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The role of illness engulfment in the association between insight and depressive symptomatology in schizophrenia

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ABSTRACT

Good clinical insight in schizophrenia tends to be associated with better outcomes, but also with increased depression. We hypothesized that illness engulfment, a process whereby an individual's self-concept becomes defined solely by illness and the 'patient identity' becomes primary, is a mediating and/or moderating factor in the association between insight and depressive symptomatology in schizophrenia. Mediation and moderation analyses were conducted using the PROCESS macro on data from 140 individuals with enduring schizophrenia who completed measures of the insight dimension of 'Awareness of Illness and Need for Treatment' (AINT), the Calgary Depression Scale, and the Modified Engulfment Scale. There was a significant indirect effect of AINT, mediated through engulfment, on depressive symptomatology (95% CI = 0.017 to 0.143), independent of duration of illness and current severity of positive symptoms. Moderation analysis revealed a significant interaction effect between level of engulfment and AINT, on depressive symptomatology, $b = 0.005$, $t(134) = 2.814$, $p < .01$, 95% CI = 0.002 to 0.009, controlling for the duration of illness and current severity of positive symptoms. At low levels of engulfment, higher AINT was associated with lower depression scores; while at high levels of engulfment, higher AINT was associated with higher depression scores. Illness engulfment may be an important process by which insight influences mood in schizophrenia. Insight interventions that also target engulfment may reduce the risk of increased depressive symptomatology.

1. Introduction

Poor insight in schizophrenia, or a lack of awareness of various aspects of illness, is associated with poorer treatment adherence and therapeutic alliance, heightened severity of symptoms, and poorer community functioning; while better insight is associated with heightened levels of depression, poorer self-reported quality of life, and increased suicidality (Lysaker et al., 2018). There is concern among clinicians that improving insight may lead to lower mood and increased suicidal ideation, and evidence from longitudinal studies suggests that improvements in insight are associated with increased depressive symptomatology (Belvederi Murri et al., 2015; Lysaker et al., 2018).

Factors that have been found to mediate and moderate the association between clinical insight and depressive symptomatology include: psychological and attitudinal factors, such as internalized stigma (Belvederi Murri et al., 2016; Cavelti et al., 2012b; Lien et al., 2018; Lysaker et al., 2007; Schrank et al., 2013; Staring et al., 2009; Valiente et al., 2015; Yanos et al., 2008), perceived discrimination (Belvederi Murri et al., 2016), illness perception and attitude toward recovery (Cavelti et al., 2012a), hope and self-esteem (Belvederi Murri et al., 2016; Drake et al., 2004; Schrank et al., 2013; Yanos et al., 2008), rumination (Thomas et al., 2014), and negative possible future self (MacDougall et al., 2015); premorbid functioning (Restifo et al., 2009); social factors including socioeconomic status (Belvederi Murri et al., 2016), satisfaction with social support (Kaiser et al., 2006) and social rank appraisal (McLeod et al., 2009); and clinical factors such as severity of illness and level of service engagement (Belvederi Murri et al., 2016). Although many factors make significant contributions to the association between insight and depressive symptomatology, much of the variance remains unexplained. A factor reflecting a broader construct is more likely to subsume a larger proportion of people in explaining this association. One such factor that is yet unexplored but is relatively simple to measure is illness engulfment, or the process whereby an individual's self-concept becomes defined solely by illness (Estroff, 1989; Lally, 1989). It involves the progressive restriction of roles until only the patient role remains (Estroff, 1989). This broad

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construct is applicable to mental illness as well as physical illness such as chronic kidney disease (Beanlands et al., 2006).

In schizophrenia, illness engulfment is associated with feelings of low self-esteem, hopelessness, low self-efficacy, and depressive symptomatology (McCay and Seeman, 1998). Importantly, engulfment is also positively associated with insight (Williams and Collins, 2002). We predict that in individuals who are more aware of various aspects of their illness, the patient role may become highly centralized to their self-concept, leading to feelings of hopelessness and decreased self-esteem, and higher levels of depressive symptomatology. The primary aim of this study was to examine whether illness engulfment is a mediating factor in the association between insight and depressive symptomatology in schizophrenia. Using mediation analysis, which seeks to examine the causal mechanism underlying an observed relationship between a predictor variable (X) and an outcome (Y) via a third variable, the mediator (M) (Hayes, 2018; Hayes and Rockwood, 2017), we hypothesized that a) engulfment is positively associated with both insight and depressive symptomatology; and b) there is a significant indirect effect of insight (X) on depressive symptomatology (Y) via engulfment (M). A secondary analysis examined whether engulfment is a moderator of the association between insight and depressive symptomatology. The results of this research may have important implications for targeting engulfment in interventions aimed at improving insight, in order to reduce the associated risk of depression.

2. Methods

Insight is a multidimensional construct that is multi-determined and influences treatment adherence and clinical outcomes (Belvederi Murri and Amore, 2018). The current study was conducted as part of a large, cross-sectional study of insight in people with enduring schizophrenia. The primary aim was to develop a model of the existing dimensions of insight to a) explore psychological and biological determinants of insight; and b) develop interventions to improve insight and outcome in schizophrenia. A previous factor analysis of items from multiple measures of insight identified a five-factor model of clinical and cognitive insight in schizophrenia (Konsztowicz et al., 2018). The present study examines the association between one of the identified dimensions of clinical insight, 'Awareness of Illness and Need for Treatment' (AINT) that is defined below, depressive symptomatology and illness engulfment in people with enduring schizophrenia.

2.1. Participants

In the initial study, a sample of 165 participants aged 18–50 years meeting diagnostic criteria for schizophrenia or schizoaffective disorder were recruited and 24 met exclusion criteria, resulting in a sample of 141 participants (for details, see Konsztowicz et al., 2018 Supplementary Material). For the current study, one additional participant was excluded because the Modified Engulfment Scale was not completed. A sample of 140 participants was included.

Participants were in an enduring phase of illness, defined by a minimum of three years of pharmacological treatment for psychosis. Participants were English or French-speaking and were otherwise physically healthy. Exclusion criteria included low IQ score (> 2 standard deviations below group mean), history of medical or neurological condition that can affect cognition (ex., head injury with loss of consciousness for > 10 min), family history of hereditary neurological disorders (ex., Huntington's disease), or current substance dependence.

A semi-structured interview was conducted to determine the age of illness onset and duration of illness. Diagnosis was confirmed by the Structured Clinical Interview for DSM-IV and medical chart review. Number and duration of hospitalizations, current medications, and medication dosage were confirmed by medical chart review. The Scale for the Assessment of Positive Symptoms (SAPS) (Andreasen, 1984b) and the Scale for the Assessment of Negative Symptoms (SANS) (Andreasen, 1984a) were used to quantify the current severity of positive and negative symptoms.

The investigation was carried out in accordance with the latest version of the Declaration of Helsinki. Research protocols were approved by the Douglas Institute's Research Ethics Committee. Written informed consent was obtained from all participants after the nature of the procedures had been fully explained. Data were collected from November 2011 to June 2015.

2.2. Evaluation measures

Insight: An 8-item measure of the dimension of "Awareness of Illness and the Need for Treatment" (AINT) previously developed in our laboratory (Konsztowicz et al., 2018) was used. The measure includes select items from the abbreviated Scale for the Assessment of Unawareness of Mental Disorder (SUMD) (Amador et al., 1994; Michel et al., 2013) (reverse-scored), the Schedule for the Assessment of Insight – Expanded (SAI-E) (Kemp and David, 1997), and the self-report Birchwood Insight Scale (BIS) (Birchwood et al., 1994). Although 'awareness of illness' and 'awareness of the need for treatment' are often seen as separate dimensions (David, 1990; Lincoln et al., 2007; Mintz et al., 2003; Osatuke et al., 2008), our factor analysis revealed a common factor for these (Konsztowicz et al., 2018). The AINT measure provides a comprehensive method for quantifying this dimension of clinical insight, and the score is highly concordant with the "Awareness of mental disorder" score on the SUMD ($r = 0.74$, $p < .001$, two-tailed). The total score range is from 3 to 25, where higher scores indicate better insight.

Depressive symptomatology: The Calgary Depression Scale (CDS) (Addington et al., 1990) is a 9-item clinician-rated measure for evaluating symptoms of depression in individuals with schizophrenia. The total score range is from 0 to 27, where higher scores indicate higher levels of depressive symptomatology.

Engulfment: The Modified Engulfment Scale (MES) (McCay and Seeman, 1998) is 30-item self-report scale designed to measure the impact of schizophrenia on self-concept. Items are rated on a 5-point Likert scale from 1 (completely false) to 5 (completely true). The total score range is from 30 to 150, where higher scores indicate higher levels of engulfment.

2.3. Statistical analysis

We explored the associations between our variables of interest (AINT, depressive symptomatology, and engulfment) and socio-demographic and clinical variables using Spearman's correlations, Mann-Whitney U and Kruskal-Wallis tests. In two cases, a single item response was missing on the MES scale and the mode was imputed to estimate a total score. In subsequent analyses, we co-varied any socio-demographic or clinical variables that were associated with two or more of the primary variables of interest, as these are potential confounders in the model (MacKinnon et al., 2000).

Spearman's correlations were used to examine predicted associations between AINT, depressive symptomatology, and engulfment. The mediating effect of engulfment was examined using the PROCESS macro (version 3.0) which uses a regression-based model (Hayes, 2018). The macro provides a 95% bootstrap confidence interval for the indirect effect. Confidence intervals for the indirect effect that do not include zero indicate a significant effect at the $p < .05$ significance level. Analyses were conducted with 5000 bootstrap samples. A sensitivity analysis was conducted with the mediating and outcome variables switched (i.e., depressive symptomatology as the mediator and engulfment as the outcome).

Since the data used in this study are cross-sectional and we cannot reliably determine whether engulfment lies in the causal pathway between insight and depressive symptomatology, we included a secondary analysis to examine the potential interaction effect of engulfment and

Table 1
Sociodemographic and clinical characteristics of the sample (N = 140).

	Mean	SD	Range	Median	n	%
Gender						
M					102	72.9
F					38	27.1
Age (years)	35.7	7.9	21–50	35		
Education (years)	11.3	2.6	4–22	11		
IQ[a]	94.6	14.2	66–134	94		
Socioeconomic status[b]						
Lower to Lower Middle					46	32.9
Middle					47	33.6
Upper Middle to Upper					22	15.7
Unknown					25	17.9
Diagnosis						
Schizophrenia					99	70.7
Schizoaffective disorder					30	21.4
Unconfirmed psychotic disorder					11	7.8
Current hospitalization status						
Outpatient					126	90.0
Inpatient					14	10.0
Age of onset (years)	22.1	6.6	8–44	20		
Duration of illness (years)	13.5	7.9	3–37	12		
# of hospitalizations (n = 131)	4.9	4.1	0–22	4		
Duration of hospitalization (days)[c] (n = 114)	82	127	1–1271	55		
Chlorpromazine equivalent[d] (n = 133)	794	846	11–4835	555		
SAPS Total	18.8	17.0	0–85	14.5		
SANS Total	25.6	10.8	0–55	25		
AINT	20.8	4.9	3–25	22		
CDS	2.9	2.9	0–15	2		
MES	87.5	18.4	33–136	88.5		

SAPS, Scale for the Assessment of Positive Symptoms total (composite) score was calculated by summing all items except for the global rating items; SANS, Scale for the Assessment of Negative Symptoms total (composite) score was calculated by summing all items except for the global rating items; AINT, Awareness of Illness & Need for Treatment dimension of insight as per Konsztowicz et al. (2018); CDS, Calgary Depression Scale; HAS, Hamilton Anxiety Scale; MES, Modified Engulfment Scale.

[a] IQ score estimated as per Wechsler Abbreviated Scale of Intelligence (WASI).

[b] Socioeconomic status was rated using the Hollingshead two-factor index of social position (Miller, 1991) with modification of the education scale for Quebec.

[c] Value refers to grand mean of hospitalized participants' mean length of stay.

[d] Antipsychotic chlorpromazine-equivalent dose was calculated according to Leucht et al. (2014).

AINT on depressive symptomatology. We conducted a moderation analysis using the PROCESS macro (version 3.0), with AINT as the predictor, depressive symptomatology as the outcome, and engulfment as the moderator variable. The Johnson-Neyman (1936) approach was used to identify a region of significance for the moderator. All analyses were conducted using SPSS Statistics version 22.0.

3. Results

Table 1 reports the sociodemographic and clinical characteristics of the sample. AINT scores were higher among women (Mdn = 23.0) than men (Mdn = 22.0), $U = 1505.0$, $z = -2.05$, $p = .04$, $r = -0.17$. Higher AINT score was also associated with shorter duration of hospitalizations (r = - 0.29, p = .002) and higher antipsychotic chlorpromazine equivalent dose (r = 0.27, p = .002). Higher engulfment was associated with increased age (r = 0.22, p = .009), longer duration of illness (r = 0.25, p = .003), higher antipsychotic chlorpromazine equivalent dose (r = 0.24, p = .006), and increased current severity of positive symptoms (r = 0.23, p = .007). Higher depressive symptomatology was associated with longer duration of illness (r = 0.17, p = .040) and increased current severity of positive symptoms (r = 0.25, p = .003), and these variables were included as covariates in subsequent analyses. Sociodemographic and clinical variables from Table 1 that are not mentioned in the above list did not correlate significantly with the primary variables of interest.

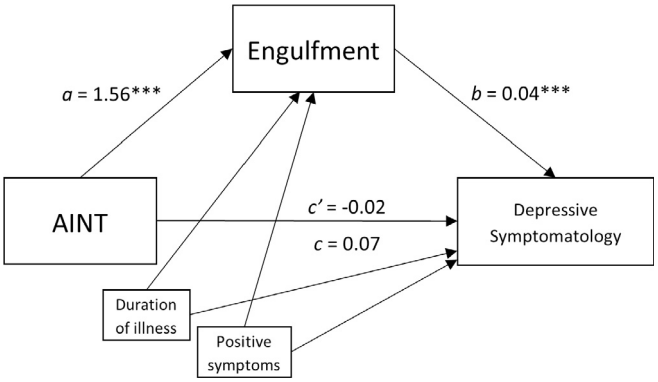

Fig. 1. Results of the mediation analysis. Coefficients are unstandardized regression weights. Insight was examined using a measure of the dimension of 'Awareness of Illness and Need for Treatment', or AINT (Konsztowicz et al., 2018); engulfment was measured using the Modified Engulfment Scale (McCay and Seeman, 1998); depressive symptomatology was measured using the Calgary Depression Scale (Addington et al., 1990). The results indicated a significant indirect effect of AINT, mediated through engulfment, on depressive symptomatology, independent of duration of illness and severity of positive symptoms (95% CI: 0.017 to 0.143). ***p < .001.

Spearman partial correlations (one-tailed) were used look for predicted associations among the primary variables of interest while controlling for duration of illness and current severity of positive symptoms. Engulfment was positively associated with AINT (r = 0.37, p < .001) and depressive symptomatology (r = 0.29, p < .001). AINT and depressive symptomatology were not directly associated (r = 0.06, p = .24). Fig. 1 illustrates the mediation model. The overall mediation model was significant, $R^2 = 0.194$, $F\ (4, 135) = 8.129$, $p < .001$ (Table 2). AINT was predictive of engulfment, $t\ (136) = 5.756$, $p < .001$, and in turn, engulfment was predictive of depressive symptomatology, $t\ (135) = 3.035$, $p = .003$. The analysis indicated a significant indirect effect of AINT, mediated through engulfment, on depressive symptom severity (95% CI = 0.017 to 0.143), independent of the duration of illness and current severity of positive symptoms. The partially standardized effect size for the indirect effect ($ab_{ps} = .02$) was small (Preacher and Kelley, 2011). A sensitivity analysis (not shown) conducted with the mediating and outcome variables switched showed no indirect effect of AINT, mediated through depression, on engulfment when controlling for duration of illness and severity of positive symptoms (95% CI = −0.039, 0.254).

For the moderation analysis, the overall model was significant, $R^2 = 0.239$, $F\ (5, 134) = 8.420$, $p < .001$. The analysis revealed a significant interaction effect of engulfment and AINT on depressive symptomatology, $b = 0.005$, $t\ (134) = 2.814$, $p < .01$, 95% CI = 0.002 to 0.009, controlling for the duration of illness and current severity of positive symptoms. With increasing levels of engulfment, the strength of the relationship between AINT and depressive symptomatology changed from a small negative effect ($b = -.241$, $t = -0.560$, $p = .011$, 95% CI = −0.427 to −0.055) to a small positive effect ($b = 0.306$, $t = 2.438$, $p = .016$, 95% CI = 0.058 to 0.554). Specifically, at MES scores below 55, higher AINT was significantly associated with lower depression scores; at MES scores ranging from 55 to 108, there was no significant effect of AINT on depression score; and at MES scores above 108, higher AINT was significantly associated with higher depression scores. Fig. 2 visually depicts the simple slopes equations of the regression of depressive symptomatology on AINT at three levels of engulfment.

Table 2
Model coefficients for the mediation analysis.

Predictor		Outcome						
		M (ENGULFMENT)				*Y* (DEPRESSION)		
		Coeff[a]	*SE*	*p*		Coeff[a]	*SE*	*p*
X (AINT)	*a*	1.565	0.272	< .001	*c'*	−0.017	0.052	.738
M (ENGULFMENT)		–	–	–	*b*	0.044	0.015	.003
C1 (Duration of illness)		0.365	0.171	.035		0.051	0.030	.087
C2 (Positive symptoms)		0.260	0.078	.001		0.036	0.014	.010
constant		45.196	5.945	< .001		−2.026	1.210	.096
		R^2 = 0.299 F (3, 136) = 19.345, p < .001				R^2 = 0.194 F (4, 135) = 8.129, p < .001		

[a] Coefficients represent unstandardized regression weights. AINT = Awareness of Illness and Need for Treatment dimension of insight; SE = standard error.

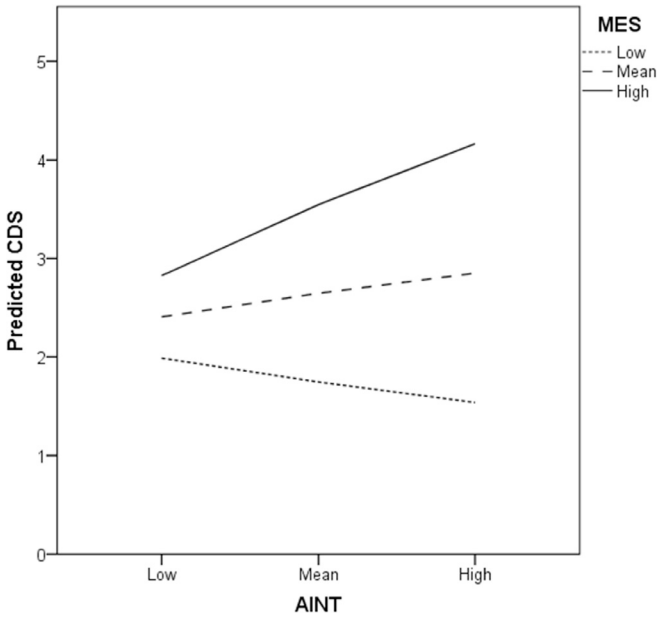

Fig. 2. Simple slopes equations of the regression of depressive symptomatology on insight at three levels of illness engulfment. A measure of the dimension of 'Awareness of Illness and Need for Treatment', or AINT (Konsztowicz et al., 2018) was used to reflect insight; engulfment was measured using the Modified Engulfment Scale (MES) (McCay and Seeman, 1998); depressive symptomatology was measured using the Calgary Depression Scale (CDS) (Addington et al., 1990). The results indicated a significant interaction effect between level of AINT and level of engulfment on depressive symptomatology, b = 0.005, t (134) = 2.814, p < .01, 95% CI = 0.002 to 0.009, when controlling for the duration of illness and current severity of positive symptoms. "Low", "mean", and "high" represent scores at (−1) standard deviation of the mean, the mean score, and (+1) standard deviation of the mean, respectively.

4. Discussion

4.1. General discussion

This study examined the association between the 'Awareness of Illness and Need for Treatment' dimension of insight, depressive symptomatology, and illness engulfment in a sample of people with enduring schizophrenia. The results suggest that illness engulfment mediates and moderates the relationship between AINT and depressive symptomatology, independent of duration of illness and severity of positive symptoms. Although many specific mediators and moderators of this association have been identified in the past, our finding suggests that illness engulfment may be an important process by which insight influences mood in schizophrenia, and points to the heuristic value of examining illness engulfment as a potential target for intervention. On a broad scale, this study brings to light the engulfing effects of schizophrenia, which is essential for helping individuals, caregivers, clinicians, and researchers to understand the complex relationship between insight and depression, and to work towards improving quality of life in this population.

Supposing the accuracy of our causal assumption, the significant indirect effect implies that individuals with better AINT are estimated to have higher depressive symptomatology, due to the tendency of those with higher AINT to experience higher engulfment, which in turn leads to higher depressive symptoms. Our conclusion is supported by the results of the sensitivity analysis, which demonstrated that depressive symptomatology does not mediate the association between AINT and engulfment.

Our study did not find a direct association between AINT and depressive symptomatology. Although modern mediation analysis does not require an association between the predictor and outcome variables as a precondition because the indirect effect is quantified rather than inferred (Hayes, 2018; Shrout and Bolger, 2002), this was an expected association based on the known relationship between insight and depression in the literature. In a previous meta-analysis, Mintz et al. (2003) reported a small positive relationship between overall clinical insight and severity of depressive symptomatology (ES = .18). This included modest positive associations between independent dimensions of clinical insight and depressive symptoms, including awareness of mental disorder, awareness of social consequences of disorder, awareness of need for treatment, awareness of symptoms of disorder, and attribution of symptoms to illness (ES ranging from 0.11 to 0.39). Likewise, Belvederi Murri et al. (2015) observed that higher overall clinical insight, awareness of having a mental disorder, awareness of symptoms, and more accurate attribution of symptoms were significantly but weakly associated with higher levels of depressive symptomatology (ES ranging from 0.13 to 0.17). A related construct to clinical insight is cognitive insight, or the ability to properly evaluate and correct distorted beliefs and misinterpretations (Beck et al., 2004). A recent meta-analysis by Palmer et al. (2015) focusing on the Beck Cognitive Insight Scale revealed a small but significant positive association between cognitive insight and depressive symptomatology (ES = 0.17). Importantly, the magnitude of the association between insight and depression can be influenced by factors such as the measure used to assess depressive symptomatology, phase of illness, and study design (i.e., longitudinal vs. cross-sectional) (Belvederi Murri et al., 2015), as well as by confounding factors such as severity of positive and negative symptoms (Belvederi Murri et al., 2016). Individuals in our sample tended to have high insight scores and low depression scores, which could explain why we failed to detect an association. In the initial stages of data collection, the presence of depression (evidenced by a CDS rating score of 6 or greater) was considered an exclusion criterion. This criterion was later removed as it was deemed too stringent and was a barrier to participant recruitment; however, our sample is

biased towards lower levels of depressive symptomatology.

Although the direct effect of AINT on depression was non-significant, the sign of the coefficient was negative. This suggests that a person demonstrating better insight, but an equal level of engulfment, is estimated to have lower depressive symptomatology. The total effect of AINT on depression, which is an aggregate of the indirect and direct effects, was also non-significant. This can occur when the indirect and direct effects are similar in magnitude but opposite in sign, and is sometimes referred to as inconsistent mediation or suppression (Hayes and Rockwood, 2017). The positive sign of the coefficient suggests that, overall, a person with better insight has higher depressive symptomatology. Taken together, these results suggest that the association between AINT and depressive symptomatology may differ based on the presence or absence of engulfment. Importantly, there is potential for an individual to have good insight without associated symptoms of depression, if illness engulfment is minimized. These conclusions are supported by the significant interaction effect found in the moderation analysis. A longitudinal study is needed to confirm whether the role of illness engulfment is as a mediator that lies in the causal pathway of the insight-depression relationship, as a moderator that influences the strength or direction of the relationship, or as both.

The present study hypothesized that insight contributes to increased depression via illness engulfment, although the precise mechanism has not been explored. According to Williams (2008), acquiring insight involves taking on a new post-diagnosis identity that changes the way individuals see themselves, and this occurs in the context of a social environment with significant stigma towards schizophrenia. The author proposed an 'engulfed' post-diagnosis identity whereby role constriction is prompted by the interaction of insight and self-stigma: internalization of negative stereotypes about people with schizophrenia as damaged or deviant may fuel the belief that one cannot participate in society, thus limiting the range of social identities (Williams, 2008). This may lead to a loss of sense of self and purpose in life, which may engender feelings of hopelessness and demoralization. In line with this, a study by Or et al. (2013) found that internalized stigma moderates the association between insight and meaning in life, where those with high internalized stigma and high insight also report lower levels of meaning in life. Importantly, the self-reflectiveness dimension of cognitive insight is associated with depression and low mood (Palmer et al., 2015), which suggests that the way individuals think about themselves may be an important part of the link between insight and depression (Lysaker et al., 2018). Taken together, these findings point to the possible role of self-reflection and internalization of stigma, as well as other related constructs such as self-concept and self-esteem, in the mediating effect of illness engulfment.

4.2. Implications

The results of this study have important implications for the conceptualization and treatment of poor insight and depression in schizophrenia. The positive association between insight and engulfment highlights the need for interventions that promote a healthy self-concept while limiting role constriction (Williams and Collins, 2002). There is some evidence that interventions aimed at improving insight lead to increased depressive symptomatology, although the findings are mixed. In one study, researchers found that participants who increased their awareness of illness after a brief insight-focused cognitive-behavioural therapy intervention tended to become depressed (Rathod et al., 2005). Contrarily, a trial of metacognitive reflection and insight therapy in patients with first-episode psychosis (MERIT-EP) showed a statistical and clinically significant improvement in insight compared to treatment as usual, with no evidence of increased depression or suicidality (Vohs et al., 2017). The authors speculated that the MERIT-EP intervention helped individuals to form a more integrated understanding of anomalous self-experiences and the events surrounding the onset of their mental illness, and to consider their psychiatric challenges while focusing on their strengths, thus resisting the negative consequences of insight such as stigma. In line with this, metacognitive capacity has been identified as a predictor of stigma resistance, where individuals with a more complex and integrated sense of themselves may be able to consider how stigma experiences and stereotypes of mental illness do not apply to them, hence resisting self-stigma (Nabors et al., 2014). Recently, a group-based intervention called Narrative Enhancement and Cognitive Therapy (NECT) (Yanos et al., 2011) that was designed to decrease self-stigma and help individuals to construct a richer self-identity via psychoeducation, cognitive restructuring, and narrative enhancement has shown effectiveness in improving measures of self-stigma and insight (Yanos et al., 2012), self-stigma, self-esteem, self-reported quality of life, and hope (Roe et al., 2014), and self-stigma and self-esteem post-intervention and at 6-month follow up (Hansson et al., 2017). Taken together, these findings suggest that awareness of self and formation of a healthy sense of identity are important for improving insight and outcome, without increasing the likelihood of depression and suicidality.

There is some evidence to suggest that illness engulfment can be directly targeted and effectively diminished in group and/or individual intervention modalities. One randomized-controlled trial of a group intervention for engulfment and self-stigma showed efficacy in improving measures of engulfment, hope, and quality of life in a sample of people with first-episode psychosis immediately after intervention (McCay et al., 2007). Although no significant changes were observed in self-concept, self-esteem, self-efficacy or stigma, the authors suggested that this may be due to (1) the small sample size and lack of power in the study, and (2) the fact that these aspects may change more slowly over time, in a process that is catalyzed by the more immediate effect of increased hope and reduced illness-related self-definition. Further longitudinal studies with larger samples are required to clarify the mechanism of action of this intervention.

4.3. Limitations

The present study had several limitations that warrant consideration. First, the variables of interest were measured cross-sectionally and as such, the causal direction of their associations cannot be unequivocally determined. Second, although previous studies have shown that the relationship between insight and depression is mediated by other factors aside from illness engulfment, we were unable to systematically examine the influence of each of these factors or their potential effects once engulfment is considered. For example, we did not examine self-stigma, a known mediator of the insight-depression association (Belvederi Murri et al., 2015). A study with a larger sample size is necessary to rule out the possibility of an epiphenomenal association (Hayes, 2018), whereby engulfment might appear to mediate the association between insight and depression, but this occurs merely through its conceptual association with self-stigma (Williams, 2008). Third, our study examined only a single dimension of insight, which limits the generalizability of our findings regarding the role of illness engulfment, because depression has been shown to be variably associated with independent dimensions of insight (Belvederi Murri et al., 2015; Mintz et al., 2003). Fourth, participants in this study were in an enduring phase of illness and the results may not generalize to all phases (i.e. first-episode psychosis or early onset schizophrenia). Finally, individuals in our sample had an overall good level of insight and low level of depressive symptomatology, which may have influenced the results.

4.4. Future directions

This study is the first of which we are aware to simultaneously examine insight, depressive symptomatology, and engulfment in people with schizophrenia. Future research could extend these findings by examining these relationships in a larger, more heterogenous sample.

The relationships among insight, depressive symptomatology, and engulfment should be studied longitudinally to confirm the causal direction of the associations. If illness engulfment lies in the causal pathway between insight and depressive symptomatology, then manipulating it via intervention should engender changes in the associations between the variables. Additionally, the specificity of illness engulfment as a mediator should be confirmed by examining whether the independent effect of illness engulfment is maintained when other factors known to be related to engulfment, such as self-stigma, are included in the model. Finally, as the self-reflectiveness domain of cognitive insight is increasingly seen to play a role in clinical insight (Béland and Lepage, 2017) and depression (Palmer et al., 2015) in schizophrenia, future studies should also examine the potential role of illness engulfment in the association between cognitive insight and depression.

5. Conclusion

The results of this study suggest that clinical insight influences mood indirectly through mediating variables such as illness engulfment, and that illness engulfment moderates the strength and direction of the relationship between insight and mood. Interventions aimed at improving poor insight in people with schizophrenia can potentially reduce the risk of eliciting depressive symptoms by targeting and impeding the process of illness engulfment.

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