.12	.07

Table 33

Correlations among Self-Relevant Information Processing Variables for People with Schizophrenia in Study 6.

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence
SCCS	.61***					
MNMDT	.15	.22				
MNMDT-RT	-.32*	-.26^{+}	-.21			
MNMDT-Modified	.03	-.04	.55*	-.08		
MNMDT-Confidence	.47***	.16	.19	-.11	.41*	
MNMDT-Confidence RT	-.30*	.18	-.09	.49***	.11	-.12

Table 34

Correlations among Self- Processing and Interview-Rated Positive Symptoms in People with Schizophrenia in Study 6

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
Delusions/Hallucinations	.01	-.22	-.35***	-.08	-.21	.02	-.19
Hallucinations	-.07	-.25^{+}	-.26^{+}	-.11	-.15	-.04	-.27^{+}
Global Rating of Delusions	.08	-.09	-.36**	-.02	-.26^{+}	.01	-.02
Bizarre Behavior	-.09	.17	-.12	-.01	.04	.29*	-.09
Formal Thought Disorder	.14	-.05	-.08	-.01	-.05	.10	.18

* $p < .05$, $p < .10$

Table 35

Correlations among Self- Processing and Interview-Rated Positive Symptoms in People with Schizophrenia in Study 6

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
Negative Composite	.08	-.09	-.28*	.21	-.09	-.04	.27^{+}
Affective Flattening	.06	-.06	-.22	.12	-.06	.09	.25^{+}
Alogia	-.08	-.01	-.09	.12	-.05	-.12	.28^{+}
Avolition/Apathy	-.02	-.07	-.12	.06	.07	-.01	-.02
Anhedonia	.14	-.09	-.27^{+}	.21	-.17	-.06	.20

Table 36

Correlations among Self-Relevant Information Processing and Global Functioning in People with Schizophrenia in Study 6.

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
Strauss-Carpenter							
Hospitalization	-.05	-.07	.29*	.05	.26^{+}	-.06	.01
Social Functioning	.11	.05	.04	-.15	.07	.06	-.02
Employment	.02	.02	.08	.07	-.01	.07	.21
Symptom Severity	.02	.01	.10	.08	-.05	-.08	.08
Global Assessment Scale	-.10	.02	.29*	.20	.11	-.13	.07

Table 37

SAPS and BPRS Positive Symptoms as a Function of Self-Concept Clarity and Aberrant Salience.

	SAPS-Delusions/ Hallucinations	SAPS-Delusions	SAPS-Hallucinations	BPRS-Unusual Thought Content	BPRS-Hallucinations
Step 1 (ΔR^2)	.12*	.04	.04	.10$^+$	.18**
ASI (β)	.35*	.20	.19	.39*	.50**
SCC (β)	-.02	.02	..30	.06	.10
Step 2 (ΔR^2)	.09*	.09*	.01	.07*	.02
ASI X SCC (β)	.37*	.37*	.01	.33*	.16

** $p < .01$, * $p < .05$

Table 38

Comparison between Schizophrenia and Control Groups on Paranoia, Peters Delusion Inventory, and Cardiff Anomalous Perceptions Scale

	Schizophrenia Mean (SD)	Control Mean (SD)
Paranoia		
SPQ-Suspiciousness	4.81 (2.15)*	1.79 (1.50)
Cardiff Anomalous Perceptions Scale		
CAPS Total	11.25 (7.77)*	3.67 (5.30)
CAPS-Distress	33.13 (23.46)*	6.15 (9.64)
CAPS-Distract	33.62 (22.88)*	6.16 (9.64)
CAPS-Frequency	33.92 (23.90)*	5.39 (8.41)
Peters Delusions Inventory		
PDI-Total	9.88 (4.09)*	5.30 (4.12)
PDI-Distress	26.63 (15.90)*	10.70 (11.71)
PDI-Preoccupation	28.79 (16.08)*	10.79 (9.91)
PDI-Conviction	34.98 (16.53)*	18.27 (14.97)

* $p < .05$

Figure 1: Magical Ideation/Perceptual Aberration as a Function of Aberrant Salience and Self-Concept Clarity in Study 1.

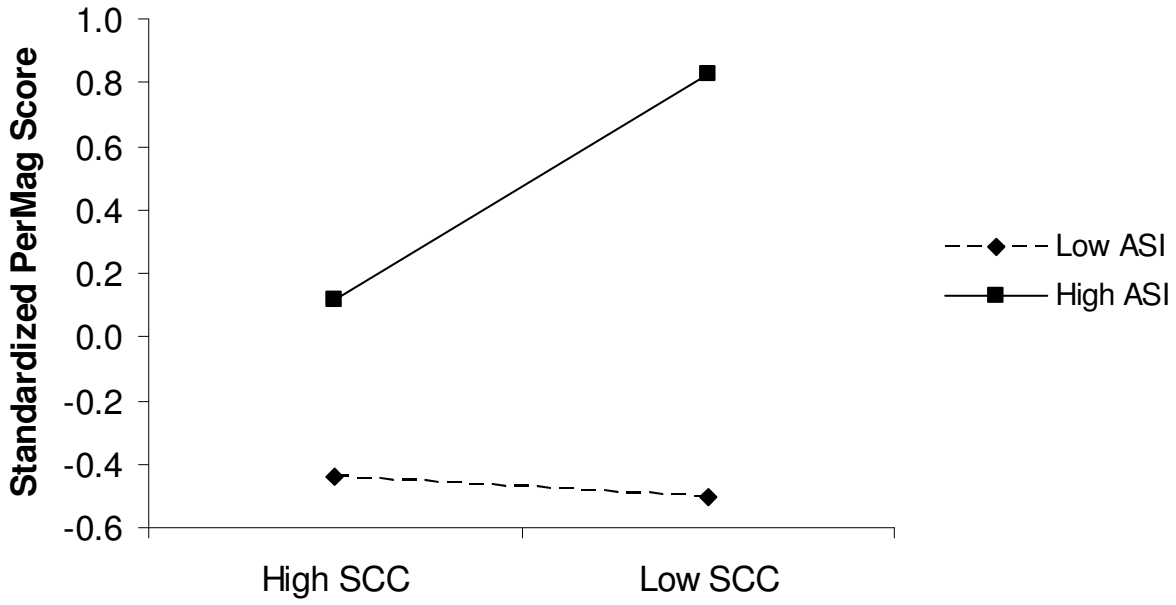


Figure 2

Self-Concept Clarity by Aberrant Salience Interaction in Predicting Positive Composite Scores in Study 5.

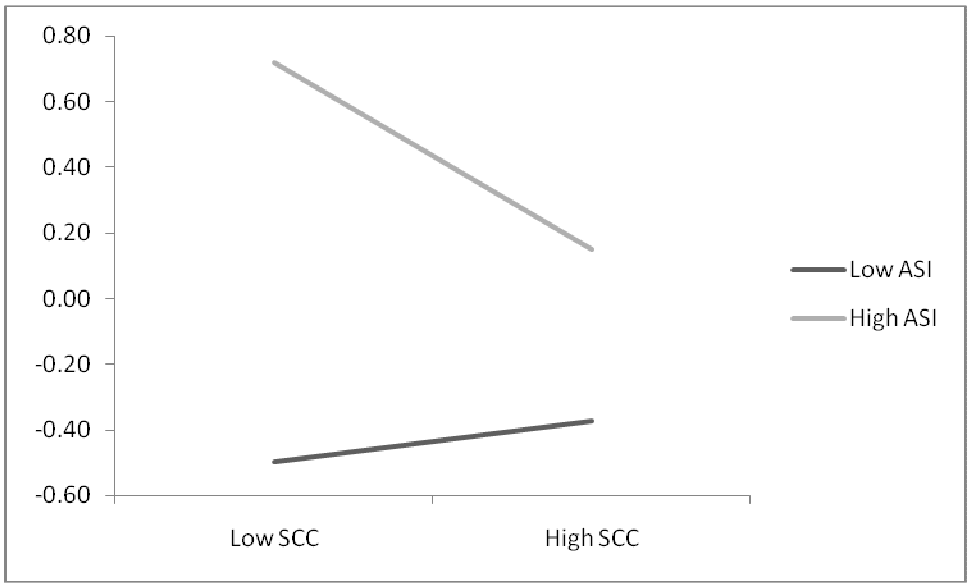
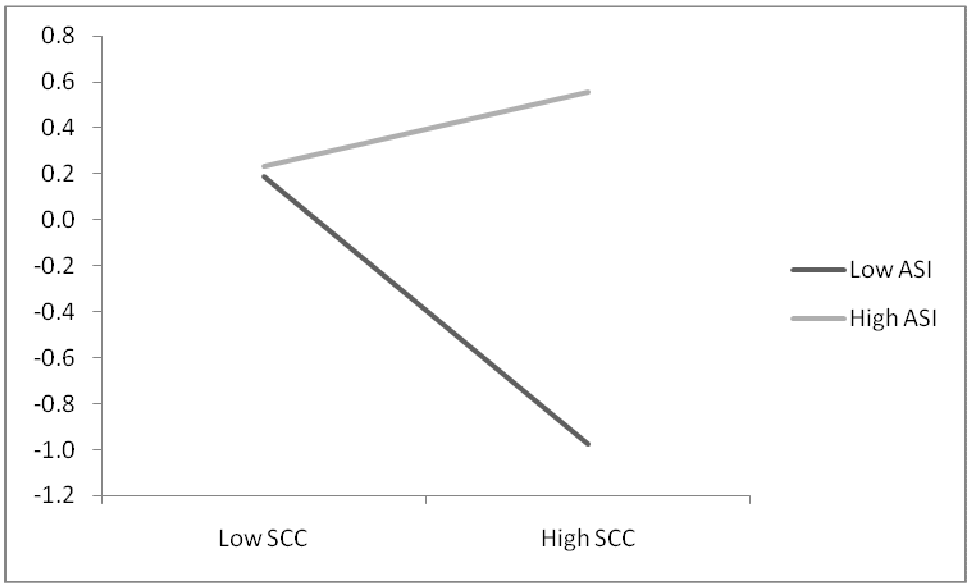


Figure 3

Moderation of Self-Concept Clarity by Aberrant Salience in Predicting SAPS-Positive Symptoms in Study 6



Vita

David Cicero is a graduate student in the clinical psychology Ph.D. program at the University of Missouri in Columbia where he resides with his wife and daughter. David graduated from the University of Virginia with a BA in Psychology in 2003. Following a year in Washington, DC, David moved to Columbia, Missouri in 2004. He obtained a Master of Arts in 2007, and plans to finish a Ph.D. in 2012. He will do his clinical predoctoral internship at the VA Maryland Health System/University of Maryland School of Medicine beginning in June, 2011.

Appendix A

Table 1A

Frequencies of Ratings for all Participants in Study 5.

Total	0	1	2	3	4	5	6	7
Positive Ratings								
Delusional Ideation	69	26	22	23	18	10	0	0
Paranoia	48	47	39	26	5	3	0	0
Grandiosity	99	22	29	6	2	9	1	0
Perceptual Anomalies	87	22	24	23	8	3	1	0
Disorganized Communication	90	36	24	12	5	0	0	0
Negative Ratings								
Social Anhedonia	105	16	16	20	7	4	0	0
Avolition	102	36	21	8	1	0	0	0
Expression of Emotion	98	32	19	18	1	0	0	0
Experience of Emotions and Self	117	21	13	10	6	1	0	0
Ideational Richness	140	13	10	3	1	0	0	0
Occupational Functioning	134	23	3	5	3	0	0	0
Disorganized Ratings								
Odd Behavior	128	16	18	5	1	0	0	0
Bizarre Thinking	124	21	14	5	4	0	0	0
Impairment in Focus/Attention	68	54	41	3	2	0	0	0
Impaired Personal Hygiene	150	14	1	3	0	0	0	0

Table 2A

Frequencies of Ratings for Wisconsin Positive Participants in Study 5 (n = 61)

Total	0	1	2	3	4	5	6	7
Positive Ratings								
Delusional Ideation	6	7	10	16	13	9	0	0
Paranoia	4	12	23	17	2	3	0	0
Grandiosity	20	9	17	6	2	6	1	0
Perceptual Anomalies	13	9	15	13	7	3	1	0
Disorganized Communication	21	16	12	7	4	0	0	0
Negative Ratings								
Social Anhedonia	42	6	7	5	1	0	0	0
Avolition	28	17	12	3	1	0	0	0
Expression of Emotion	34	13	8	6	0	0	0	0
Experience of Emotions and Self	36	14	3	5	2	1	0	0
Ideational Richness	47	7	5	1	0	0	0	0
Occupational Functioning	40	15	2	1	3	0	0	0
Disorganized Ratings								
Odd Behavior	36	8	14	3	0	0	0	0
Bizarre Thinking	33	11	9	4	4	0	0	0
Impairment in Focus/Attention	13	23	21	2	2	0	0	0
Impaired Personal Hygiene	52	6	1	2	0	0	0	0

Table 3A

Frequencies of SIPS Ratings for Negative Participants in Study 5 (n = 64)

Total	0	1	2	3	4	5	6	7
Positive Ratings								
Delusional Ideation	29	11	10	8	4	2	0	0
Paranoia	13	21	16	11	2	1	0	0
Grandiosity	42	8	11	0	0	3	0	0
Perceptual Anomalies	35	12	7	7	2	0	1	0
Disorganized Communication	31	15	10	5	2	0	0	0
Negative Ratings								
Social Anhedonia	19	7	10	17	7	4	0	0
Avolition	33	18	8	5	0	0	0	0
Expression of Emotion	25	14	11	13	1	0	0	0
Experience of Emotions and Self	34	10	9	6	5	0	0	0
Ideational Richness	53	3	5	2	0	0	0	0
Occupational Functioning	54	4	1	4	1	0	0	0
Disorganized Ratings								
Odd Behavior	47	7	7	2	1	0	0	0
Bizarre Thinking	46	10	5	2	0	0	0	0
Impairment in Focus/Attention	26	19	18	1	0	0	0	0
Impaired Personal Hygiene	54	8	0	2	0	0	0	0

Table 4A

Frequencies of Ratings for all Control Participants in Study 5.

Total	0	1	2	3	4	5	6	7
Positive Ratings								
Delusional Ideation	33	8	2	2	2	0	0	0
Paranoia	30	13	2	1	1	0	0	0
Grandiosity	36	7	4	0	0	0	0	0
Perceptual Anomalies	38	2	4	3	0	0	0	0
Disorganized Communication	37	6	4	0	0	0	0	0
Negative Ratings								
Social Anhedonia	44	3	0	0	0	0	0	0
Avolition	40	4	2	1	0	0	0	0
Expression of Emotion	38	7	1	1	0	0	0	0
Experience of Emotions and Self	45	1	1	0	0	0	0	0
Ideational Richness	43	3	1	0	0	0	0	0
Occupational Functioning	41	6	0	0	0	0	0	0
Disorganized Ratings								
Odd Behavior	45	2	0	0	0	0	0	0
Bizarre Thinking	45	1	1	0	0	0	0	0
Impairment in Focus/Attention	31	12	4	0	0	0	0	0
Impaired Personal Hygiene	46	1	0	0	0	0	0	0

Levels of Aberrant Salience, Self-Concept Clarity and Wisconsin Groups.

Methodologists have suggested that it may be difficult to test an interaction with extreme groups (Preacher, et al., 2005), especially when the groups were selected on a variable (e.g., PerMag) that is related to the dependent variable (e.g., delusional ideation). As an alternative analysis, I examined the proportion of participants in each Wisconsin group who were high on aberrant salience, but low on self-concept clarity. First, I ranked ordered the participants into quartiles based on their ASI scores and SCC scores. This created four groups of participants for ASI scores and 4 groups of participants for SCC scores. Then, I merged the groups together to form all possible 16 combinations of quartile ranks (e.g., ASI 4^{th} quartile/SCCS 1^{st} quartile, ASI 4^{th} quartile/SCCS 2^{nd} quartile, etc…). Next, I used a chi-square to test whether the proportion of participants in each of the 16 groups differed by their Wisconsin Group membership. This chi-square value indicated that there is a different distribution of participants by group than would be expected by chance (χ^2 (28) = 278.12, $p < .001$). Additionally, a Z-test with a Bonferroni adjustment for multiple comparisons was used to compare the proportion of people in each ASI/SCC group by Wisconsin group membership.

As can be seen in Figure 3 and Table A5, 39.3% of the positive group was in highest quartile in aberrant salience and the lowest quartile in self-concept clarity, and an additional 24.3% were in the highest quartile in aberrant salience and the second highest quartile in self-concept clarity. There was a significantly higher proportion of participants in the positive group in the highest quartile ASI/Lowest Quartile SCC group compared to both negative and control groups. Additionally, this proportion was higher for the positive group in the 75-100 quartile ASI/50-75 SCC group compared to the negative and

control groups. Participants in the negative group tended to be in the lowest quartile of self-concept clarity, but this was spread across the range of the aberrant salience quartiles. The negative group had a higher proportion it the lowest SCC quartile compared to the control group for 3 of the 4 ASI quartile groups. Finally, the highest percentage of participants in the control group was in the lowest aberrant salience quartile and the highest self-concept clarity quartile (18.6%), and this was significantly higher than both the positive and negative groups. This suggests that positive participants do seem to be the participants with extreme levels of aberrant salience and self-concept clarity, which provides further support for the interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences.

Table A5

Quartile Rankings based on ASI and SCCS in Study 5

		Control (n = 441)	Positive (n = 74)	Negative (n = 80)	Total (n = 595)
ASI 0-25%	SCC 0-25%	1.8%[a]	0.0%[a]	10.0%[b]	2.7%
	SCC 26-50%	6.3%[a]	0.0%[a]	1.3%[a]	4.9%
	SCC 51-75%	9.3%[a]	0.0%[b]	7.5%[a]	6.7%
	SCC 76-100%	18.6%[a]	0.0%[b]	3.8%[b]	14.3%
ASI 26-50%	SCC 0-25%	5.0%[a]	2.7%[a]	8.8%[a]	5.2%
	SCC 26-50%	7.9%[a]	0.0%[b]	8.8%[a]	7.1%
	SCC 51-75%	10.0%[a]	0.0%[b]	6.3%[ab]	8.2%
	SCC 76-100%	10.4%[a]	0.0%[b]	1.3%[b]	7.9%
ASI 51-75%	SCC 0-25%	3.4%[a]	6.8%[ab]	13.8%[b]	5.2%
	SCC 26-50%	4.8%[a]	4.1%[a]	8.8%[a]	5.2%
	SCC 51-75%	7.5%[a]	2.7%[a]	2.5%[a]	8.2%
	SCC 76-100%	6.1%[a]	5.4%[a]	5.0%[a]	5.9%
ASI 76-100%	SCC 0-25%	2.3%[a]	39.2%[b]	13.8%[c]	8.4%
	SCC 26-50%	3.6%[a]	24.3%[b]	7.5%[a]	6.7%
	SCC 51-75%	2.9%[a]	14.9%[b]	1.3%[a]	4.2%
	SCC 76-100%	0.0%[a]	0.0%[a]	0.0%[a]	0.0%
Total		100%	100%	100%	100%

Correlations among Aberrant Salience and Schizotypy Measures. As can be seen in A6, Magical Ideation was positively correlated with ASI scores, modified ASI scores, and ASI Frequency scores. There was a trend for a significant relationship between magical ideation and Implicit Aberrant Salience. Magical Ideation was negatively correlated with tendency to avoid punished variables on the PST. Similarly, perceptual aberration was positive correlated with all 3 ASI variables and negatively correlated with avoiding punished variables on the PST. Social Anhedonia was positively correlated the ASI, but was negatively correlated with both choosing rewards and avoiding punishments. PDI total and subscale scores were positively correlated with all three ASI variables. Additionally, there was a positive correlation between PDI distress and preoccupation scores with implicit aberrant salience, and a trend for a correlation between implicit aberrant salience and PDI total scores. The CAPS-Total Score and all subscales were positively correlated with all three ASI measures. The SPQ-Suspiciousness subscale was correlated with all three ASI measures and there was a trend for a positive correlation between SPQ-S scores and implicit aberrant salience.

Correlations among Aberrant Salience and Interview-Rated Psychotic-Like Experiences. As can be seen in Table X, SIPS-Rated Delusional Ideation and Paranoia were both correlated with all three ASI measured. SIPS-Rated Grandiosity was correlated with all three ASI measures and with implicit aberrant salience on the SAT, and SIPS-Rated Perceptual Anomalies was positively correlated with the three ASI measures. SIPS-Rated Disorganized communication was also correlated with all three ASI measures, albeit less strongly than were Delusional Ideation, Paranoia, Grandiosity, and Perceptual Anomalies.

Correlations among Aberrant Salience and Interview-Rated Negative Symptoms. Social Anhedonia was uncorrelated with all measures of aberrant salience, but there was a trend for a negative correlation with avoidance learning as measured with the PST. Avolition was positively correlated with Study 1 ASI scores. There was a trend for impairment in the expression of emotion to be negative correlated with reward learning on the PST, while experiences of emotion and the self was correlated with aberrant salience in the last 2 weeks and the frequency of these experiences. Impairment in occupational functioning was negatively correlated with a preference for reward over avoidance learning.

Correlations among Aberrant Salience and Interview-Rated Disorganized Symptoms. As can be seen in Table A6, Odd behavior, bizarre thinking, and impairment in focus and attention all were positively correlated with the three ASI measures. In addition, there was a trend for a positive correlation between odd behavior and explicit aberrant salience was measured with the SAT.

Correlations among Aberrant Salience and Interview Rated Perceptual Anomalies. As can be seen in A6, all three SIAPA subscales were positively correlated with all three ASI scales.

Correlations among Aberrant Salience and Self-Processing Variables. As can be seen in Table A7, the Rosenberg Self-Esteem Scale was negatively correlated with the ASI in Study 1. The SCCS administered in both Study 1 and Study 4 was negatively correlated with all three ASI measures, and the Study 1 administration was positively correlated with avoidance learning. The MNMDT score from study 1 was weakly negatively correlated with ASI scores, and there was a trend for this score to be

correlated with explicit aberrant salience. There was a trend for a correlation between MNMDT reaction times and implicit aberrant salience. The Modified MNMDT in Study 4 was negatively correlated with all three ASI measures.

Table A6

Correlations among Aberrant Salience Variables and Schizotypy Scales in Study 4 and Study 5.

	ASI Study 1	ASI Study 4	ASI Frequency	ABSAL-Implicit	ASBAL-Explicit	PST-Choose	PST-Avoid	Choose-Avoid
MagicID	.60***	.56***	.56***	.16^{+}	-.12	-.05	-.08*	.02
PerAb	.52***	.54***	.55***	.13	-.06	-.06	-.08*	.02
SocAnh	.12***	.04	.05	-.04	.14	-.08*	-.07*	-.01
PDI-Total	.57***	.67***	.65***	.14^{+}	-.09	.01	-.02	.02
PDI-Distress	.53***	.68***	.69***	.21**	-.09	.01	-.01	.01
PDI-Preoccupation	.55***	.69***	.70***	.19*	-.06	.02	-.01	.02
PDI-Conviction	.53***	.69***	.66***	.11	-.08	.02	-.03	.04
CAPS-Total	.50***	.71***	.68***	.08	-.05	.08	.05	.02
CAPS-Distress	.47***	.66***	.66***	.11	-.07	.12	.05	.02
CAPS-Distraction	.46***	.68***	.67***	.11	-.05	.11	.03	.06
CAPS-Frequency	.48***	.73***	.73***	.12	-.02	.05	.01	.03

Table A6 Continued

Correlations among Aberrant Salience and other Variables in Study 4 and Study 5.

	ASI Study 1	ASI Study 4	ASI Frequency	ABSAL-Implicit	ASBAL-Explicit	PST-Choose	PST-Avoid	Choose-Avoid
SPQ-Suspiciousness	.39***	.51***	.48***	.15^{+}	.01	.02	.01	.01
Delusional Ideation	.52***	.53***	.51***	.07	-.10	.07	-.05	.10
Paranoia	.46***	.48***	.48***	.09	.01	-.07	-.09	.13
Grandiosity	.34***	.50***	.57***	.25**	-.08	.07	.02	.12
Perceptual Anomalies	.41***	.40***	.40***	-.11	.01	.01	.03	-.02
Disorganized Communication	.33***	.29***	.27***	-.04	.06	.03	.13	-.08
Social Anhedonia	-.08	-.03	.02	-.03	.12	-.11	-.14^{+}	.03
Avolition	.20*	.10	.09	-.05	-.06	.08	.10	-.02

Table A6 continued

Correlations among Aberrant Salience and other Variables in Study 4 and Study 5.

	ASI Study 1	ASI Study 4	ASI Frequency	ABSAL-Implicit	ASBAL-Explicit	PST-Choose	PST-Avoid	Choose-Avoid
Expression of Emotion	.07	.04	.09	.16^{+}	-.05	-.14^{+}	-.04	-.02
Experience of emotion/self	.08	.17*	.22**	-.05	.11	.04	-.01	.03
Ideational Richness	.03	.01	.03	.03	.05	-.11	.05	-.13
Occupational Functioning	.12	.04	.10	.02	-.03	-.10	.13	-.18*
Odd Behavior	.21**	.23**	.25**	.06	.14+	.08	.01	-.06
Bizarre Thinking	.32***	.34***	.34***	-.06	.07	-.02	-.01	.03
Focus/Attention	.33***	.31***	.32***	-.02	.06	.04	.07	-.03
Personal Hygiene	.13	.10	.15^{+}	-.02	.11	-.04	.05	-.07

A6 Continued

Correlations among Aberrant Salience and other Variables in Study 4 and Study 5.

	ASI Study 1	ASI Study 4	ASI Frequency	ABSAL-Implicit	ASBAL-Explicit	PST-Choose	PST-Avoid	Choose-Avoid
Intensity	.41***	.63***	.59***	.06	.02	.04	-.03	.06
Flooding	.36***	.59***	.56***	-.01	.07	.02	.05	-.03
Focus	.34***	.40***	.39***	.07	-.06	-.01	-.04	.08

Table A7

Correlations among Aberrant Salience and Self-Relevant Information Processing Variables in Study 4 and Study 5

	ASI Study 1	ASI Study 4	ASI Frequency	ABSAL-Implicit	ASBAL-Explicit	PST-Choose	PST-Avoid	Choose-Avoid
Rosenberg SES (study 1)	-.15***	-.08	-.11	-.11	-.03	.02	.04	-.02
Rosenberg SES (Study 4)	-.13	-.08	-.05	-.10	-.05	.10	.02	.07
SCCS (Study 1)	-.36***	-.24**	-.30**	-.10	-.01	.01	.07*	-.05
SCCS (study 4)	-.36***	-.30***	-.33***	-.11	.01	.03	.03	-.01
MNMDT Score (Study 1)	-.09**	.04	.01	-.02	.15^{+}	.03	.05	-.02
MNMDT RT	.01	-.01	.01	.15^{+}	-.01	-.01	-.04	.03
MNMDT Score (Study 1)	-.22**	-.14^{+}	-.16*	-.12	.01	.04	.03	.02
SCC Confidence	.06	.03	.03	-.12	.01	-.01	-.01	.01

Table A8

Correlations between Positive, Negative, and Disorganized Interview Ratings and Aberrant Salience Variables.

	Positive	Negative	Disorganized
Aberrant Salience Inventory	.53***	.09	.35***
Modified ASI Last 2 Weeks	.58***	.08	.35***
ASI Frequency	.59***	.14^{+}	.37***
Frank Task Avoid	-.03	-.03	.03
Frank Task Choose	.01	-.10	.04
Frank Task Choose minus Avoid	.04	-.07	.01
SAT-Reward Explicit	-.05	-.13	.02
SAT Non-Reward Explicit	-.03	-.09	-.05
Adaptive Salience Explicit	-.02	-.04	.04
Aberrant Salience Explicit	-.04	.05	.13
SAT-Reward RT	-.05	-.02	-.02
SAT-Non Reward RT	.01	-.02	.01
SAT-Adaptive Salience RT	-.13	.06	-.03
SAT-Aberrant Salience RT	.07	.02	-.01

Table A9

Correlations between Positive, Negative, and Disorganized Interview Ratings and Self-Processing Variables.

	Positive	Negative	Disorganized
Rosenberg Self-Esteem Scale Time 1	-.17*	-.27*	-.19*
Rosenberg Self-Esteem Scale Time 2	-.19*	-.25**	-.20*
Self-Concept Clarity Scale (Study 1)	-.33***	-.35***	-.30***
SCCS Study 2	-.39***	-.35***	-.32***
Me Not-me Decision Task	.03	-.06	-.03
Me Not-me Decision Task (RT)	.10	.23*	.16*
Me Not-me Decision Task (SD)	-.08	.04	.01
MNMDT Study 2	-.18*	-.17*	-.23*
SCC Confidence	-.09	.21**	-.22**

Table A10

Correlations between Positive, Negative, and Disorganized Interview Ratings and Self-Processing Variables.

	Positive	Negative	Disorganized
Peters Delusions Inventory			
PDI-Total	.59***	.19*	.35***
PDI-Distress	.62***	.25**	.39***
PDI-Preoccupation	.60***	.16*	.34***
PDI-Conviction	.59***	.15^{+}	.33***
Cardiff Anomalous Perceptions Scale			
CAPS-Total	.70***	.12	.44***
CAPS-Distress	.71***	.20*	.44***
CAPS-Distraction	.69***	.16^{+}	.44***
CAPS-Frequency	.69***	.13	.44***
Paranoia			
SPQ-Suspiciousness	.40***	.18*	.17*
Wisconsin Schizotypy Scales			
Magical Ideation	.60***	.13^{+}	.37***
Perceptual Aberration	.59***	.11	.45***
Social Anhedonia	.02	.48***	.05

Table A11

Correlations among Self-Processing and Aberrant Salience Variables in Study 4.

	SCCS Study 1	SCCS Study 2	MNMDT Study 1	MNMDT-RT	MNMDT Study 2	SCCS Confidence	RSES Study 1	RSES Study 2
ASI Study 1	-.36***	-.36***	-.09*	.01	-.22**	.06	-.15***	-.13
Frank Choose	.04	-.03	.01	-.01	-.01	-.10	.03	.03
Frank-Avoid	.06	-.01	.01	-.02	.01	-.07	.03	.03
Frank Score	-.05	-.07	-.01	.01	-.03	-.08	-.01	-.01
ASI Study 2	-.24**	-.30***	.04	-.01	-.14^{+}	.03	-.08	-.08
ASI-Frequency	-.30***	-.33***	.01	.01	-.16*	.03	-.11	-.05
Implicit Adaptive	.06	.06	-.09	.10	.02	.06	.10	.09
Implicit ABSAL	-.10	-.11	-.02	.15^{+}	-.12	-.12	-.11	-.10
Explicit Adaptive	-.01	.02	.01	.02	-.02	.05	-.02	-.03
Explicit Aberrant	-.01	.01	.15^{+}	-.01	.01	.01	-.03	-.05

Table A12

Correlations among Self-Processing and Schizotypy Scales in Study 4.

	SCCS Study 1	SCCS Study 2	MNMDT Study 1	MNMDT-RT	MNMDT Study 2	SCCS Confidence	RSES Study 1	RSES Study 2
MagicID	-.31***	-.37***	-.14***	-.06^{+}	-.35***	.02	-.18***	-.20*
PerAb	-.36***	-.37***	-.16***	.02	-.31***	-.07	-.24***	-.19*
SocAnh	-.32***	-.26**	-.20***	.07*	-.08	-.12	-.27***	-.17*
PDI-Total	-.34***	-.38***	-.05	.04	-.14^{+}	-.02	-.19***	-.13
PDI-Distress	-.40***	-.42***	-.11**	.03	-.15^{+}	-.03	-.26***	-.17*
PDI-Preoccupation	-.34***	-.39***	-.05	.01	-.11	.04	-.17***	-.12
PDI-Conviction	-.27***	-.33***	-.02	-.01	-.08	.09	-.12***	-.09
CAPS-Total	-.23**	-.37***	.06	.07	-.14^{+}	-.06	-.11	-.15^{+}
CAPS-Distress	-.26**	-.38***	.06	.11	-.12	-.08	-.11	-.14^{+}

Table A13 continued

Correlations among Self-Processing and Schizotypy Scales in Study 4.

	SCCS Study 1	SCCS Study 2	MNMDT Study 1	MNMDT-RT	MNMDT Study 2	SCCS Confidence	RSES Study 1	RSES Study 2
CAPS-Distraction	-.27**	-.39***	.04	.09	-.13	-.08	.14^{+}	-.16*
CAPS-Frequency	-.26**	-.35***	.01	.06	-.12	-.01	.10	.11
SPQ-Suspiciousness	-.36***	-.47***	-.15^{+}	.06	-.13	.01	-.32***	-.39***

Table A14

Correlations among Self-Processing variables and symptom ratings in Study 5.

	SCCS Study 1	SCCS Study 2	MNMDT Study 1	MNMDT-RT	MNMDT Study 2	SCCS Confidence	RSES Study 1	RSES Study 2
Delusional Ideation	-.26***	-.35***	.01	.03	-.17*	-.04	-.09	-.14+
Paranoia	-.35***	-.40***	.04	.09	-.11	-.06	-.25**	-.26**
Perceptual Anomalies	-.23**	-.21*	-.02	.05	-.14+	-.05	-.17*	-.11
Grandiosity	-.23**	-.29***	.02	.16*	-.17*	-.05	-.06	-.10
Perceptual Anomalies	-.23**	-.21*	-.02	.05	-.14+	-.05	-.17*	-.11
Disorganized Communication	-.21**	-.28*	.09	.07	-.10	-.20*	-.10	-.15+
Social Anhedonia	-.13	-.17*	-.09	-.18*	-.02	-.13	-.10	-.05
Avolition	-.29***	-.31***	-.09	.16*	-.31***	-.17*	-.34***	-.36***
Expression of Emotion	-.24**	-.27**	-.02	.18*	-.07	-.14+	-.13	-.13
Experience of emotion/self	-.36***	-.33***	.02	.10	-.01	-.15+	-.15+	-.18*

Table A14 Continued

Correlations among Self-Processing variables and symptom ratings in Study 5

	SCCS Study 1	SCCS Study 2	MNMDT Study 1	MNMDT-RT	MNMDT Study 2	SCCS Confidence	RSES Study 1	RSES Study 2
Ideational Richness	-.12	-.01	.04	.20*	-.07	-.08	-.11	-.05
Occupational Functioning	-.22**	-.25**	-.03	.08	-.28**	-.15^{+}	-.29***	-.27**
Odd Behavior	-.17*	-.21**	-.01	.06	-.12	-.19*	-.07	-.11
Bizarre Thinking	-.21**	-.23**	-.01	.15^{+}	-.15^{+}	-.17*	-.08	-.09
Focus/Attention	-.37***	-.40***	-.02	.12	-.24**	-.15^{+}	-.29***	-.32***
Personal Hygiene	-.09	-.07	-.06	.18*	.15^{+}	-.14^{+}	-.12	-.03
Intensity	-.25**	-.25**	.09	.06	-.04	.01	-.05	-.02
Flooding	-.28***	-.31***	.13	.16*	-.03	-.04	-.07	-.06
Focus	-.25***	-.32***	.11	.09	-.07	-.01	-.06	-.10
Positive	-.33***	-.39***	.03	.10	-.18*	-.09	-.17*	-.19*
Negative	-.35***	-.35***	-.06	.23**	-.17*	-.21*	-.27**	-.25**
Disorganized	-.30**	-.32***	-.03	-.03	.19*	.03	-.17***	-.17*

Table A15

Group comparisons for Aberrant Salience Variables based on SIPS Ratings.

	Positive Group Mean (SD)	Negative Group Mean (SD)	Control Group Mean (SD)
Aberrant Salience Inventory	21.90 (5.65)[a]	14.58 (5.19)[b]	15.98 (5.93)[b]
Last 2 weeks ASI	8.65 (6.83)[a]	2.54 (3.44)[b]	3.25 (3.98)[b]
ASI Frequency	32.84 (30.33)[a]	13.26 (2.60)[b]	9.43 (12.53)[b]
Frank Task Avoid	45.38 (10.89)[a]	40.72 (14.83)[a]	49.67 (14.24)[b]
Frank Task Choose	42.38 (10.58)[ab]	37.82 (14.04)[a]	45.38 (13.12)[b]
Frank Task Choose minus Avoid	-3.00 (4.13)[a]	-3.00 (3.57)[ab]	-4.29 (4.10)[b]
SAT-Reward Explicit	71.82 (23.97)[a]	69.20 (23.80)[a]	74.38 (22.24)[a]
SAT Non-Reward Explicit	19.02 (16.41)[a]	14.94 (15.92)[a]	20.23 (18.94)[a]
Adaptive Salience Explicit	52.80 (31.90)[a]	54.26 (33.04)[a]	54.15 (33.15)[a]
Aberrant Salience Explicit	8.59 (9.01)[a]	11.06 (12.55)[a]	8.49 (9.78)[a]
SAT-Reward RT	221.63 (59.36)[a]	227.97 (84.26)[a]	232.90 (61.88)[a]
SAT-Non Reward RT	240.08 (75.46)[a]	241.60 (64.00)[a]	243.31 (68.75)[a]
SAT-Adaptive Salience RT	17.47 (49.23)[a]	5.73 (25.35)[a]	11.05 (27.50)[a]
SAT-Aberrant Salience RT	17.20 (29.31)[a]	12.75 (12.50)[a]	12.45 (11.03)[a]

Table A16

Group comparisons for Schizotypy Scales based on SIPS Ratings

	Positive Group	Negative Group	Control Group
	Mean (SD)	Mean (SD)	Mean (SD)
Wisconsin Schizotypy Scales			
Magical Ideation	1.45 (1.24)[a]	-0.24 (.81)[b]	0.07 (1.21)[b]
Perceptual Aberration	1.65 (1.71)[a]	-0.16 (0.71)[b]	0.04 (1.13)[b]
PerMag	3.10 (2.66)[a]	-0.40 (2.66)[b]	0.11 (2.19)[b]
Social Anhedonia	1.21 (1.48)[a]	3.25 (1.42)[b]	0.56 (1.58)[c]
Peters Delusion Inventory			
PDI-Total	10.18 (4.27)[a]	5.20 (2.44)[b]	6.10 (3.44)[b]
PDI-Distress	30.35 (16.08)[a]	14.88 (8.78)[b]	15.21 (11.73)[b]
PDI-Preoccupation	31.66 (16.52)[a]	14.20 (7.63)[b]	12.56 (1.49)[b]
PDI-Conviction	35.82 (17.66)[a]	16.68 (8.40)[b]	19.93 (12.22)[b]
Cardiff Anomalous Perceptions Scale			
CAPS-Total	10.32 (7.00)[a]	2.38 (3.21)[b]	3.01 (3.09)[b]
CAPS-Distress	26.30 (22.84)[a]	6.46 (9.47)[b]	6.49 (7.32)[b]
CAPS-Distraction	29.05 (24.97)[a]	6.38 (9.24)[b]	7.59 (8.87)[b]
CAPS-Frequency	266.16 (23.63)[a]	5.38 (8.13)[b]	5.97 (6.93)[b]
Paranoia			
SPQ-Suspiciousness	4.13 (2.31)[a]	3.42 (2.51)[a]	2.36 (2.24)[b]

Table A17

Group comparisons for Self-Processing based on SIPS Ratings.

	Positive Group Mean (SD)	Negative Group Mean (SD)	Control Group Mean (SD)
Rosenberg Self-Esteem Scale	29.25 (5.68)[a]	29.77 (6.14)[b]	31.86 (4.82)[a]
Self-Concept Clarity Scale	30.70 (9.42)[a]	32.92 (10.01)[a]	38.55 (9.33)
Me Not-me Decision Task	19.29 (2.94)[a]	19.46 (2.96)[a]	19.83 (3.08)[a]
Me Not-me Decision Task (RT)	1523.91 (463.90)[a]	1621.53 (411.55)[a]	1456.87 (525.41)[a]
Me Not-me Decision Task (SD)	793.50 (373.59)[a]	786.95 (334.00)[a]	998.00 (525.41)[a]
MNMDT Study 2	18.44 (3.23)[a]	19.39 (2.42)[ab]	19.96 (3.01)[b]
SCC Confidence	5.11 (0.66)[a]	5.12 (0.68)[a]	5.26 (0.69)[a]
SCCS Study 2	32.06 (9.94)[a]	36.50 (10.30)[b]	41.36 (9.94)[c]
Rosenberg Self-Esteem Scale (Study 2)	29.92 (5.92)[a]	30.31 (6.03)[a]	32.97 (5.04)[c]

Appendix B

Table B1

Correlations among Aberrant Salience Variables and BPRS ratings in Study 6.

	ASI	Frank Choose	Frank Avoid	Choose -Avoid	ABSAL -RT	ADAPT -RT	ABSAL -Explicit	Adapt-Explicit
Somatic Concern	-.03	-.08	.09	-.13	.20	-.09	.08	.26^{+}
Anxiety	.09	-.14	.22	-.29*	-.12	-.04	-.08	-.12
Depression	.02	-.09	.04	-.09	.07	.25^{+}	-.01	-.13
Suicidality	.05	-.03	-.12	.09	.39**	-.40**	.15	.01
Guilt	.04	-.05	-.12	.08	.25^{+}	.26^{+}	.15	.15
Hostility	.22	.12	.12	-.02	.02	.11	.16	-.09
Elevated Mood	.10	.13	.08	-.01	.10	-.14	.09	-.23
Grandiosity	.26^{+}	-.08	.09	-.13	.04	-.06	.17	-.11
Suspiciousness	.04	.06	.12	-.05	-.16	-.20	-.08	.12
Hallucinations	.40**	-.05	-.07	.03	.05	-.24^{+}	-.01	-.17
Unusual Thought Content	.31*	-.09	.10	-.15	.12	-.09	.09	-.05

Table B1 Continued

Correlations among Aberrant Salience Variables and BPRS ratings in Study 5.

	ASI	Frank Choose	Frank Avoid	Choose -Avoid	ABSAL -RT	ADAPT -RT	ABSAL -Explicit	Adapt-Explicit
Bizarre Behavior	.20	-.17	-.10	-.03	-.06	-.27	.18	-.04
Self-Neglect	-.10	-.21	.13	-.26	.07	.15	.07	.04
Disorientation	.09	-.21	.05	-.19	.11	.02	-.13	.16
Conceptual Disorganization	.11	.04	.05	-.02	.03	-.22	.11	-.02
Blunted Affect	-.04	.02	.26*	-.21	-.11	-.07	.06	-.12
Emotional Withdrawal	-.04	-.09	.12	-.17	-.05	-.07	-.02	-.15
Motor Retardation	-.04	.10	.29*	-.18	.09	-.03	.05	-.02
Tension	.03	-.04	.07	-.09	.04	-.02	-.16	-.05
Excitement	.09	.23	.03	.14	.07	-.05+	-.17	.11
Distractibility	.11	-.07	.12	-.14	.32*	.07	-.19	.09
Motor Hyperactivity	.08	.11	.03	.05	-.04	-.15	-.18	.03

Table B1 Continued

Correlations among Aberrant Salience Variables and BPRS ratings in Study 5.

	ASI	Frank Choose	Frank Avoid	Choose -Avoid	ABSAL -RT	ADAPT -RT	ABSAL -Explicit	Adapt-Explicit
Mannerisms and Posturing	.03	.13	.11	.01	-.10	.03	.21	.10

* $p < .05$, $^{+} p < .10$

Table B2

Correlations among Self-Relevant Information Processing Variables BPRS Ratings.

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
BPRS/Somatic Concern	.07	-.06	-.15	-.09	-.10	-.08	-.04
BPRS/Anxiety	-.16	-.14	-.12	.10	-.16	-.07	-.02
BPRS/Depression	-.24^{+}	-.19	.01	.14	.01	-.16	.02
BPRS/Suicidality	-.13	-.20	.13	.13		-.20	.03
BPRS/Guilt	-.10	-.20	.32*	.01	.11	-.12	-.16
BPRS/Hostility	.17	.06	.11	-.19	.14	.43**	-.28^{+}
BPRS/Elevated Mood	.13	.05	.18	-.10	-.01	.18	-.18
BRPS/Grandiosity	.18	-.20	-.10	-.19	-.04	.24^{+}	-.19
BPRS/Suspiciousness	.03	.06	-.30*	.28*	-.14	.01	.04
BPRS/Hallucinations	-.07	-.11	-.25^{+}	-.07	-.16	-.04	-.23

Table B2 Continued

Correlations among Self-Relevant Information Processing Variables and BPRS Ratings

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
BPRS/Unusual Thought Content	.10	-.14	-.30*	.01	-.12	.05	.06
Bizarre Behavior	-.01	-.03	-.15	.01	-.20	.13	.07
Self-Neglect	.04	-.03	.07	-.05	.14	.02	.10
Disorientation	.01	-.08	-.10	.06	-.04	.01	.19
Conceptual Disorganization	.01	.04	-.10	-.19	.09	.13	-.01
Blunted Affect	.05	.01	-.18	.14	-.07	.04	.24+
Emotional Withdrawal	-.15	-.09	-.13	.40**	-.17	-.12	.38**
Motor Retardation	-05	-.01	-.20	.10	-.10	.12	.15
Tension	.04	-.14	-.05	-.10	-.06	.31*	-.31*

Table B2 Continued

Correlations among Self-Relevant Information Processing Variables and BPRS Ratings

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
Uncooperativeness	-.06	-.05	-.28*	-.01			-.07
Excitement	.11	-.12	.16	.02	.17	.29*	-.08
Distractibility	.19	.02	-.07	.22	.06	.15	-.07
Motor Hyperactivity	-.05	-.08	.03	-.14	.07	.34*	-.22
Mannerisms and Posturing	-.23^{+}	.09	-.01	.06	-.20	.14	-.01

Table B3

Correlations between Aberrant Salience Variables and Specific Delusions in People with Schizophrenia.

	ASI	Frank Choose	Frank Avoid	Choose -Avoid	ABSAL -RT	ADAPT -RT	ABSAL -Explicit	Adapt-Explicit
Persecutory Delusions	.08	.01	.08	-.06	-.10	-.15	.01	-.11
Delusions of Guilt	.02	-.09	-.17	.09	.39**	.40**	.01	.15
Grandiose Delusions	.16	-.01	.01	.01	-.14	-.15	.05	.02
Religious Delusions	.22	-.01	.01	.01	-.14	-.15	.05	.02
Somatic Delusions	-.01	.01	.10	-.08	.11	-.01	.32*	.20
Delusions of Reference	.21	-.02	.05	-.05	.05	-.31*	-.19	.04
Delusions of Being Controlled	.23	-.12	-.01	-.08	.10	-.16	-.15	.11
Mind Reading	.20	.01	.14	-.12	.14	-.12	-.22	.11
Thought Broadcasting	.27^{+}	-.11	-.05	-.03	.05	-.17	-.19	.10
Thought Insertion	.23	-.06	.01	-.04	.32*	-.09	-.19	.18
Thought Withdrawal								

* $p < .05$, $^{+} < .10$

Table B4

Correlations among Self- Processing and Interview-Rated Positive Symptoms in People with Schizophrenia in Study 6

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
Persecutory Delusions	.04	.11	-.38**	.24^{+}	-.18	-.07	0.01
Delusions of Guilt	-.14	-.19	.14	.16	.01	-.20	0.01
Grandiose Delusions	.22	-.15	-.20	-.05	-.17	.15	-.14
Religious Delusions	.16	.10	-.10	-.11	-.16	-.13	-.11
Somatic Delusions	.11	.06	.05	-.08	-.12	-.04	-.10
Delusions of Reference	·01	-.19	-.15	-.06	-.15	.05	.05
Delusions of Being Controlled	-.14	-.09	-.11	-.04	-.04	.16	-.06
Mind Reading	.05	-.03	-.14	.03	-.13	-.02	.21
Thought Broadcasting	-.15	-.14	-.13	.11	-.10	-.04	.18
Thought Insertion	-.16	-.16	-.04	-.07	.03	-.17	.14
Thought Withdrawal	-.15	-.19	-.18	.01	.01	-.04	.26^{+}

Table B5

Correlations among Aberrant Salience Variables and Self-Processing Variables in Study 6.

	RSES	SCCS	MNMDT	MNMDT-RT	MNMDT-Modified	MNMDT-Confidence	MNMDT-Conf-RT
ASI	-.28*	-.57***	-.18	.09	-.01	-.12	.16
Frank Choose	.12	.15	.23	-.26^{+}	-.05	-.06	-.10
Frank Avoid	.19	.11	-.07	-.08	-.07	.02	-.05
Choose-Avoid	-.07	.01	.23^{+}	-.12	.03	-.06	-.02
ABSAL-RT	.20	-.03	.29^{+}	-.20	.17	-.08	-.08
ADAPT-RT	.14	-.08	.32*	.07	.41**	.10	.16
ABSAL-Explicit	.04	.16	.04	.14	.05	-.06	.12
ADAPT-Explicit	-.03	.10	.39**	-.29*	.12	.09	-.13