

# Self-reported Ambivalence in Schizophrenia and Associations With Negative Mood

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**Abstract:** One instrument potentially useful for schizophrenia research is the Revised Schizotypal Ambivalence Scale (rSAmb). However, previous research has not examined the construct validity of this instrument in people with schizophrenia. In the current study, people with schizophrenia-spectrum disorders ( $n = 47$ ) and bipolar disorder (BPD;  $n = 19$ ) completed the rSAmb along with current symptom and other clinical data. As a group, the people with schizophrenia/schizoaffective disorder reported significantly less ambivalence on the rSAmb than did the people with BPD. In addition, the rSAmb was not significantly related to any schizophrenia symptom (all correlations  $< 0.15$ ). Instead, the rSAmb was significantly associated with negative mood symptoms in the past week, a diagnosis of schizoaffective disorder rather than schizophrenia, and the number of negative terms used in speech. These results suggest that the rSAmb may be associated with negative mood and not with schizophrenia, although systematic examination of larger cohorts is warranted.

**Key Words:** Ambivalence, emotion, schizotypal, mood, schizophrenia

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It has long been thought that intense ambivalence is an important symptom in schizophrenia (Bleuler, 1950 [original work published 1911]; Kraepelin, 1919–1971). There are multiple reasons why research on this construct would be aided by reliable and valid self-report measures. Measuring symptoms with interview can be time consuming and necessitates clinical expertise. Other emotion symptoms of schizophrenia (such as anhedonia) have also proven challenging to measure with interviews (Blanchard et al., 2011; Horan et al., 2006), and it is common for schizophrenia studies to use self-report measures of these emotion constructs (e.g., Gard et al., 2007). In addition, there are some types of studies, such as genetic research with very large sample sizes, in which having easily administered scales would greatly facilitate research (e.g., Ohi et al., 2012; Tomppo et al., 2009). There is also a paucity of ambivalence measures for schizophrenia research, which therefore limits research on the convergent validity of any individual ambivalence measure. Hence, it is valuable to examine the validity of any existing schizophrenia ambivalence measure.

Ambivalence as a construct was described by Bleuler as one of the four primary symptoms of schizophrenia and was defined as “positive and negative [emotions] at one and the same time” (Bleuler, 1950, p. 53 [original work published 1911]; Raulin and Brenner, 1993). Despite the potential importance of this construct for schizophrenia, there are arguably no strongly validated measures of ambivalence for use with people with schizophrenia (Treméau et al.,

2009). The current research examined the construct validity of a self-report measure of intense ambivalence, the Revised Schizotypal Ambivalence Scale (rSAmb; Raulin and Brenner, 1993).

In particular, in the current research, we examined whether the rSAmb was more related to schizophrenia and schizophrenia symptoms or to mood disorder symptoms. Although it has long been thought that ambivalence is related to schizophrenia (Meehl, 1962), ambivalence has also been associated with depression (Raulin and Brenner, 1993). Ambivalence reflects reporting both positive and negative feelings about stimuli that should be viewed as more positive than negative (e.g., close relationships; things that normally give one the most pleasure). Depression reflects decreased positive affect and increased negative affect and distress (Clark and Watson, 1991). Hence, depression makes people less strongly positive and more strongly negative about things that are typically viewed as positive, which should result in increased ambivalence in depression.

Because previous research had found that ambivalence often occurs in people with depression, Raulin (1984) originally designed the Intense Ambivalence Scale to expressly measure ambivalence that was more strongly related to schizophrenia-spectrum disorders and symptoms than to mood disorder symptoms. However, in studies on the scale, ambivalence seemed to be as, or more, associated with mood disorder as it was associated with schizophrenia. Raulin then revised the scale and created the rSAmb, removing 12 items expressly measuring negative emotional content and adding 7 new items thought to more precisely capture the ambivalence characteristic of schizophrenia. Raulin intended the new scale to differentiate individuals with schizophrenia-spectrum disorders from people with depression and other psychiatric conditions (Raulin and Brenner, 1993). However, to our knowledge, the rSAmb has never been examined in people with schizophrenia and mood disorders.

In previous research with nonclinical samples, the rSAmb has been positively associated with schizophrenia-like symptoms, (Cicero and Kerns, 2010; Kerns, 2006). In contrast, the rSAmb has not been associated with major depressive disorder (Kwapil et al., 2002; Mann et al., 2008), although rates of major depression or other forms of clinical disorders were low in these nonclinical samples. At the same time, the rSAmb has been strongly associated with decreased emotional clarity (Cicero and Kerns, 2010; Kerns, 2006), which has also been strongly associated with depression (Berenbaum et al., 2012; Salovey et al., 1995). Therefore, on the basis of nonclinical samples, it is arguably inconclusive whether the rSAmb is more strongly associated with schizotypy or with negative mood. The current study examined whether the rSAmb may be more related to schizophrenia and schizophrenia symptoms or to mood disorder symptoms.

## METHODS

### Participants

The participants were 47 individuals with schizophrenia ( $n = 30$ ) or schizoaffective disorder ( $n = 17$ ) and 19 individuals with bipolar I disorder. The participants were either long-term (not recent admission) inpatients at a long-term state psychiatric hospital (with a largely forensic population; schizophrenia group,  $n = 34$ ; bipolar disorder [BPD] group,  $n = 6$ ) or outpatients (schizophrenia group,

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$n = 13$ ; BPD group,  $n = 13$ ). Informed consent was obtained by trained doctoral-level graduate students, and all study procedures were approved by the University of Missouri institutional review board. Psychiatric diagnoses using *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV*; American Psychiatric Association, 1994), criteria were made by experienced doctoral-level graduate student clinicians after administration of the psychotic and mood disorders sections of the Structured Clinical Interview for the *DSM-IV* (First et al., 1998) and a review of clinical records. Current and past medication information was collected by medical chart review. Information concerning demographics and psychiatric medication are presented in Table 1. The diagnostic groups differed significantly with respect to sex (a higher ratio of women in the BPD sample), so we included sex as a covariate in all between-group analyses.

## Measurements

### Revised Schizotypal Ambivalence Scale

The rSamb (Raulin, 1986) is a 19-item, true-false instrument that measures simultaneous experience of opposing emotions or the rapid and almost random change of emotions from one extreme to another (e.g., “Love and hate tend to go together,” “My thoughts and feelings always seem to be contradictory.” The  $\alpha$  in this study was 0.83.

### Schizophrenia Symptoms

Delusions and hallucinations were rated using the Brief Psychiatric Rating Scale (BPRS; Overall and Gorham, 1962). Other schizophrenia symptoms were rated using the Scale for the Assessment of Negative Symptoms (SANS) and the Scale for the Assessment of Positive Symptoms (SAPS; Andreasen, 1982). Interrater reliability for all symptoms was greater than 0.90.

### Past Week Negative Mood Symptoms

Previous week interviewer ratings of negative mood symptoms were measured using the following items from the BPRS (Overall and Gorham, 1962): depression, guilt, anxiety, and hostility. The  $\alpha$  in this sample was 0.68.

### Negative Terms in Speech

To get a behavioral measure of negative emotionality, we rated the number of negative words spoken by the participants during an

interview lasting, on average, between 15 and 30 minutes. The interview consisted of a modified version of the Autobiographical Memory Test (Williams and Broadbent, 1986) in which they were asked to give a specific memory for up to 18 different memory cues. Raters trained to make reliable ratings rated all negative emotion terms in each person's typed speech interview, and the interrater reliability was 0.78. To correct for differences in the amount of speech across individuals, emotion terms reflect the mean number of terms in every 100 words of speech. Three subjects (two with schizophrenia diagnoses and one with schizoaffective disorder diagnosis) either did not do the interview or provided speech samples that were too unclear to transcribe reliably.

### Clarity of Emotions

The participants completed the Trait Meta-Mood Scale's clarity of emotions subscale (Salovey et al., 1995), which consists of 11 items (e.g., “I am usually very clear about my feelings” and “I almost always exactly know how I am feeling”). Responses are made with a 5-point scale indicating the amount of agreement. The  $\alpha$  in this sample was 0.77. Previous research has consistently found that people with major depression report decreased emotional clarity (e.g., De Gennaro et al., 2004).

## RESULTS

### Ambivalence and Diagnostic Group

First, we examined scores on the rSamb between the diagnostic groups. The scores on the rSamb were found to be significantly lower in the people with schizophrenia disorders (mean [SD], 7.1 [4.5]) than in the people with BPD (mean [SD], 12.6 [3.2];  $t[64] = 2.6$ ;  $p = 0.01$ ; effect size  $d = 0.69$ ). Next, just within the people with schizophrenia-related disorders, we compared the people diagnosed with schizoaffective disorder (mean [SD], 8.9 [4.8]) versus those with schizophrenia (mean [SD], 6.1 [4.0]). The people with schizoaffective disorder reported significantly greater ambivalence than the people with schizophrenia ( $t[45] = 2.77$ ,  $p < 0.01$ ,  $d = 0.83$ ). Hence, not only did the people with a mood disorder report greater ambivalence than the people with schizophrenia but also within just the people with schizophrenia and schizoaffective disorder, ambivalence was related to the excess of mood disorder symptoms necessary for a current schizoaffective diagnosis.

### Ambivalence and Schizophrenia Symptoms

Next, we examined associations between self-reported ambivalence and the level of individual schizophrenia symptoms in the schizophrenia group as measured by the BPRS and the SANS/SAPS. As can be seen in Table 2, self-reported ambivalence as measured by the rSamb was not significantly associated with any schizophrenia symptom, all  $p$ 's  $\leq 0.15$ .

### Ambivalence and Negative Mood-Related Measures

Within the schizophrenia group, we next examined associations between the rSamb and mood-related symptoms. As can be seen in Table 2, ambivalence was strongly associated with increased negative mood-related symptoms in the past week as measured by the BPRS, especially for depression ( $p = 0.40$ ) and for guilt ( $p = 0.46$ ). In addition, ambivalence was strongly associated with the use of more negative terms in speech.

The people with BPD had significantly greater mean levels of depression (mean [SD], 4.1 [1.4]) as measured by the BPRS than the people with schizophrenia and schizoaffective disorders (mean [SD], 2.2 [1.5];  $t[56] = -4.0$ ;  $p < 0.001$ ). To examine mediation of depression in the relationship of diagnostic status and ambivalence, mediational analyses were conducted with PRODCLIN for R

**TABLE 1.** Demographic Characteristics, Symptoms, and Medication Information by Participant Group

	Schizophrenia ( $n = 47$ )	Bipolar ( $n = 19$ )
Age, mean (SD)	44.7 (10.0)	40.8 (10.0)
Sex (male), %	78%	37%
Race (African-American), %	23%	1%
Education, mean (SD)	11.3 (2.0)	10.8 (2.1)
SANS anhedonia	2.2 (1.5)	2.6 (1.4)
SANS avolition	1.4 (1.4)	2.2 (1.5)
SANS alogia	1.1 (1.2)	0.7 (0.9)
SANS flat affect	1.8 (1.3)	1.1 (1.3)
BPRS delusions	4.0 (1.6)	2.3 (1.4)
BPRS hallucinations	2.8 (2.0)	2.0 (1.4)
BPRS depression	2.2 (1.5)	4.1 (1.4)
BPRS total	44.4 (9.6)	41.8 (8.7)
Antidepressants, %	36%	84%
Antipsychotics, %	85%	63%
Mood stabilizers, %	30%	42%

**TABLE 2.** Associations Between Ambivalence and Interviewer-Rated Symptoms in Schizophrenia Patients

	Ambivalence
	$\rho$
Schizophrenia symptoms	
Anhedonia	0.11
Avolition	0.13
Flat affect	-0.01
Alogia	0.10
Delusions	0.07
Hallucinations	0.10
Disorganized behavior	0.01
Formal thought disorder	0.15
Mood symptoms	
Negative mood symptoms	0.42*
Negative speech terms	0.43*
Emotional clarity	-0.40*

\* $p < 0.01$ .

(Mackinnon et al., 2007). This method, unlike Sobel's test, yields asymmetric confidence intervals for a product of the regression coefficients without any assumption that the regression coefficient products are normally distributed. Because zero fell outside both 95% and 99% upper and lower confidence intervals, it seemed that depression mediated the relationship between diagnosis (bipolar disorder [BPD] versus schizophrenia/schizoaffective) and ambivalence.

Overall, self-reported ambivalence seemed to be associated behaviorally with an increased focus on negative emotions. In addition, ambivalence was significantly negatively correlated with clarity of emotions ( $\rho = -0.40$ ,  $p < 0.01$ ). This suggests that self-reported ambivalence as measured by the rSamb may be related to problems identifying emotions.

## DISCUSSION

This is the first study to examine self-reported ambivalence in schizophrenia and BPD using the rSamb. In the current research, self-reported ambivalence was more associated with mood symptoms than with schizophrenia. The individuals with BPD reported more ambivalence than those with schizophrenia-spectrum disorders. rSamb scores were also higher in the people with schizophrenia-spectrum disorders who had a schizoaffective diagnosis rather than a schizophrenia diagnosis. Furthermore, higher rSamb scores were associated with interviewer-rated negative mood symptoms, with the number of negative emotion terms in speech, and with decreased emotional clarity. At the same time, rSamb scores were not significantly associated with any schizophrenia symptom that we measured. Overall, this evidence suggests that self-reported ambivalence as measured by the rSamb is not uniquely associated with schizophrenia but is instead associated with negative affect.

It has long been thought that ambivalence is central to schizophrenia (Bleuler, 1950 [original work published 1911]). Despite the potential importance of ambivalence for schizophrenia, there are arguably no clearly validated measures of ambivalence for use with people with schizophrenia. Moreover, ambivalence also occurs in depression (Raulin and Brenner, 1993), and depression is quite common in schizophrenia, with estimates of at least 60% of people with schizophrenia meeting criteria for a lifetime history of one or more depressive episodes (Martin et al., 1985). The current research suggests that the rSamb is more related to negative mood symptoms than it is to schizophrenia and its symptoms. One implication of these results is that ambivalence may not be as central to

schizophrenia as has been previously thought and instead reflects the experience of negative mood.

One caveat to our current results is that task-assessed ambivalence might yield different results. However, it is also the case that other schizophrenia research has commonly used self-reported emotion symptom measures (Dowd and Barch, 2009; Gold et al., 2008; Treméau et al., 2009). On the basis of the current results, we recommend that future research on ambivalence in schizophrenia, whether using self-report or task measures of ambivalence, continue to investigate whether ambivalence is associated with schizophrenia and its symptoms or with negative mood symptoms.

In studies examining current self-reported emotion to laboratory stimuli, ambivalence has been defined as "the degree of unpleasantness felt from positive stimuli, and the degree of pleasantness felt from negative stimuli" (Treméau et al., 2009, p. 224). In one schizophrenia study, Treméau et al. did find increased task-assessed ambivalence (*i.e.*, increased negative affect) for positive laboratory stimuli to be correlated with self-reported anhedonia but not with at least one of the measures of negative mood symptoms that they obtained (Treméau et al., 2009). However, that study did not include a psychiatric control group. Future research using the rSamb in conjunction with a task-based measure of ambivalence would be helpful for determining whether ambivalence is specifically associated with schizophrenia and its symptoms.

We think that the most important limitations of the current research are the sample size and the patient characteristics. First, we had only a small number of people with BPD, although if we included the patients with schizoaffective disorder, we would have a decent sample size of people with strong evidence of mood disturbance. However, it would still be important for our results to be replicated in different samples to ensure that our results are not specific to our particular sample, which mostly consisted of patients in a long-term forensic facility. Although many of the patients in this facility are probably representative of most people with schizophrenia, who often come to clinical attention only after public rule violations, the other participants in our sample may have criminal backgrounds that would not be very common among most people with schizophrenia (Brennan et al., 2000). Hence, we recommend future research examining whether the rSamb or other ambivalence measures are associated with schizophrenia and its symptoms in different types of schizophrenia samples. In addition, future analyses of larger cohorts could provide power to examine schizoaffective subtypes. Last, a related recommendation for future research might be to examine ambivalence in a group of people with schizophrenia without current depression or a lifetime history of depression.

## DISCLOSURES

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