Chapter 12
Self-Concept Clarity and Psychopathology

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Abstract Self-concept clarity refers to the coherence of an individual's identity, how confident one is about one's attributes, and how consistent and stable these attributes are (Stinson, Wood, & Doxey, 2008). Studies have linked low self-concept clarity to poor psychological adjustment and functioning and high self-concept clarity to adaptive psychological adjustment and functioning. Low self-concept clarity has also been linked to a variety of types of psychopathology, including depression, anxiety, and autism. However, the majority of work on the relations between self-concept clarity and psychopathology has focused on its role in schizophrenia spectrum disorders such as schizophrenia, attenuated psychotic disorder, and schizotypal personality disorder. In this chapter, the relations between self-concept clarity and depression, anxiety disorders, and autism spectrum disorders are briefly reviewed. Then, evidence for disturbances in self-concept clarity in schizophrenia is reviewed and linked to a long history of research dating back to the earliest descriptions of the disorder that conceptualized schizophrenia as a disorder primarily of the self.

Keywords Self-concept clarity · Psychopathology · Schizophrenia · Psychosis · Schizotypy · Psychotic-like experiences · Depression · Anxiety · Anomalous self-experiences · Autism

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depression, anxiety disorders, and autism spectrum disorders are briefly reviewed. Then, evidence for disturbances in self-concept clarity in schizophrenia is reviewed and linked to a long history of research dating back to the earliest descriptions of the disorder that conceptualized schizophrenia as a disorder primarily of the self.

Self-Concept Clarity and General Psychopathology

Theorists have suggested that low self-concept clarity may be related to a number of types of psychopathology such as depression, general anxiety, social anxiety, and autism. Much of the work on self-concept clarity in depression has included general population or college student samples. For example, in the original studies in which the Self-Concept Clarity Scale was developed, self-concept clarity was negatively correlated with both negative affectivity and depression in a sample of undergraduates (Campbell et al., 1996). Other work has also found that self-concept clarity is negatively correlated with depression in a general population sample (Treadgold, 1999) and in college students (Butzer & Kuiper, 2006; Smith, Wethington, & Zhan, 1996). Moreover, a potential mechanism for this finding is that self-concept clarity is associated with coping style. People with high self-concept clarity tend to engage in more active coping strategies such as taking action, planning, and positive reinterpretation of events, while people with low self-concept clarity tend to engage in maladaptive coping strategies such as denial, behavioral disengagement, and mental disengagement (Smith et al., 1996).

In addition to being associated with depression and coping style, self-concept clarity may be related to loneliness (Richman et al., 2016). In several studies, Richman et al. found that self-concept clarity mediates the relation between loneliness and depression. In the first study, self-concept clarity mediated the relation between loneliness and depression in a cross-sectional study of undergraduates. In a second study, 98 romantic couples were followed for 6 months. Using multilevel modeling, they found that loneliness was associated with depression over time and that self-concept clarity mediated the relation. This suggests that self-concept clarity may be a potential mechanism by which loneliness leads to depression, even among people in romantic relationships. This finding was then replicated in a separate sample of heterosexual couples.

In addition to coping style and loneliness, self-concept clarity may also mediate the relation between life stress and depression. Chang (2001) hypothesized that life stress may cause depression in adolescents because it interferes with their ability to establish a coherent self-concept. In a cross-sectional study of 268 high school students, self-concept clarity was strongly negatively correlated with both stressful life events and depressed mood. Moreover, self-concept clarity partially mediated the relation between stressful life events and depressed mood, even when accounting for the effect of self-esteem on the relation. Like the finding with loneliness, this finding suggests that low self-concept clarity may be a mechanism by which life stress confers its risk for depression.

Like studies on the relation between self-concept clarity and depression, most of the research on the relation between self-concept clarity and anxiety has included unselected undergraduates as the participants, often in the same studies that measured depression. In all of these studies, self-concept clarity has been shown to be negatively correlated with generalized anxiety (Bigler, Neimeyer, & Brown, 2001; Butzer & Kuiper, 2006; Campbell et al., 1996; Smith et al., 1996).

Theorists have used the Intolerance of Uncertainty model (Dugas, Freeston, & Ladouceur, 1997) to explain the relation between self-concept clarity and generalized anxiety (Kusec, Tallon, & Koerner, 2016). The Intolerance of Uncertainty model suggests that generalized anxiety disorder is a result of excessive worry and that the excessive worry is a pathological response in an effort to deal with uncertainty (Dugas, Gagnon, Ladouceur, & Freeston, 1998). As a result, individuals with low self-concept clarity would find themselves constantly worrying in an attempt to deal with the uncomfortable feelings related to this lack of a clear self-concept. In a community sample of people screened for high and low levels of generalized anxiety disorder, the high GAD group had lower self-concept clarity than the low GAD group. Moreover, self-concept clarity was negatively correlated with all measures of intolerance of uncertainty (Kusec et al., 2016).

Along with generalized anxiety, low self-concept clarity has also been linked to social anxiety disorder. Theories of social anxiety disorder suggest that it is the result of negative mental representations of the self, coupled with a fear of exposing these core representations of the self (Rapee & Heimberg, 1997). People with low self-concept clarity may be especially likely to develop social anxiety disorder because external events are more likely to have an impact on their self-concepts. In a study including college students, self-concept clarity was negatively associated with social anxiety disorder, even when accounting for shared variance with depression and self-esteem, which are both highly correlated with self-concept clarity (Stopa, Brown, Luke, & Hirsch, 2010). In a second study, participants with high levels of social anxiety had lower Self-Concept Clarity Scale scores and lower scores on a behavioral task measure of self-concept that involved participants deciding whether adjectives did or did not describe their personalities. Participants with high social anxiety were less confident in their assessments of themselves, again suggesting decreased self-concept clarity. Along with the results of associations with generalized anxiety, these results suggest that self-concept clarity may be related to multiple types of anxiety disorders more broadly.

Another group of disorders that may be related to self-concept clarity are autism spectrum disorders. A long line of research in people with autism spectrum disorders suggests that, compared to neurotypical individuals, people with autism have limited self-knowledge (Berna, Goritz, Schroder, Coutelle, et al., 2016). However, very few studies have conceptualized this lack of self-knowledge as low self-concept clarity. People with autism spectrum disorders have decreased insight into their mental states and emotions (Williams, 2010) and tend to think of themselves in less social and psychological terms than do people without autism spectrum traits (Jackson, Skirrow, & Hare, 2012). These deficits have been primarily linked to deficits in theory of mind. Theory of mind refers to the ability of an individual to under-

stand one's own and others' perspectives, opinions, desires, and intentions. People with autism spectrum disorders and traits have been shown to have lower self-concept clarity scores than neurotypical individuals (Berna, Goritz, Schroder, Coutelle, et al., 2016). Moreover, this difference was mediated by the ability to use past events to find meaning in life (i.e., meaning making), but not by the ability to scrutinize past behavior to understand oneself. This suggests that the potential mechanism for low self-concept clarity in autism spectrum disorders may be an impairment in using autobiographical memories to find meaning.

Self-Concept Clarity and Schizophrenia Spectrum Disorders

Before reviewing the research on self-concept clarity and schizophrenia, it is necessary to define schizophrenia, a heterogeneous disorder with many diverse symptoms. Modern conceptualizations of schizophrenia define the disorder by positive symptoms (i.e., a behavioral excess of something that should be absent but is present), negative symptoms (i.e., deficits in functioning of things that should be present but are absent), and disorganized symptoms. Positive symptoms include delusions (fixed, false beliefs that are not endorsed by the individual's culture or subculture) and hallucinations (sensations in the absence of external stimuli). The most common type of delusion is persecutory, in which individuals believe someone or something is out to get or harm them (Appelbaum, Robbins, & Roth, 1999), but delusions can take many other forms. The most common hallucinations are auditory and visual, but tactile, olfactory, and gustatory hallucinations are also present in schizophrenia. Negative symptoms include avolition, amotivation, affective flattening, alogia, social isolation, lack of interest or pleasure drawn from social situations, and a lack of emotion. Disorganized symptoms include disorganized speech (e.g., tangential, circumstantial, incoherent speech patterns) and disorganized or bizarre behavior or affect. Historically, schizophrenia was conceptualized as primarily a disorder of the self, in which an individual has an incoherent, unclear, or otherwise disturbed sense of self (Bleuler, 1911; Sass & Parnas, 2003). Recent theorists have noted that disturbances in self-processing are conspicuously absent from the *Diagnostic and Statistical Manual of Mental Disorders* (DSM 5; Park & Nasrallah, 2014).

The prevalence of schizophrenia in the general population is estimated to be around 1 percent (Saha, Chant, Welham, & McGrath, 2005; van Os, Hanssen, Bijl, & Vollebergh, 2001). However, this 1 percent only includes people meeting full criteria for schizophrenia, which includes the presence of continuous symptoms for more than 6 months and a high degree of impairment related to these symptoms (American Psychological Association, 2013). Recent research suggests that psychotic symptoms are more common than was previously thought, with estimates as high as one in five, or even one in four, people experiencing at least one psychotic symptom at some point in their lives (van Os, Hanssen, Bijl, & Ravelli, 2000). Moreover, psychosis is thought to exist on a spectrum, with full-blown psychotic

symptoms on one end and milder, subclinical psychotic-like experiences on the other end (van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). Along the spectrum are schizophrenia spectrum personality disorders, or "cluster A" disorders, including schizotypal, paranoid, and schizoid personality disorders. Theorists have debated whether this continuum is completely dimensional and semi-dimensional or if there is a categorical taxon of people who experience subclinical psychotic-like symptoms, but there is a universal agreement that people without full-blown schizophrenia can experience subclinical psychotic-like symptoms (Korfine & Lenzenweger, 1995; Kwapil, Barrantes-Vidal, & Silvia, 2008; Lenzenweger, 1999).

Schizophrenia is generally considered to have several phases. The first phase, the premorbid phase, is the period from birth until symptoms begin to appear (Keshavan et al., 2009; Stoffelmayr, Dillavou, & Hunter, 1983). The second phase is the prodromal phase in which the individual begins to experience clinically significant attenuated psychotic symptoms (Moller & Husby, 2000; Yung & McGorry, 1996). This period can last for days, weeks, months, or even years. The prodromal phase is synonymous with the DSM 5 diagnosis of attenuated psychosis syndrome. Attenuated psychosis syndrome is included in Section III of the DSM, which is a section for disorders and classification strategies in need of more research before being included in the main text of the document. The third phase is the acute phase in which the individual develops frank psychotic symptoms. It is in this phase that most people with schizophrenia first have the need for inpatient treatment, and people experiencing this for the first time are referred to as "first episode" (Yung, 2003). The fourth and final phase of the disorder is the recovery phase. In the recovery phase, people with schizophrenia experience better functioning and fewer acute psychotic symptoms. People tend to fluctuate between the acute and recovery phases when they have a relapse of psychotic symptoms (Andresen, Oades, & Caputi, 2003; Bellack, 2006; Romano, McCay, Goering, Boydell, & Zipursky, 2010). Self-concept clarity may play a role in each of these phases of the disorder.

Self-Concept Clarity and Schizophrenia

The idea that schizophrenia is primarily a disorder of the self has a long history in psychiatry (Bleuler, 1911; Parnas, 2011). Schizophrenia was originally termed dementia praecox, which reflects early thinking that schizophrenia was a form of early-onset dementia (Moskowitz & Heim, 2011). Later, Bleuler coined the term "schizophrenia" consistent with his conceptualization of schizophrenia as a "splitting of the mind" (Moskowitz & Heim, 2011), stating "I call dementia praecox schizophrenia because, as I hope to show, the splitting of the different psychic functions is one of its most important features. In each case there is a more or less clear splitting of the psychological functions: as the disease becomes distinct, the personality loses its unity" (Bleuler, 1911, p.8). This suggests that Bleuler put the disturbance in the self at the center of his definition of schizophrenia. Moreover, the

description of the personality losing its unity can be interpreted as the individual losing self-concept clarity. As the disorder progresses, the self gets more and more disturbed, and the person's self-concept becomes less clear, to the point where they may find it difficult to accurately describe their personalities.

The construct of self-concept clarity has been examined in many different ways related to schizophrenia spectrum disorders. These studies have aimed to examine whether people with schizophrenia and people with attenuated psychotic syndrome have lower self-concept clarity than healthy controls and whether these symptoms are associated with a number of other symptoms and characteristics in people with schizophrenia.

Several studies have examined whether people with schizophrenia spectrum disorders have lower self-concept clarity in the chronic, first-episode, and attenuated psychosis syndrome phases of the disorder. In one study, people with chronic schizophrenia and a healthy control sample matched on age, sex, ethnicity, and parental education were given two measures of self-concept clarity (Cicero, Martin, Becker, & Kerns, 2016). In addition to the commonly used Self-Concept Clarity Scale, participants completed the Me Not-Me Decision Task (MNMDT; Campbell et al., 1996) in which participants are shown 60 adjectives and asked to choose, as quickly and accurately as possible, whether the adjective does (i.e., "ME") or does not (i.e., "NOT ME") describe themselves. Embedded among these 60 adjectives are 30 pairs of antonyms. Self-concept clarity is conceptualized as two separate indicators including the number of consistent responses to these pairs (e.g., answering "ME" to extroverted and "NOT ME" to introverted) and the reaction time in which these judgments are made. Compared to healthy controls, people with schizophrenia had lower Self-Concept Clarity Scale scores, fewer consistent responses, and a longer mean reaction time on the Me Not-Me Decision Task. This result is consistent with the hypothesis that people with schizophrenia have low self-concept clarity.

As mentioned, schizophrenia is thought to have several phases including the premorbid, prodromal, and acute phases. In addition to these phases, researchers also often examine people in the early acute stage, often referred to as "first episode." One advantage of investigating the role of self-concept clarity in these phases is that it can aid in understanding schizophrenia development while removing confounds associated with chronic schizophrenia such as long-term medication use. The prodromal phase of schizophrenia is characterized by the presence of attenuated psychotic symptoms (i.e., symptoms similar to delusions and hallucinations but in a diminished form). One recent study found people with high levels of attenuated psychotic symptoms have lower self-concept clarity than matched control groups (Berna, Goritz, Schroder, Coutelle, et al., 2016). Participants were German-speaking individuals who completed the study online through WiSo-Panel, a research group similar to Amazon Mechanical Turk but based in Germany. Participants with attenuated psychotic symptoms were 49 people with high scores (above 1.5 SD above the mean) on the Community Assessment of Psychic Experiences (Stefanis et al., 2002) questionnaire. These participants had a mean age of 41.9 (SD = 11.3) and where 63.3% female. Although only two participants had a schizophrenia spectrum diag-

nosis, 67.3% had a psychiatric diagnosis, with the most common being depression (57.1%) and anxiety disorders (30.6%). Forty-nine percent were currently in outpatient psychotherapy, and 46.9% were currently taking psychotropic medications. The study also included a comparison group of 147 participants with low scores (below 0.5 SD above the mean) who were matched on age, sex, education, and employment status. These results suggest that self-concept clarity may be related to increased psychotic-like symptoms both in community samples and in people at risk for the development of psychosis.

In addition to people in the prodrome, previous work has found that people experiencing their first episode of psychosis had lower Self-Concept Clarity Scale scores than a matched control group (Evans, Reid, Preston, Palmier-Claus, & Sellwood, 2015). This sample included 28 participants recruited from several early interventions for psychosis teams across the United Kingdom and 31 nonclinical comparison participants who were matched on sex, age, ethnicity, and education. Participants ranged from 18 to 38, and first-episode psychosis was defined as people who had their first episode of psychosis requiring treatment within 3 years prior to the beginning of the study. Taken along with the prodromal findings, these results suggest that low self-concept clarity is present from the early stages of the disorder.

Self-Concept Clarity and Symptoms in Schizophrenia

In addition to examining whether people with schizophrenia have lower self-concept clarity than comparison groups of people without schizophrenia, several studies have examined whether self-concept clarity is associated with symptoms and other related constructs among people who have schizophrenia. Theorists have suggested that self-concept clarity should be negatively correlated with both positive and negative symptoms, which is consistent with views of self-concept disturbances in people with schizophrenia (Sass & Parnas, 2003). However, results have been somewhat mixed, and several studies have found more nuanced relations between self-concept clarity and symptoms. In one study, self-concept clarity was negatively associated with both positive and negative symptoms of schizophrenia (Cicero, Martin, et al., 2016) as measured with the Peters et al.'s Delusions Inventory (Peters, Joseph, & Garety, 1999), the Cardiff Anomalous Perceptions Scale (Bell, Halligan, & Ellis, 2006a), and the Revised Social Anhedonia Scale (Eckblad, Chapman, Chapman, & Mishlove, 1982).

In contrast, a longitudinal study following 101 people with schizophrenia for 6 months found that self-concept clarity at Wave 1 was associated with an *increase* in positive symptoms at Wave 2 (Weinberg et al., 2012). This association was particularly strong among people who experienced frequent stress during the 6 months between measurements. It is unclear why self-concept clarity would be associated with an increase in positive symptoms. Moreover, the results also seem inconsistent with another finding in the study, suggesting that self-concept clarity was associated with an increase in quality of life between measurements. However, in the study,

positive symptoms at Wave 1 were associated with higher quality of life at Wave 2, suggesting that more symptomatic individuals experienced a higher quality of life than less symptomatic individuals. This finding was especially strong for individuals with low levels of stress.

The finding that positive symptoms were associated with a higher quality of life is inconsistent with most research on quality of life and psychopathology (Bobes, Garcia-Portilla, Bascaran, Saiz, & Bouzoño, 2007; Galuppi, Turola, Nanni, Mazzoni, & Grassi, 2010; Norman et al., 2000). One explanation for this finding could be that the results are a statistical artifact related to the way the variables were entered into the hierarchical linear regression model. Regardless of the explanation, research on the relation between self-concept clarity and positive and negative symptoms is not completely clear, and more research is needed to understand this potentially nuanced relation.

A third study examining the relations between self-concept clarity and symptoms of schizophrenia spectrum disorders found that, among people with attenuated psychosis, self-concept clarity was negatively correlated with negative symptoms, but not associated with positive symptoms (Berna, Goritz, Schroder, Coutelle, et al., 2016). However, in a broader sample including people with and without attenuated psychotic symptoms, self-concept clarity was negatively associated with total psychosis scores, negative symptoms, and depressive symptoms, but still not with positive symptoms (Berna, Goritz, Schroder, Coutelle, et al., 2016).

In addition to positive and negative symptoms, people with schizophrenia also experience more general psychopathology symptoms such as depression and anxiety. In a study of 31 inpatients with schizophrenia, self-concept clarity was strongly negatively correlated with the severity of depression and anxiety symptoms (Bigler et al., 2001). Overall, research on the relations between self-concept clarity and symptoms of schizophrenia suggests that low self-concept clarity is associated with severity of symptoms. One potential explanation for these inconsistent findings is that other variables, as discussed below, moderate the relation between self-concept clarity and symptoms in schizophrenia. Regardless of the explanation, these varying results suggest that more research is needed to understand the relation between self-concept clarity and symptoms of schizophrenia.

Self-Concept Clarity and Trauma in Schizophrenia

Previous research suggests that childhood trauma is common in people with schizophrenia (see Read, van Os, Morrison, & Ross, 2005, for a review). Some research suggests that people who experience trauma may have lower self-concept clarity and that low self-concept clarity may be the mechanism for the relation between trauma and psychosis. One study found that self-concept clarity was negatively associated with childhood emotional, physical, and sexual abuse, emotional and physical neglect, and total abuse/neglect (Evans et al., 2015). Moreover, self-concept clarity mediated the relations between emotional abuse, physical abuse, emotional

neglect, physical neglect, total abuse/neglect scores, and psychosis. This suggests that self-concept clarity may be a mechanism by which childhood trauma results in the emergence of psychosis in adolescence/early adulthood. Moreover, this finding provides support for previous proposed theories that childhood trauma leads to a fractured and unclear sense of self (Lutz & Ross, 2003). Other work suggests that negative early childhood experiences, such as having neglectful, cold, or unsupportive parents, may serve as chronic negative social feedback on the developing individual, which could lead to low self-concept clarity (Streamer & Seery, 2015). According to self-verification theory, if this social feedback is inconsistent with the individual's self-concept, it can inhibit the development of a coherent self-concept. In turn, low self-concept clarity may lead to the development of several types of psychopathology including dissociative disorders, post-traumatic stress disorder, and schizophrenia. With respect to schizophrenia, this incoherent sense of self may lead to the deficits in reality testing or disorganization that are common in schizophrenia (Allen, Coyne, & Console, 1997). One limitation of this work is that it has all been cross-sectional, which limits causal interpretations of the data. Future research could follow people longitudinally and test whether reductions in self-concept clarity occur after a traumatic event.

Self-Concept Clarity and Stigma in Schizophrenia

In addition to positive and negative symptoms, many people with schizophrenia are exposed to stigma related to their illness. Stigma refers to the negative stereotypes people have about other people with mental illness, such as people with mental illness being weak or violent (Boyd, Adler, Otilingam, & Peters, 2014). Stigmatization refers to exposure to stigma from other people or organizations (Noyman-Veksler, Weinberg, Fennig, Davidson, & Shahar, 2013) and can include things like loss of employment or housing opportunities. Some people with schizophrenia experience self-stigma, in which they internalize these societal ideas and begin to believe them about themselves (Corrigan, Larson, & RÜSch, 2009). In numerous studies, self-stigma has been associated with poor outcomes in these populations. In a correlational study, self-concept clarity has been found to be negatively associated with internalized stigma including the Alienation, Stereotype Endorsement, social withdrawal, and discrimination experience subscales of the Internalized Stigma of Mental Illness Scale (Hasson-Ohayon et al., 2014). Low self-concept clarity was also associated with a decrease in meaning in life, but the relation was mediated by self-stigma.

In a longitudinal study, self-concept clarity has been found to be associated with a decrease in self-stigmatization in people with schizophrenia (Noyman-Veksler et al., 2013). This relation may be due to self-concept clarity protecting against negative life events such as social rejection (Ayduk, Gyurak, & Luerssen, 2009), the use of adaptive rather than passive or maladaptive coping styles (Smith et al., 1996), or reductions in general life stress. Moreover, self-concept clarity was negatively

associated with a tendency to view the self as ill (Noyman-Veksler et al., 2013). In other words, people with schizophrenia viewed themselves as healthier if they had high self-concept clarity compared to if they had low self-concept clarity. Taken together, the results of the relations between self-concept clarity and stigma in schizophrenia suggest that high self-concept clarity may protect against the harmful effects of stigma and may be related to better long-term outcomes as a result.

Self-Concept Clarity, Aberrant Salience, and Psychotic-Like Experiences

Social-cognitive models of psychotic-like experiences suggest that the maladaptive processing of information related to the self plays a central role in the development and maintenance of psychosis and psychotic-like experiences, particularly for delusions and subclinical magical ideation (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002). However, these models suggest that maladaptive self-information processing alone may not result in a delusion-like experience (Bell, Halligan, & Ellis, 2006b; Freeman, 2007). Psychosis and psychotic-like experiences begin with an anomalous perceptual experience, which becomes a psychotic experience when it is interpreted. An anomalous perceptual experience is a strange or unusual experience involving the senses that can be auditory, visual, olfactory, or gustatory. One such experience may be aberrant salience (Cicero, Becker, Martin, Docherty, & Kerns, 2013; Kapur, 2003).

Aberrant salience is the incorrect assignment of salience, significance, or importance to otherwise innocuous stimuli (Kapur, 2003). The theory of aberrant salience comes from a long line of research suggesting that dopamine dysregulation is related to the development and maintenance of psychosis (Howes & Kapur, 2009). First, antipsychotic medication's mechanism of action is blocking dopamine D_2 receptors, and the clinical dose is related to their potency to block the receptors (Nikam & Awasthi, 2008). Second, dopamine agonists like methamphetamine precede symptoms of psychosis in otherwise healthy individuals or cause a relapse in people with schizophrenia who are not acutely psychotic (Harris & Batki, 2000). Finally, imaging research has found that dopamine levels are increased in subcortical brain regions in people in the schizophrenia prodrome and people who are experiencing an acute psychotic episode (Howes et al., 2009; Laruelle & Abi-Dargham, 1999).

In healthy individuals, dopamine is thought to regulate incentive salience (Berridge, 2007; Depue & Collins, 1999). Incentive salience is the motivational or "wanting" part of learning from rewards, as opposed to the purely hedonic or "liking" part. Since there is excessive dopamine activity in subcortical brain regions, the aberrant salience theory suggests this activity is related to unusual or incorrect attributions of incentive salience to stimuli. This theory is supported by phenomeno-

logical accounts of psychosis and the schizophrenia prodrome. People report that seemingly innocuous things in the environment suddenly take on an importance or significance (e.g., Bowers & Freedman, 1966; Moller & Husby, 2000). As people experiencing aberrant salience try to make sense of these experiences, they develop compelling explanations that manifest as delusional beliefs (Cicero, Kerns, & McCarthy, 2010; Kapur, 2003).

According to these social-cognitive models of psychosis, individuals who experience aberrant salience then engage in a search for meaning in which an explanation for the experience is selected. The processing of self-relevant information influences this search for meaning and maladaptive beliefs about the self may lead people to select maladaptive or delusional explanations for these experiences. For example, if someone experiencing aberrant salience begins to notice that there are many people walking in the neighborhood at night, this situation would feel very important and relevant to the individual personally, which will trigger a search for meaning. Although this situation would be objectively irrelevant to the individual, the aberrant experience of salience makes the situation appear relevant to the self, and the individual will try to incorporate it into his or her self-concept.

If the person has low self-concept clarity, the person may have trouble integrating this information into self-concept and select a delusional explanation for the experience. The person may come to believe that the people walking in the neighborhood are monitoring the person. In contrast, high self-concept clarity may serve as a protective mechanism that prevents the individual from maladaptively incorporating information into the self-concept. As a result, individuals with high self-concept clarity may be more likely to select a situational explanation (e.g., there is a special event in the neighborhood) because they are confident that the delusional explanation is inconsistent with their self-concepts.

Moreover, the unclear self-concept itself may trigger people to search for meaning, which, coupled with aberrant salience, may produce more psychotic and psychotic-like experiences. Thus, social-cognitive models of psychosis suggest that self-concept clarity alone might not be associated with psychotic-like experiences but that self-concept clarity may only be associated with psychotic-like experiences in people who have high levels of aberrant salience. In other words, there should be an interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences.

In a series of studies, this expected interaction has been found (Cicero et al., 2013). In a large sample of undergraduates, aberrant salience and self-concept clarity interacted to predict psychotic-like experiences as measured with the Perceptual Aberration (i.e., a measure of subclinical hallucinations; Chapman, Edell, & Chapman, 1980) and Magical Ideation Scales (i.e., a measure of subclinical delusions; Eckblad & Chapman, 1983). Self-concept clarity was significantly negatively correlated with perceptual aberration and magical ideation at high levels of aberrant salience but was unassociated with perceptual aberration and magical ideation at low levels of aberrant salience. Thus, people with high levels of aberrant salience and low levels of self-concept clarity had the highest levels of psychotic-like experiences.

As previously mentioned, self-concept clarity is negatively related to a number of maladaptive behaviors, traits, and psychopathologies. Thus, it is important to test whether this interaction is specific to psychotic-like experiences. Aberrant salience and self-concept clarity did not interact to predict scores on the Revised Social Anhedonia Scale (Eckblad, Chapman, Chapman, & Mishlove, 1982), a measure of the subclinical symptom of a lack of interest in or pleasure drawn from social interactions, which is considered to be a negative symptom (Kwapil, Miller, Zinser, Chapman, & Chapman, 1997). This suggests that the interaction between self-concept clarity and aberrant salience is specifically related to the positive, as opposed to negative, subclinical psychotic-like symptoms. Like studies with people with schizophrenia, this study found a main effect for a relation between subclinical negative symptoms and self-concept clarity, but this relation was not moderated by aberrant salience.

In a second study, this interaction was replicated in a separate sample and extended to another dependent variable, the Peters et al. Delusions Inventory (PDI; Peters et al., 1999). The PDI is a measure of delusions and delusion-like experiences that can be used in both clinical and nonclinical populations. In a third study, the interaction was replicated again, but aberrant salience and self-concept clarity did not interact to predict paranoia (Cicero et al., 2013). This suggests that the interaction is specific to delusion-like and hallucination-like experiences, but not to paranoia or other aspects of psychotic-like experiences.

In addition to being specific to psychotic-like experiences, it is important to examine whether the interaction is specific to self-concept clarity. Since self-concept clarity has been shown to be related to poor psychological adjustment, such as high levels of neuroticism (Bigler et al., 2001), and psychotic-like experiences are also strongly associated with neuroticism (Barrantes-Vidal, Ros-Morente, & Kwapil, 2009; Macare, Bates, Heath, Martin, & Ettinger, 2012), it is possible that it is the overlap between these constructs that is driving the interaction between aberrant salience and self-concept clarity. In this third study with undergraduates, there was a significant main effect between neuroticism and psychotic-like experiences, but neuroticism did not interact with aberrant salience or self-concept clarity to predict psychotic-like experiences (Cicero et al., 2013). Moreover, the interaction between aberrant salience and self-concept clarity was still significant when removing shared variance with neuroticism and shared variance with a neuroticism by aberrant salience interaction term. Taken together, these findings suggest that the interaction between aberrant salience and self-concept clarity is specific to psychotic-like experiences and that it cannot be accounted for by shared variance with other maladaptive traits such as high levels of neuroticism.

In a fourth study, these results were replicated in a separate sample of people at risk for the future development of schizophrenia. Using a comprehensive interview measure of psychotic-like experiences, the Structured Interview for Prodromal Syndromes (Miller et al., 2003), self-concept clarity was again associated with psychotic-like experiences in people with high levels of aberrant salience, but not in people with low levels of aberrant salience (Cicero, Docherty, Becker, Martin, & Kerns, 2015). Like the previous studies, this finding suggests that the highest rates

of psychotic-like experiences are found in people with low self-concept clarity but high aberrant salience. These results were specific to perceptual anomalies, unusual thought content, and grandiosity, but not paranoid ideation or disorganized communication. The interaction between aberrant salience and self-concept clarity was further extended by including an additional interview measure of anomalous perceptual experiences, the Structured Interview for the Assessment of Perceptual Anomalies (SIAPA; Bunney et al., 1999), for which the same interaction was found. Moreover, there was not a significant interaction between aberrant salience and self-concept clarity in predicting negative or disorganized symptoms. In addition to finding that these results were specific to positive symptoms of schizophrenia spectrum disorders, the results of this study showed that it was specific to self-concept clarity and not self-esteem. Previous research has found that self-esteem is strongly correlated with self-concept clarity (Campbell, 1990). Thus, one alternative explanation for the results could have been that overlap with self-esteem was driving the interaction. However, this study found that self-esteem did not mediate the moderation (Cicero et al., 2015). In other words, self-esteem could not statistically account for the interaction, suggesting that it is self-concept clarity and not self-esteem that is related to psychotic-like experiences.

Finally, in another study, the interaction between self-concept clarity and aberrant salience was replicated again, this time in a diverse sample of European-American, Asian-American, Pacific Islander, and multiracial participants (Cicero & Cohn, 2017). Like in the previous four studies, self-concept clarity was negatively associated with psychotic-like experiences in people with high levels of aberrant salience, but not significantly associated with psychotic-like experiences in people with low levels of aberrant salience. This study further extended the aberrant salience by self-concept clarity interaction findings, by linking it to a long line of research on the connection between schizophrenia and disturbances in self-concept. The interaction between aberrant salience and self-concept clarity in predicting psychotic-like experiences was mediated by anomalous self-experiences, suggesting that this interaction could be accounted for by the presence of self-disturbances (Cohn & Cicero, 2016).

Anomalous Self-Experiences and Schizophrenia Spectrum Disorders

As mentioned, the idea that schizophrenia is related to disturbances in self-concept has a long history in psychiatry (Bleuler, 1911; Parnas, 2011). Modern psychopathologists have termed this construct "anomalous self-experiences," which have been extensively studied from a phenomenological perspective. With respect to psychiatry and psychology, phenomenology refers to a description of symptoms from the first-person perspective of an individual experiencing the disorder. Based on the phenomenological perspective, Sass and Parnas (2003) developed the

ipseity-disturbance model. “Ipseity” is derived from the Latin term for the self or itself, “ipse.” They define ipseity as “the experiential sense of being a vital part and self-identical subject of experience or first person perspective on the world” (Sass & Parnas, 2003, p. 428). The two primary aspects of the ipseity-disturbance model are hyper-reflexivity and diminished self-affection. Hyper-reflexivity is an exaggerated self-consciousness in which things that are normally experienced implicitly suddenly require attention to be carried out or the self may be experienced as an external object. For example, someone experiencing hyper-reflexivity may feel that they need to concentrate on the explicit steps of carrying out an action, such as turning a door knob to open a door, which would normally be carried out without conscious awareness of these details. Diminished self-affection refers to a lack of basic subjective self-presence or that one exists and has self-agency. People experiencing diminished self-affection may feel that they no longer exist or are no longer the person inhabiting their bodies and acting out their behaviors.

Phenomenological researchers have suggested that anomalous self-experiences are among the core experiential features of the schizophrenia prodrome (Moller & Husby, 2000). Many people experiencing their first episode of psychosis report feelings of not truly existing, not being alive, not having an inner self, or being somehow entirely different from everyone else. This experience may be at a lower cognitive level than self-concept clarity, such that people who have these experiences have trouble reflecting on themselves, which results in low scores on self-report measures of SCC such as the Self-Concept Clarity Scale. People who have anomalous self-experiences do not experience a complete loss of self-concept. Rather, they experience a disordered or unstable basic sense of self. These experiences have been shown to be very common, with some estimates suggesting more than 70% of people with schizophrenia spectrum disorders report anomalous self-experiences (Parnas et al., 1998).

In contrast to deficits in self-concept clarity, which is related to a variety of types psychopathology, research suggests that anomalous self-experiences are specific to schizophrenia spectrum disorders (i.e., schizophrenia, schizoaffective disorder, schizotypal personality disorder, etc.). Schizophrenia spectrum diagnoses are the most common diagnoses for people who experience psychosis. However, psychosis is also relatively common in people with other diagnoses, such as major depressive disorder, bipolar disorder, substance use disorders, and dementia. It is important to establish whether anomalous self-experiences are common in people with these other disorders or if they are specific to the schizophrenia spectrum.

In several studies, the presence of anomalous self-experiences has been shown to discriminate between people who have a schizophrenia spectrum diagnosis and people who have no mental illness (Raballo, Saebye, & Parnas, 2011), as well as between people who have a schizophrenia spectrum diagnosis and another psychotic disorder that is not on the schizophrenia spectrum (Haug, Lien, et al., 2012; Parnas, Handest, Saebye, & Jansson, 2003). In contrast, people with schizotypal personality disorder have been found to have similar levels of anomalous self-experiences to people with schizophrenia, and both are higher than people without a schizophrenia spectrum diagnosis (Parnas, Handest, Jansson, & Saebye, 2005;

Raballo et al., 2011). Since schizophrenia is generally considered a more severe disorder on the schizophrenia spectrum than schizotypal personality disorder, this suggests that the presence of anomalous self-experiences may not be related to the severity of the disorder but are present across the spectrum. Likewise, people with schizotypal personality disorder tend to have higher scores than people with other personality disorders (Raballo & Parnas, 2010). Anomalous self-experiences are also relatively common in the general population and are related to subclinical schizotypal symptoms.

Another important topic in schizophrenia research is the assessment of risk for psychosis and the prediction of the future development of psychosis. Research suggests that identifying people at risk for the development of psychosis may delay the onset of the disorder, improve prognosis, and potentially prevent the onset of the disorder altogether (Addington & Heinssen, 2012; Melle et al., 2008; Stafford, Jackson, Mayo-Wilson, Morrison, & Kendall, 2013). Several recent studies have shown that anomalous self-experiences may be useful in predicting the development of psychosis in at risk samples. In one study, participants identified as having a high clinical risk for "transition" to psychosis were assessed for anomalous self-experiences in addition to more typical risk criteria such as attenuated positive symptoms (i.e., ideas of reference, odd beliefs or magical thinking, perceptual disturbances, paranoid ideation, odd thinking and speech, odd behavior, and odd appearance), intermittent psychotic symptoms (i.e., transient psychotic symptoms), and the presence of schizotypal personality disorder and a genetic risk for psychosis. After a 2-year follow-up, the presence of anomalous self-experiences at baseline was associated with the development of psychosis even when controlling for baseline levels of functioning and symptoms (Nelson, Thompson, & Yung, 2012). In another study, 155 first time inpatients with a variety of diagnoses were followed for 5 years. Participants with diagnoses other than schizophrenia spectrum disorders were more likely to develop a schizophrenia spectrum diagnosis at follow-up if they have high levels of anomalous self-experiences (Parnas et al., 2011). Despite this potential importance for prediction of psychosis, anomalous self-experiences have not been included in proposed diagnostic criteria for attenuated psychosis syndrome.

In addition to being more common in people with schizophrenia spectrum disorders and predicting the development of psychosis, anomalous self-experiences have been shown to be associated with poor outcomes in people with schizophrenia. Like self-concept clarity, anomalous self-experiences are associated with increased depressive symptoms in people with schizophrenia spectrum disorders (Haug, Oie, et al., 2012). In addition, anomalous self-experiences have been found to be associated with social-cognitive deficits, particularly with deficits in emotion processing (Cicero, Martin, Becker, & Kerns, 2016). More broadly, anomalous self-experiences have been found to be associated with poor social functioning (Haug et al., 2014), as well as with increased suicidal ideation, social isolation, and inferiority feelings in people with schizophrenia (Skodlar & Parnas, 2010). These findings suggest that anomalous self-experiences are not only more prevalent in schizophrenia spectrum disorders but are also predictive of worse functioning and prognosis.

Phenomenological researchers have suggested that the sense of self can be further broken down into a "minimal" or "basic" sense of self and a higher-level "narrative" or "social self" (Nelson, Parnas, & Sass, 2014). The minimal self refers to the implicit experience of existing or inhabiting one's body and having agency in actions. The stream of consciousness, self-awareness and presence, and somatization factors of anomalous self-experiences may be on this basic level of self-experience. The narrative or social self refers to the self that is the object of introspection and includes constructs such as personality, self-concept, self-esteem, and self-concept clarity. These aspects of the self-concept may be arranged in a hierarchy such that people with disturbances in minimal or basic self also have higher-level disturbances in self-concept. Thus, if this theory of self-organization is correct, then we should expect to find that measures of basic anomalous self-experiences are correlated with self-concept clarity.

Despite this strong theoretical rationale, few studies have examined the correlations among these constructs in either the general population or schizophrenia spectrum samples. In a large sample of undergraduates, anomalous self-experiences were strongly correlated with self-concept clarity as measured with the Self-Concept Clarity Scale and were moderately correlated with scores on the Me Not-Me Decision Task (Cicero, Neis, Klaunig, & Trask, 2017). Moreover, in a sample of people with schizophrenia, anomalous self-experiences were also correlated with scores on the Self-Concept Clarity Scale and the Me Not-Me Decision Task (Cicero, Martin, Becker, & Kerns, 2016). These correlational results are consistent with a hierarchical model in which anomalous self-experiences occur at a more basic level, while self-concept clarity is a higher-level process. Future research could continue to explore these relations using experimental methods to see if anomalous self-experiences could actually *cause* reductions in self-concept clarity.

Conclusion

In conclusion, low self-concept clarity has been shown to be related to a variety of types of psychopathology including depression, generalized anxiety, social anxiety, and autism spectrum disorders among others. The type of disorder with the most research on self-concept clarity is schizophrenia spectrum disorders. This research is complemented by a long tradition of research suggesting that schizophrenia is primarily a disorder of the self. The finding that self-concept clarity is low in so many different types of psychopathology suggests that low self-concept clarity may be a risk factor for psychopathology generally, rather than any specific disorder. Future research on the relations between self-concept clarity and psychopathology may focus on 1) examining the mechanisms that mediate these relations and 2) determining whether self-concept clarity is a cause or a sequela of psychopathology.

First, previous research has suggested several potential mechanisms that may explain the relations between self-concept clarity and various types of psychopa-

thology. These proposed mechanisms include trauma (Evans et al., 2015), early childhood experiences (Streamer & Seery, 2015), loneliness (Richman et al., 2016), coping style (Smith et al., 1996), life stress (Chang, 2001), intolerance of uncertainty (Kusec et al., 2016), impairment in autobiographical memories (Berna, Goritz, Schroder, Coutelle et al., 2016), mental illness stigma (Noyman-Veksler et al., 2013), and anomalous self-experiences (Cicero, Neis, Klaunig, & Trask, 2017). Critically, nearly all of the findings indicating potential mechanisms for self-concept clarity have included just a single study. Thus, future work replicating these results is important to increase confidence in the findings. Moreover, many of these studies included college student participants who may or may not have been experiencing clinically significant psychopathology. Two exceptions are work with people with autism spectrum disorders and people with schizophrenia (Berna, Goritz, Schroder, Coutelle et al., 2016; Cicero, Martin, Becker, & Kerns, 2016). Future work could examine these mechanisms in clinical populations of people with major depressive disorder, generalized anxiety disorder, and social anxiety disorder, among others. In addition to replicating and clarifying the mediating variables, this work could help to determine if self-concept clarity is specific to certain types of psychopathology or is a broad correlate of many types of maladaptive functioning.

In addition to exploring the mechanisms of the relations between self-concept clarity and psychopathology, future research could attempt to determine whether low self-concept clarity is a cause or a consequence of psychopathology. This research could be carried out in two ways. First, researchers could follow general population samples, or people found to be at risk for psychopathology longitudinally to determine whether self-concept clarity decreases prior to the development of psychopathology. Although these correlational studies would not be able to rule out all alternative casual variables, they could determine the temporal order of self-concept clarity and psychopathology. If low self-concept clarity is present prior to the development of psychopathology, then it is unlikely to be a sequela of psychopathology. Conversely, if low self-concept clarity is present only after the development of psychopathology, then it is unlikely to be a causal factor in its development. Ecological momentary assessment (EMA) studies could be used to understand the maintenance of psychopathology by examining whether fluctuations in self-concept clarity are related to fluctuations of psychopathology. For example, some EMA research has found that reductions in self-esteem precede increases in paranoia in daily life (Thesissen, Bentall, Lecomte, van Os, & Myin-Germeys, 2008). Future research could examine similar questions with regard to self-concept clarity and determine whether the effects are specific to self-concept and separate from self-esteem.

A second way researchers could attempt to determine whether low self-concept clarity causes psychopathology is to experimentally lower self-concept clarity and measure whether psychopathology increases as a result. For example, Proulx and Heine (2009) asked participants to write a series of essays in which they described a situation in which they were shy and a situation in which they were outgoing. They then wrote an essay using the previous essays as evidence that they had two selves inhabiting the same body. In the control condition, the third essay was

replaced by an essay indicating that the participant had a unified self. Proulx and Heine found that participants in the experimental condition were more likely to accurately identify pattern congruent letter strings in a subsequent task, indicating that they found more "meaning." These results were interpreted within a Meaning Making Model (MMM) framework in which the experimental essay was a threat to meaning and the letter string task was an effort to reinstate meaning. Another interpretation that would also be consistent with the MMM is that the essay task manipulated self-concept clarity (i.e., the threat to meaning was low self-concept clarity) and that the letter task represented an effort to reinstate meaning to compensate. A similar process may occur in people with psychosis in which a delusional explanation develops as a way to compensate for the threat to meaning created by low self-concept clarity. Future research could use a task similar to Proulx and Heine's to experimentally reduce self-concept clarity and test whether it results in an increase in delusion-like beliefs in an effort to reinstate meaning. Moreover, social-cognitive models suggest that this effect is strongest in people with high levels of aberrant salience. Previous work has found that experimentally manipulating dopamine levels with a gambling task, which in turn should increase aberrant salience, results in delusion-like beliefs and behaviors (Karcher, Cicero, & Kerns, 2015). Future research could manipulate self-concept clarity and either manipulate or measure aberrant salience to see if the effect of self-concept clarity on psychotic-like beliefs is moderated by aberrant salience.

This research clarifying the causal relations between self-concept clarity and psychopathology and the mechanisms by which they are related could be further used to create a developmental model of the role self-concept clarity in psychopathology. As mentioned, self-concept clarity may fit well as a variable within social-cognitive models of psychosis, but more work is needed to understand its relations to other types of psychopathology. At the same time, more work is needed even within social-cognitive models of psychosis to understand the causal structure and mechanisms of action. Future research may determine whether one model is appropriate to explain the relations between self-concept clarity and all forms of psychopathology or if a separate model is needed for each distinct type of psychopathology.

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